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THE FUNCTION OF A NAIL: AN ARCHAEOLOGICAL EXAMINATION OF THREE
18TH- AND 19TH-CENTURY EASTERN PEQUOT RESERVATION HOMES IN
SOUTHEASTERN CONNECTICUT

A Thesis Presented

by

Salvatore A. Ciccone

Submitted to the Office of Graduate Studies,
University of Massachusetts Boston,
in Partial fulfillment of the requirements for the degree of

MASTER OF ARTS

December 2022

Historical Archaeology Program

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ABSTRACT

THE FUNCTION OF A NAIL: AN ARCHAEOLOGICAL EXAMINATION OF THREE 18TH- AND 19TH-CENTURY EASTERN PEQUOT RESERVATION HOMES IN SOUTHEASTERN CONNECTICUT

December 2022

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This thesis examines three indigenous households excavated on the Eastern Pequot reservation in North Stonington, Connecticut. Architectural artifact and spatial analyses, combined with historical documents, are utilized to understand reservation building practices of Native Americans navigating colonialism in the 18th and 19th century. The homes are small in design with at least one window and one stone chimney each. They all possessed cellars, but not all are stone-lined. Nails and window glass serve as the primary architectural artifact classes in this work, with an emphasis on their manufacture and modification. Examining nail and glass type, quantity, modification, and spatial patterns facilitates discussion on the forms Eastern Pequot homes took and how they entered the archaeological record. Furthermore, historical records combined with archaeological evidence suggest repairs were made to the homes or materials recycled from them. Documents highlight the relationship between the overseer and tribal members on the reservation and suggest overseers played an

active role in Eastern Pequot home maintenance, at least in the 19th century. Results indicate that when these homes entered the archaeological record, they were intentionally demolished, although perhaps not immediately after the residents left. This historical and material evidence offers insight on Eastern Pequot strategies to navigating reservation life during colonialism of the 18th and 19th century.

ACKNOWLEDGEMENTS

I would like to begin by thanking the Eastern Pequot Tribal Nation for their support of the on-going long-term research collaboration with the University of Massachusetts Boston. This initiative begun two decades ago is a catalyst for this research, and I hope I have helped to provide some answers about past tribal members. Thank you for the honor and privilege of helping to tell a piece of your story. I would like to express my deepest gratitude to my entire committee for their support and guidance over the years. Dr. Stephen Silliman exhibited great patience throughout this process and has helped guide this thesis to completion. Insights, expertise, and new perspectives from Dr. Douglas Bolender and Dr. Christa Beranek ensured this thesis was grounded and finished in its best possible iteration. To my cohort and classmates, I am truly thankful for all the wonderful memories we have shared in the classroom and the field. Of all my wonderful colleagues, there are two members I would like to highlight: Stephen Anderson and Joseph Trebilcock. They supported me throughout this journey and were a constant source of inspiration – this thesis would not have been completed without their steadfast support. To my family and friends outside the world of archaeology who made a valiant effort to feign interest in a sometimes mundane subject matter such as nails, I thank you. And finally, I would like to conclude by thanking my wonderful, kind, smart, and encouraging wife Danielle. She was always there to lift me up when I was feeling down or discouraged during this process. Her encouragement was immeasurable. This has been a great undertaking, and it would not have been realized without the support of all these fantastic people.

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CHAPTER 1

INTRODUCTION

Since its promotion by Wilk and Rathje (1982), household archaeology has become a historical archaeology global staple (Liebmann et al. 2005; Schwarz 2009; Snow 2012; Reeves and Schweickart 2019). Households are “portals to understanding larger communities” (Douglass and Gonlin 2012: 8) while both transforming society and mirroring these transformations, functioning as a “unit of adaptation” (Douglass and Gonlin 2012: 2). A household is created through three main components: a dwelling, related activities and occupying members (Douglass and Gonlin: 2012). As for the dwelling, architecture possesses both practical and ideological purposes. It shelters its inhabitants from the elements, but it also provides a powerful and invisible codification capable of expressing beliefs and frameworks (Funari and Zarankin 2003: 25-27). Members are not necessarily familial by nature, and there is not always a clear one-to-one ratio between homes and households: some could contain several households (Douglass and Gonlin: 2012; Snow 2012). Members’ decisions, actions and perhaps most importantly – their interactions – can all come into focus through household archaeology. This research framework has been applied to numerous cultures and regions, and it can certainly be applicable to New England Native Americans of the 18th and 19th century to understand their lived experience.

This thesis examines three examples of 18th- and 19th-century vernacular architecture of the Eastern Pequot Tribal Nation on their 225-acre reservation in southeastern

Connecticut. Founded in 1683, the reservation contains numerous known Native American homes, including archaeological remnants that have been mapped and studied and those of present-day members. Numerous theses, articles and books have been produced as a result of the collaborative efforts between the Eastern Pequot and the University of Massachusetts Boston (Cipolla 2005; Silliman and Sebastian Dring 2008; Silliman 2009, 2015; Hayden 2012; Hollis 2013; Anderson 2022). For the owners and inhabitants of these historic homes, daily life was not easy, and the reservation itself was supervised by a government appointed overseer. From the late 17th-century to the early 19th-century, homes on the Eastern Pequot and nearby Mashantucket Pequot reservations changed over time from wigwams to EuroAmerican-style framed homes (McBride 1990). These timber framed homes were utilized congruently with traditional round wigwams, but usage of the former eventually overtook the latter. Framed houses were similar rectangular in shape, single story, with timber skeletons wrapped in planks and boards (Stachiw et al 1997). Contemporary historical accounts describe these Pequot homes as being built and laid out in the “English Manner” (Committee Report 1761). This historic description is not only vague, but also potentially harmful. As a colonial document, it fails to acknowledge the decades of marginalization Pequots experienced, and how their housing choice reflects a loss to traditional building lands and resources. Instead, this 1761 report chose to interpret Native Americans living in timber frame dwellings as moving towards a desired “English Manner.” However, as Silliman (2009) asserts the presence of colonial artifacts in a Native assemblage does not signal a loss of Native identity; the same is true of their housing structure.

This thesis seeks to qualify this eventual change in housing style an attempt to reaffirm Native agency and to expel the idea that dwelling in a EuroAmerican style house would equate to a loss of Native identity. This is not to say that the space and materiality of the home do not affect identity and also reflect it, but this does mean that one cannot easily “read” identity from pre-existing categories of colonizer and colonized as projected simplistically onto material forms. I suggest that housing on the reservation is a negotiation of these positions and material experiences, as Eastern Pequot community members drew from past practices while engaging the rapidly changing world around them to have a future. The objective here is not to “test” persistence as that framing device is taken as a given as established through past work and the continued existence of the Eastern Pequot today, but rather to understand its inflections through architecture and space.

Persistence provides an interesting window to understanding cultural change and continuity via archaeology because it attempts to reconcile change and continuity through the welding of the two into “continuity through change” (Panich 2013: 106; Silliman 2009, Schneider et al 2020). Rather than an either-or situation of having changed or stayed the same, examining Indigenous histories through the lens of persistence enables archaeologists to peel apart the multitude of layers of cultural negotiation. Persistence begins by recognizing the active role of dynamic Native cultures and crediting them for internally sparking the practices aimed at negotiating a rapidly changing world. This process recognizes that ongoing and perpetual changes do not mark the beginnings or ends of individual cultures, but rather their dynamic continuation that is capable of adjustment (Panich 2013: 115).

Persistence places an emphasis on who used an object or inhabited a space and how to capture its full context. By examining architectural and settlement patterns, activity areas, and domestic artifacts that Indigenous groups chose to make and use as they negotiated English colonialism and changing continuities, several archaeologists have revealed deliberate Pequot actions (Silliman 2009; Handsman 2018; Anderson 2022). Through his examination of four Pequot homes, Handsman (2018) argues that a fuller contextualization of Native Americans living in EuroAmerican timber framed homes could indicate a maintenance of Indigenous identity. Utilizing their purchased ceramics to consume locally-gathered herbal tea instead of traditional tea, they were able to subvert English practices. By participating in the market economy, they challenged the English characterization of the “poor and needy” (Groton Pequot Report 1766) Native American.

This pattern is not exclusive to New England. Native American negotiation of Spanish colonialism has also been explored in great depth (Liebmann 2010; Panich 2013; Panich and Schneider 2015; Scarry 2010). Panich (2013) utilizes Mission Santa Catalina in Baja California as an emphasis of continuous cultural reworking. There, Panich (2013:114-115) argues, Indigenous people involved with the mission still flaked glass and porcelain for tools to incorporate new materials into their existing world view and material practices. Persistence has the potential to reframe the context in which changes are viewed. Rather than being observed as reactionary measures, persistence frames change as internally controlled conscious acts to navigate colonialism. It allows Indigenous groups to change the conversation from cultural stops and sputters to an attempt at negotiating colonialism and regaining agency that previous anthropologists stripped away. In this way, persistence

provides the ammunition to combat the essentialist frameworks of the past century (Silliman 2009).

This thesis examines three archaeological sites with these frameworks, 102-118, 102-126, and 102-82, on the Eastern Pequot reservation in southeastern Connecticut. Between 2011 and 2015 these three Eastern Pequot homes were all excavated as part of an ongoing collaborative field school between the Eastern Pequot Tribal Nation and the University of Massachusetts Boston. The Eastern Pequot sites have approximate dates determined from artifact assemblages: 102-118 dating from 1760 to 1780, 102-126 dating from 1775 to 1800, and 102-82 dating from 1800 to 1820. Combined, these represent over 30 pieces of brick, 350 pieces of window glass, and 800 nails. The materials were first analyzed on the University of Massachusetts Boston campus, and have since been returned to the Eastern Pequot (Silliman et al. 2013:19, 2014:1,19). These form the core of the diachronic study, and my architectural analyses are the first of its kind conducted on these sites, although several studies of other households on the reservation will offer comparative materials (Hayden 2012; Hollis 2013).

By examining a combination of archaeological assemblages and historical records, this thesis explores Eastern Pequot-Anglo cultural dynamics through an architectural lens. It seeks to answer three research questions. First, what did the Eastern Pequot homes look like, and how were they used? This question helps to evaluate field observations with additional processed data, further craft a picture of Eastern Pequot residential life, and establish a baseline of comparison. Second, what was the relationship between Eastern Pequot residents and overseers, and how might this have impacted domestic architecture? Resulting

interpretations may need contextualization depending on the amount of spatial and material control enacted by non-Pequot builders. And third, how did the homes ultimately enter the archaeological record? Understanding these options, such as active destruction versus incremental deterioration, ensures that interpretations of house use stand on a good foundation.

The following chapter provides background on the architectural styles in question and the Eastern Pequot themselves. Chapter 3 explains the research methodology for the artifact classes in detail. Chapter 4 provides more information on the three sites, offers the results derived from the methodology, and provides analysis. Chapter 5 is a discussion of the findings, while Chapter 6 concludes with how they help to answer the established research questions.

CHAPTER 2

BACKGROUND

Architecture

As conceptualized by Wilk and Rathje (1982), and furthered by Douglass and Gonlin (2012), the three main elements of household archaeology are social, behavioral, and material. Social refers to the individual members and relationships among members. Behavioral corresponds to activities performed by its members, material refers to the dwelling itself, including any building components, activity areas and artifacts (Douglass and Gonlin 2012: 3). Important as artifacts are, it is imperative to emphasize that the household is more than just the material excavated by archaeologists. Instead, households must be viewed as the encapsulation of all three elements coalesced, to form a sphere of activity (Ashmore and Wilk 1988:4-5; Wilk and Netting 1984:5-6). If the individual is the smallest conceivable social unit, households are the next larger rung on the societal organization chart (Hammel 1984:40-41). By studying the dwellings that held households, archaeologists gain insight into the lives, actions, and decisions of their inhabitants.

The following sections provide an overview of both EuroAmerican and Eastern Pequot architecture – a key component in the material pillar of household archaeology. Understanding Eastern Pequot homes within the greater context of EuroAmerican building styles starts by establishing the traditions, traits, and commonalities of each. To this end, and

to better comprehend the eventual – but not inevitable – Native American transition from wigwam to framed homes by the early to mid-19th century, historical archaeologists must be cognizant of EuroAmerican-style framed homes and what they afforded or required.

EuroAmerican Architecture

Colonists migrating to the New World brought many of their traditions with them, and their building styles were no exceptions (Cummings 1979: 1-17). The resulting structures dotting the Northeast American landscape during the first 250 years of European presence varied greatly, but most homes maintained several distinct characteristics preserved today within extant buildings, historical records, and the archaeological record. Research on this topic has produced numerous articles, books, and documentaries, each with the goal of relaying common architectural styles including room layout, structure size including specific dimensions, construction techniques, and building materials (Steinitz 1989; Garvin 2001; Smith 2007; Harper 2012). Each work presents its own biases and challenges, but when combined, they coalesce into a cohesive portrait of the evolving built landscape. Most homes did not undergo a single construction phase but rather grew and morphed according to familial resources, size and societal preferences (Harper 2012; Hollis 2012), and this is an important lesson for archaeologists to remember.

To best contextualize the three reservation homes within their contemporaneous built landscape, an understanding of surrounding EuroAmerican homes is needed. First, it must be known New England house forms of the 18th and 19th century varied greatly across the region. A clear, uniform, delineated evolution from phase-to-phase did not exist, although

some frameworks have been put forth (Deetz 1977; Greene and Pole 1984). Forms overlapped one another throughout the centuries, resulting in a diverse environment full of varying sizes, complexities, and styles. Even those considered the same style are known to exhibit distinct differences, to go along with their shared characteristics.

Garvin (2001) highlights, how square-shaped, three-room homes with off-center chimneys of the early 18th century Georgian style – named for the reigning British monarchs – differed from their later successors. Some early examples possessed a large front room containing one-third of the interior space, while two smaller rooms split the remainder in the rear (Figure 1). A chimney could be built in the center of the house with different mantles for the various rooms (Garvin 2001: 96). Figure 2 Highlights the various positionings possible during this time, note the varying placements of the chimney. Later examples possessed a rectangular outline with a diverse array of interior room layouts, and it was not uncommon for additional lean-tos to be added as well.

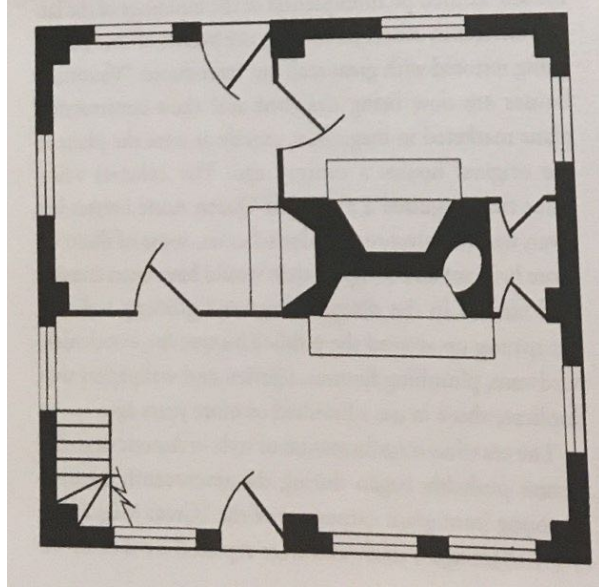


Figure 1. Sample Early Georgian Floorplan. Note Square Shape, Garvin 2001

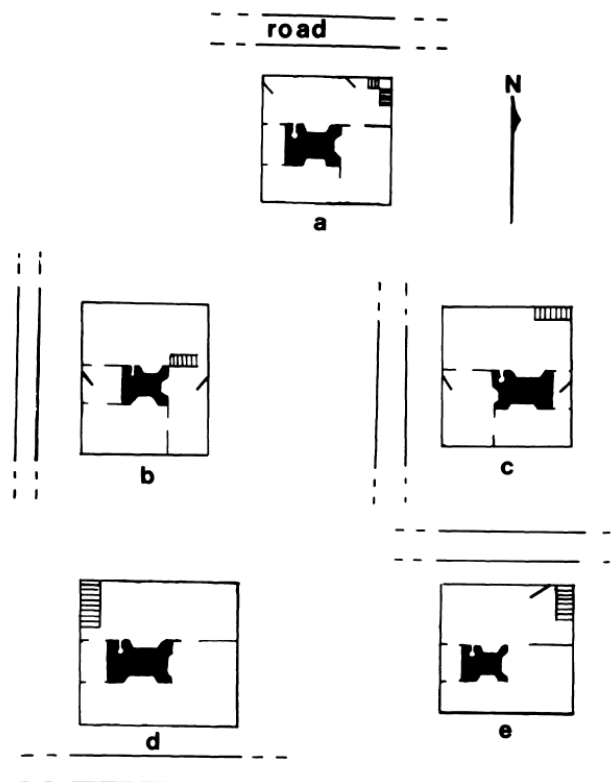


Figure 2. Various EuroAmerican Home Layouts of the early 18th century, Stachiw and Small 1989

Regardless of layout, these homes shared numerous similarities. First, they would possess a hand-dug cellar, that may or may not have been stone-lined. Access was achieved through a trap door or exterior bulkhead (Harper 2012: 15, 41). The overall footprint of the home stretched beyond the cellar itself. The homes could have either one or two stories, ranging in square footage from less than 600 to over 1000 (Steinitz 1989). They would be roofed with shingles and clapboards over the walls. As the century progressed, symmetry, while not an absolute, was certainly a defining characteristic of Georgian homes. Homes in the later part of the century were mainly characterized by low pitch roofs, sliding square-paned windows, and elaborate classical doorways. Inside the home, the structure's frame was characteristically hidden by panels, moldings and carvings created by skilled joiners and carvers. A joiner employed mortise-and-joins throughout the house, including wall and door panels, to eliminate all signs of the underlying framework. Higher demand for more sophisticated carvings created a rise in increasingly complicated carvings throughout home interiors, including Ionic and Corinthian style capitals and the later vegetative motif with the rococo style (Garvin 2001: 95-104).

The subsequent Federal style emerged in the Americas at the end of the 18th century following the Revolution and was influenced by Robert Adam, who in turn based his innovations on then-recently rediscovered Pompeiian and other archaic Italian forms. These styles were highlighted by their intricate molding details throughout the home including the door panels, fireplaces, windows, and cornices. Central chimneys became smaller in size and larger in number as they moved to exterior walls to make room for grand staircases. There are even examples where homes with existing central chimneys were removed and replaced

with new ones along exterior walls (Harrington 1989). Perpetuated first by William Pain and then Connecticut-native Asher Benjamin, these styles dominated New England in both grand and simple homes (Garvin 2001: 104 - 114).

Despite the intricate designs detailed within Garvin (2001), these larger homes were not completely ubiquitous on the historic landscape and represent more of an exception than any set rule. A measured synthesis of available information produces an image of vernacular homes quite different from many surviving historic examples, including those showcased in Garvin (2001). Steinitz, for example, advanced this notion by countering outdated regional models, especially those of Kniffen and Glassie, and realizing a more accurate understanding of housing along the North American East Coast (1989: 17). His work updated false notions regarding the New England built cultural landscape which had prevailed for decades. By arguing that surviving examples from 1800 or earlier represent only ten percent of all homes, he showed these remaining few are not an accurate representation of the vernacular. Steinitz evaluated data offered through the Federal Direct Tax Census of 1798 from numerous Massachusetts towns to determine an average home square footage of 831, much less than extant examples. With information including exterior dimensions, construction materials, height and window count, the Direct Tax Census afforded Steinitz the insight to argue that 40 percent of homes in Worcester County, Massachusetts, were 600 square feet or less (1989: 20-21).

This work portrays a landscape vastly different than one might assume by only examining surviving samples: there was great variation in home size, on both the intra- and inter-town level, usually divided along socioeconomic lines. The \$25 140-square-foot home

belonging to Grindal Thayer has most certainly not survived the test of time, but the two-story 3,000 square foot home of Luke Baldwin could have (Steinitz 1989). The absence of the smaller home on the modern landscape should not detract from its past existence and its fundamental role in the full context of the historical landscape. If one were to ignore the historical record and only examine extant examples, they might believe two-story buildings were the dominant form when in actuality, they were outnumbered two to one by one-story buildings and in some towns these smaller ones accounted for 80 percent of dwellings (Steinitz 1989: 21-22). Steinitz's work, in combination with Harper (2012), remain integral in understanding that while scholars publish books and articles regaling in the beauty of historic homes, most vernacular homes were much humbler and should be taken into account when formulating questions about regional architectural differences (Steinitz 1989: 26). In this context, the Native American homes examined here can be considered well within the range of the historic vernacular.

Instead, the smaller and more humble homes best represent the vernacular-built landscape expected for the 17th- and 18th-century in Connecticut. Many of these homes also possessed a unique characteristic known as "foundation-on-ground" with foundation stones placed directly on the flat ground. Any cellars would have been dug within the confines of these foundation stones, and the cellar ejecta placed on the exterior of the stones for added rigidity. The cellar itself could then be lined with stones with room left for a bulkhead entrance, or it could be left unlined. Within the cellar, deeper holes for storing meats, vegetables and dry goods could be dug and lined for preservation (Harper 2012: 10-11, 16, 41).

An improvement on the foundation-on-ground method was the splayed-foot foundation where the foundation exterior is several feet wider than the exterior house walls which create a triangular pattern when viewed from its cross-section. This created a wider and more stable base and when capped with thin “drip stones”, would add to cellar waterproofing (Harper 2012: 38). Many of these foundations would support cross-passage or “West Country” homes, complete with wattle-and-daub partitions and slate roofs. Consisting of three basic rooms divided perpendicularly by an open-air passage, this style strongly represents the EuroAmerican adherence to English predecessors (Harper 2012: 13). This style, which began in the 17th century, persisted well into the 18th century and remained a robust choice for their economic and efficient features.

As time passed, styles changed and more sophisticated large-framed homes demanded carpenters and joiners. They worked in harmony to design structures, procure needed resources, and facilitate the actual framing, raising, and sometimes relocating of the finished product. Customarily constructed of oak and pine wood, these larger homes also incorporated more rooms over time, possessing sturdier foundations with quarried granite slabs and a greater frequency of sawn timbers, all propelled by technological advances and changing building practices. On top of the foundation horizontal wooden sills were cog-and-notch floor joists, also known as sleepers, to which floor boards were nailed. Rising upward from the sills were the titular frames, normally erected in four groups of H-shaped bents (Garvin 2001: 10, 11). These bents ran from the front of the house to rear and featured two poles rising from the foundation to the roofline, joined at the midsection by a horizontal beam known as a girt (Cummings 1979: 54). They fastened to the lower sills with simple

tenons while the top of the post received much greater attention from the carpenter (Garvin 2001: 10, 11). These connections were complex and responsible for holding several different components including wall plates along its front length and tie beams to the rear. This necessitated a large amount of wood to be removed from the trees, and with the wider portion of the trunk at the bottom, they needed to be stood upside-down. Roofs consisted of six triangular trusses with tie beams as the horizontal hypotenuse and the two rafters rising from each end. They too were held in place by tenon joints (Garvin 2001: 12, 13). Not all framing joints required additional securing beyond their final fit, such as tie beams connected to wall plates with dovetail joints, but those which did, remained in place with either wooden wedges or drilled holes filled with treenails, or wooden pins (Garvin 2001: 5-17, Cummings 1979: 58).

The dearth of iron nails in the framing process cannot be overstated. Instead, their functionality was best utilized to clasp finishing elements to the main frame. Floor and wall planks, along with roof shingles make up nails' primary usage in these historic homes. If utilized in any framing component at all, it was often associated with smaller framing lumber or portals. Clinched nails could provide extra strength to holding hinges and door straps in place (Beaudry et al: 2003). Their presence or absence therefore affords archaeologists crucial information including execution of style in the building process and the location of potential entry ways. These framed homes were often very strong, although prone to vulnerabilities including fast-spreading fires (Garvin 2001: 23-25).

Indigenous Architecture

In contrast to EuroAmerican styles which often left an evident cellar signature, prior to the 18th century Pequots and their neighbors primarily built ephemeral dwellings which make them difficult to detect archaeologically, especially considering they were often built “without a single nail” (Carlson 1986: 33-34). Archaeological and historical records support similar descriptions of these Pequot homes. These round or oval shaped wigwams, also known as wetu, measuring 10 to 16 feet in diameter and 6 to 10 feet tall, were the structure of choice for Pequot people prior to European arrival (Stachiw et al 1997: 7). The main dwellings were constructed with a sapling framework covered in woven mats or bark and were grouped in small enclaves. Historical documents indicate that in addition to being responsible for processing food and tending to cornfields, Native American women also built these wigwams and gathered most of their needed materials during the summer months (Bragdon 2009: 141-145). The wigwams were known for their weatherproofing and ability to repel both “any drop of raine” and the “cooling breath of the ‘North winde’” (Wood 1634: 99-101). These homes varied in living space area depending on familial size and would expand to fit both nuclear and extended families (Bragdon 2009: 83-85). Their ability to be quickly assembled and disassembled was a direct result of the semi-sedentary lifestyle for southern New England’s Indigenous communities. Historic records from Ezra Stiles’ (1761) writings provide some of the only (Figure 3). He describes oval wigwams of the 18th century to be approximately 17 feet by 12 feet, complete with table, chests, dresser, chair, adornments, and sleeping mats (Stiles 1761). Thus far, only two wigwam-like structures have

been identified archaeologically on the Eastern Pequot reservation (Hayden 2012; Lane 2013).

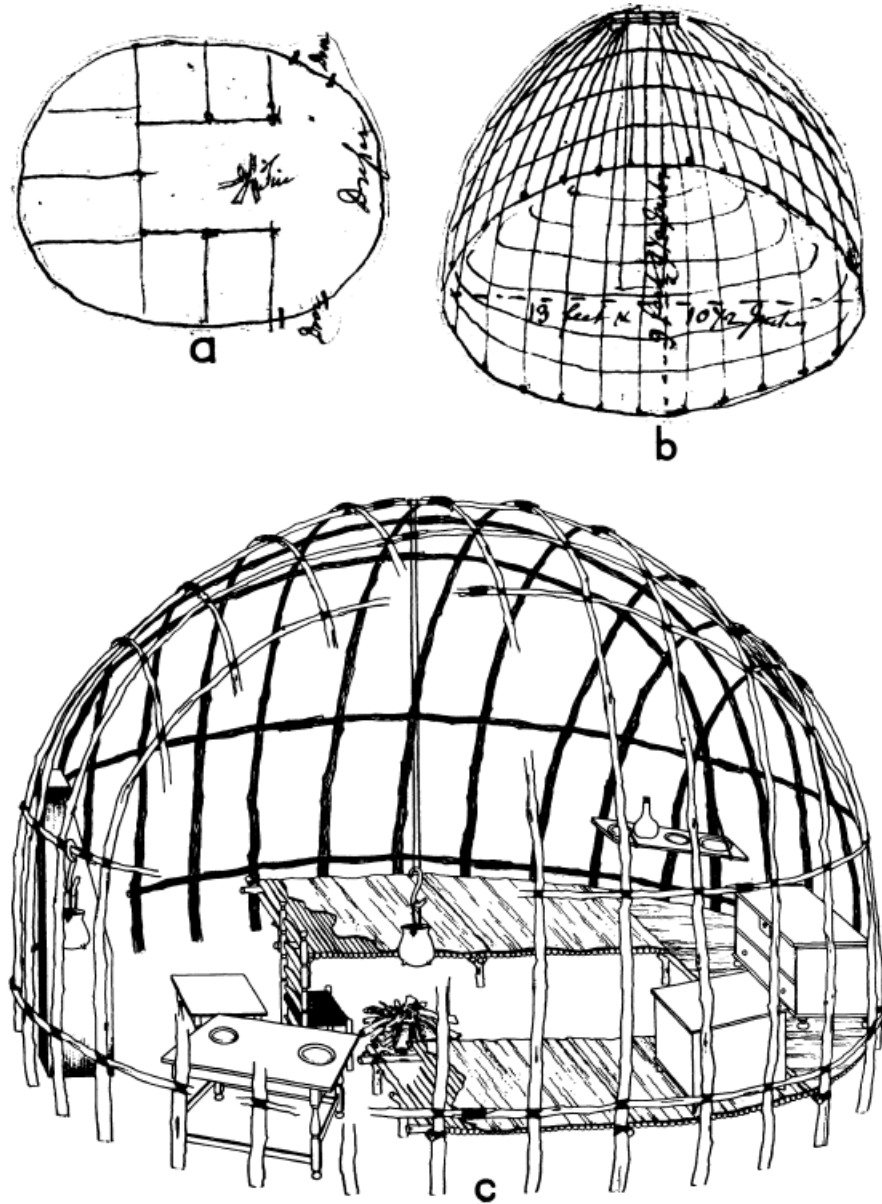


Figure 3. Ezra Stiles' Drawings of Connecticut Wigwams, 1761

The Pequot longhouse served as a complement to the wigwam. Where the wigwam housed more nuclear families, the longhouse was significantly larger in size, more

permanent, and accommodated either large families or an elevated individual. They were 30 feet wide and could range anywhere from 50 to 200 feet long. Interior space was partitioned for each family with general uniformity between each familial space. Each side of the smaller rooms had benches along the exterior walls with fire pits in the center. These dwellings dotted the landscape for centuries – until European arrival in the 17th century [cite].

Following land loss, including confinement to reservations – to be explored below – the Pequot and neighboring Native communities began to experience a dwindling of available resources to make wigwams. Forest clearing for farm land and shrinking reservations created a dearth of saplings and other materials (Stachiw et al 1997: 8). This brought about a transition from Pequot to EuroAmerican style framed homes; which was neither fast nor uniform across either Pequot community or their neighbors. Evidence points to these shifts happening only a few decades into life on reservations, which only started in the 1660s for the Mashantucket Pequot and the 1680s for the Eastern Pequot. Handsman (2018: 60) even argues for a reinterpretation of Mashantucket Pequot Site 72-66 to suggest what was previously considered middens, is in fact a wetu contemporaneous with Site 72-66. Between these new studies and Dwight's (1969) claims wigwams were still suitable up until the 19th century, these differing home styles undoubtedly existed simultaneously on the Eastern Pequot reservation.

The pattern applies to the Mashantucket Pequot, who until the mid-1700s, housed 75 percent of the 150-230 reservation occupants in wigwams (McBride 1990: 114). McBride argues it was not until the middle to late 18th century that the European model of subsistence began to emerge including less seasonal movement, shrinking reservations, and increased

animal husbandry – all of which helped lead to EuroAmerican architecture (1990: 108-11). A mid-19th century historical document offers a specific example from a committee report which outlined plans for Pequot homes to be built, “each 22 feet long, 14 feet wide and 1 story high with suitable partitions” (Committee Report 1856).

This experience coincides with contemporary Nipmuc examples to the northeast (Mrozowski et al 2015). The Sarah Burnee/Sarah Boston Site in the town of Grafton, Massachusetts represents another EuroAmerican style framed home – occupied by Nipmuc people – in the New England region. Built in the mid-18th century, and undergoing at least one documented later construction episode at the turn of the century, the home consisted of a foundation 12.5 feet wide by 17 feet wide by 5 feet deep (Mrozowski et al 2015: 92), with numerous architectural features and accompaniments, including a barn. It was a multi-generational home containing artifacts which revealed occupants connected to a global market of trade goods. This site was also fortunate to still have extant relevant historical documentation, including parcel maps and material receipts, allowing a further layer of analysis. Through the decade-plus of research here conducted by numerous archaeologists and specialists, this Nipmuc household site offers insights to a culturally important and impactful homestead (Mrozowski et al 2015).

Back in Connecticut, there was also an increase in stone usage for wall and foundation creation, both in and around these more permanent structures. While these changes to using stone happened for specific reasons – such as field clearing producing an abundance of them – it is critical to not misconstrue them as the loss of Native American cultural identity. Scholars have long argued these changes, including intermediate house

forms between wigwams and EuroAmerican frame houses, represent cultural continuation (McBride 1990; Silliman 2009; Baron et al. 1996).

As Stachiw, Dempsey and Paske (1997) assert, it is reasonable to believe native groups were exposed to and familiar with European housing styles and construction methods. Their piece offers invaluable insight on how 18th-century Native American homes were most likely constructed in southeastern Connecticut. Their report outlines a two-pronged approach: examining the archaeological record for known Native American homes and site visits of extant contemporaneous homes in surrounding Connecticut communities. In the archaeological component, they analyzed four late 18th century dwellings on the Mashantucket Pequot Reservation: two wigwams, Sites 72-39 and 72-161, and two framed homes, Sites 72-66 and 72-70B. By examining nail head type, manufacturing technique, count and condition, Stachiw et al (1997) were able to identify certain dwelling characteristics. A high presence of L-head nails suggests wooden board floors in the two frame dwellings, and even perhaps one wigwam. A lack of smaller fasteners decreased the chances a shingle roof was used on any of the homes.

Their study, documentary research and site visits on still-standing homes revealed several themes throughout. These include a preference for white oak, a common rafter system, no ridge pole, and they all utilized a plank frame structure (Stachiw et al 1997: 43). This suggests the skeleton of these 18th- and 19th-century Pequot homes were hand hewn oak timbers, fastened with mortise and tenons (Figure 4). Vertically-oriented oak planks then wrapped the exterior walls, with board battens secured on both the exterior and interior seams between the planks (Figure 5). Efficiently placed nails could be used to simultaneously

fasten an interior and an exterior batten (Stachiw et al 1997). The roof was waterproofed with a double coat of vertical, thinner planks. The lack of shingle nails and plaster reinforces Stachiw, Dempsey and Paske's (1997) notion of a simple, proficient, and straightforward plank and board approach, perhaps to curb needed materials. Individual shingles required more nails while long wood boards can cover a larger square area with less fasteners. This method also required less joinery than stud construction, which meant lower material costs and building time (Stachiw, Dempsey and Paske 1997: 12).

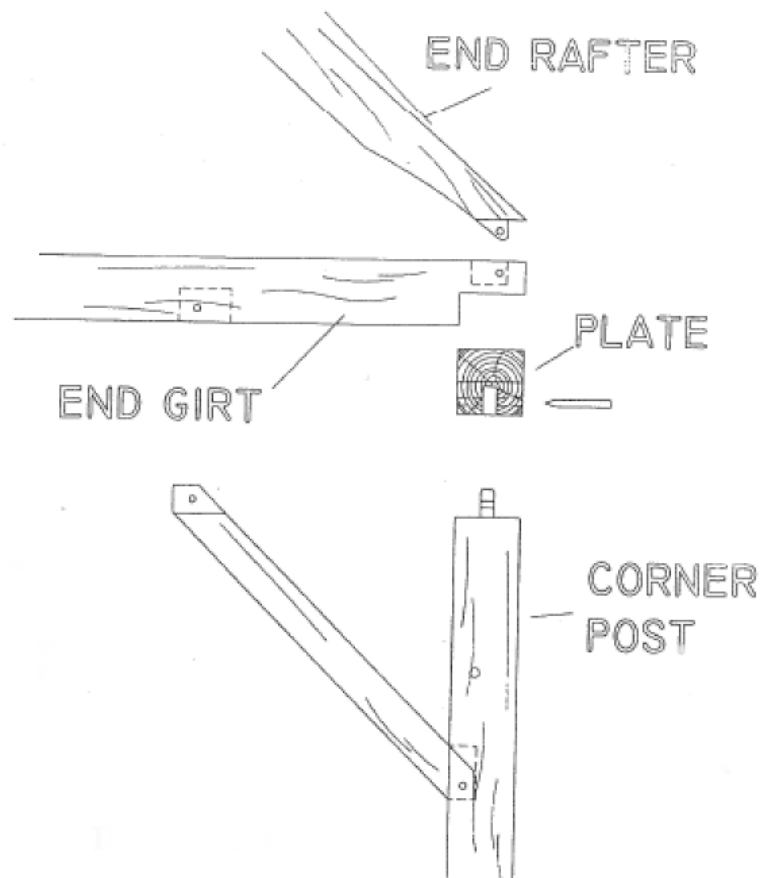


Figure 4. Framing Detail, Note Lack of Nails, Stachiw et al 1997



Figure 5. Exterior Profile Render of Pequot Timber Framed Homes, Stachiw et al 1997

They propose the house form was rectangular, with a single interior room, possible loft, single door, and windows. Note that not every window would have possessed glass. Chimneys were not always a requirement, and could reduce labor with a simple smokehole in the roof (Stachiw et al 1997: 36). Their work, along with later re-examinations (Handsman 2018) emphasize that regardless of whether a site was a wigwam or a framed house, each might have possessed windows, doors, and floorboards.

They also argued most nails and hardware were most likely salvaged or recycled as determined by the condition of the ones left behind. Unfortunately, this report failed to examine nail modification, particularly resulting from removal and salvage efforts. The presence of window glass at all sites indicates windows were indeed included in the

designing and building of these homes. Taken as a whole, Stachiw et al (1997) offers a rendering of what a 18th-or 19th-century Native American home might have looked like. Their efforts were borne out into a real-life farmstead recreation at the Mashantucket Pequot Museum and Research Center in a full-sized interactive exhibit.

Historical Context

Today's 225-acre Eastern Pequot reservation in the southeastern corner of Connecticut represents a fraction of the expansive two thousand square mile tract the Pequot people controlled in the decades preceding the Pequot War of 1636-1637 (Starna 1990). The Pequot were a powerful tribe, with upwards of 14,000 to 16,000 members (Snow and Lanphear 1988), who garnered prominence over several centuries as they brought surrounding tribes under their influence to eventually control all land spanning from West Niantic, Connecticut, down to the Long Island Sound, east to present-day Rhode Island and capped by the Thames River headwaters to the north (Starna 1990). This broad territory afforded the Pequot diverse foodways, both terrestrial and marine alike.

Historical accounts and archaeological research reveal their subsistence strategies to be focused on fishing, hunting, and gathering in conjunction with cultivated crops such as corn, beans, and squash. They practiced a dispersed, semi-sedentary lifestyle of small enclaves featuring ten to twenty homes which they moved with seasonal and resource variation. This mobility meant they spent the summer months as a coastal-oriented people while they cultivated their crops and benefitted from the bountiful Long Island Sound until colder weather precipitated an inland shift (Starna 1990:35-38). However, this

“ethnohistoric” model must be understood in its full context (Bragdon 1996). While scholars have argued that the Pequot had been living near coastal lands for roughly three seasons a year at the time of European arrival, Bragdon (1996) argues Pequots were not overly reliant upon agriculture or in concentrated villages for an extended time leading up to the 16th century. Instead, archaeological evidence supports a system of conditional sedentism with a lesser reliance on agriculture as a central food source. This mobility fostered adaptability. For example, to protect their foodways and agricultural fields leading up to the anticipated Pequot War, the Pequot people planted new cornfields on Long Island and other offshore locations, up to 200 acres in size (McBride 1990: 102-103). As part of this mobile practice, semi-permanent residences were used to protect the Pequots from the often harsh and unforgiving New England weather. Wigwams and longhouses were the domicile types within the two Pequot fortified villages, built within wooden stockades, of Mistick and Weinshauks during the Pequot War (McBride 1990).

The Pequot War

By the early 17th-century, the Pequot had established a sizeable wampum trade with the Dutch. However, through a series of violent retaliatory acts leading to tense relations with the British, what had initially started as a small dispute over accountability quickly became a costly war, for Native peoples, colonists, and Native-colonial relations alike. In less than 24 months from the war’s onset, the Pequot tribe was decimated and its land confiscated. Contrary to the end result, however, the Pequot succeeded for the entirety of the war until May 1637 when their settlement, Mistick Fort, was attacked. The uniqueness and deviation from the status quo which these two forts, Mistick and Weinshauks, represent cannot be

overstated. No other Pequot villages, at any time prior to or during European settlement, were located on defensible hilltops or as far away from a water source as the ones at Fort Wenshauks and Mistick (McBride 1990:101). This tactic, combined with their seasoned warriors – with experience from warfare with nearby tribes and successful encounters against the Dutch in 1634 – meant the Pequot tribe fared well during the majority of the Pequot War.

The Pequot tribe's initial successes, however, did not carry through the entire war, as the same forts that were meant to be defensible contributed to their downfall. Due to their high walls, concentrated Native population within, and acute Pequot awareness, the fortified village at Mistick proved difficult for the English to successfully penetrate during their “sneak attack” in May 1637. The Pequot were well aware of the English advancement through their territory and had brought in an additional 150 men to attack the English instead. These conditions lead to stiff Pequot resistance to the initial 17 English soldiers who entered the fort. After heavy fighting and suffering casualties, Captain John Mason ordered the village set ablaze (McBride and Bissonnette 2016: 43-44). It was then with the help of the Mohegan and Narragansett allies that this English attack turned into a massacre: hundreds of Pequot men, women, and children were slaughtered by the encircled troops as they tried to escape. Those who did not escape the palisade were burned alive. The ensuing counterattack during the English retreat resulted in large Pequot casualties as they abandoned the tactics that had brought them previous success and ran straight at the column of colonists (McBride and Bissonnette 2016: 46).

While the Pequot War represents one of the first protracted conflicts between Native Americans and Europeans in northeastern North America (McBride and Bissonnette 2016:

29), the decades following the Pequot War also saw many firsts for Native Americans and colonists alike. First, the Treaty of Hartford in 1638 saw the colonial English government reduce the Pequot people from a once powerful group into two shattered communities: the Western or Mashantucket Pequot and the Pawcatuck or Eastern Pequot under the control of the Mohegans and Narragansett tribes, respectively (Cook 1976: 52). This treaty served one deliberate purpose: to eradicate Connecticut of Pequot people and culture entirely. Every measure was taken to remove them from the landscape, as highlighted by the Treaty's directions for 200 Pequot males to be "divided equally between the Mohegans and Narragansetts" (McBride 1990: 105). While this number may seem high, McBride (1990) believes the figure to have been almost double based on contemporaneous sources. The colonists went so far as to ban the Pequot tribal name and forbid the Pequot from returning to their villages (Cave 1996: 161). For the next several decades, the scattered Pequot people were without their own defined territory and faced hostile opposition at attempts to establish permanent residence (Cave 1996: 162).

Beyond the Pequot War

In 1683, after great efforts by Pequot leaders and seventeen years after the Mashantucket Pequot received their reservation in 1666, the Eastern Pequot received their own reservation in present day North Stonington, Connecticut. These two reservations represent the oldest continuously occupied reservations in the United States. As helpful as these reservations were for Native communities struggling in the region, they did not immediately improve Native quality of life. Neighboring colonists frequently undermined reservation boundaries by releasing destructive cattle onto Pequot land which harmed and

destroyed Native crops. The Eastern Pequot reservation was small, the soil was hilly and rocky, and they were constantly plagued by colonial vandalism and encroachment (Den Ouden 2005).

The historical record provides numerous examples of Native attempts to curb these harmful activities, including several infractions documented in a 1750 report authored by Isaac Huntington and Ebenezer Backus which was the result of a formal complaint to the Connecticut Congress by the Eastern Pequot. The Huntington and Backus report states the Eastern Pequots were upset with three particular individuals, William Williams, Justice Minor and Nathan Crery, for actions detrimental to the tribe. They claimed Williams, Minor, and Crery challenged reservation boundaries, encroached on reservation lands, cut timber on said lands, and allowed their “unruly Horfes Cattel and Sheep in to y^e S^d Large pafter and [which] Have Eat up & Diftroid Good part of Theire Corn and Beens” (Huntington and Backus 1750). Backus and Huntington concluded these claims to be accurate and recommended the General appoint a surveyor to formally outline the boundaries of the reservation. This report documents reservation inadequacies by highlighting the difficult living conditions and personal experiences of Eastern Pequots as they navigated complex colonial interactions. Their reservation boundaries were constantly undermined and their legitimacy always questioned (Den Ouden 2005). Population waned – as did their reservation sizes, including the loss of land through illegal governmental sell-offs – through the centuries as many left due to military service (Carroll 2016), in search of employment and a means to support their families. The Eastern Pequot retained more of their reservation lands than the Mashantucket, but they started with a much smaller base at the outset.

Through the 20th century, these two tribes stayed on parallel trajectories until 1983 when the Mashantucket Pequot won a lawsuit against the federal government and were granted their federal recognition status (Jones and McBride 2006). This route was faster than the traditional avenue for recognition (Campisi 1990: 183-85). Unfortunately, their federal recognition and eventual financial success with high-stake bingo and Foxwoods Casino created an economic dichotomy with their eastern cousins. While some might perceive the Mashantucket Pequot as a shining example of example of American triumph, overcoming adversity and achieving success, the Eastern Pequot reservation pales in comparison. They lack even the most basic commodity such as paved roads. Without a doubt their experience with colonialism, including the effects of the Pequot War and Treaty of Hartford, cannot be overstated; almost four centuries have lapsed and their disenfranchisement continues. To improve their quality of life the Eastern Pequot have made exhaustive efforts to achieve federal recognition – with no avail. Between 2001 to 2003 they were granted temporary approval; however, the final decision ultimately went against them (Silliman and Sebastian Dring 2008). They are currently seeking alternative funding and even recognition routes.

Eastern Pequot Archaeology

The Eastern Pequot began their sustained archaeological research collaboration in 2003, alongside Dr. Stephen Silliman at the University of Massachusetts Boston. At the beginning of their process to achieve federal recognition, the relationship aimed to both establish a deeper connection to their past and identify culturally sensitive areas that might have been impacted during anticipated construction (Silliman and Sebastian Dring 2008). Despite their denial of federal recognition, Silliman and the tribe have conducted twelve

collaborative field schools since 2003, each with tribal members participating in the archaeology and ensuring tribal interests are protected. These individuals are direct descendants of those who lived on the reservation hundreds of years ago. Working closely with tribal members not only provides a heightened level of responsibility for the non-Native archaeologists but also new insight into how tribal members view their past. The collaborative effort allows Native Americans to actively engage in the interpretation of their history and regain control of the narrative that was taken away through colonialism. For archaeologists, understanding, incorporating and participating in Native practices and respecting their wishes, such as smudging and tobacco offerings, helps to bridge the gap between the discipline and the tribe by building trust. Silliman's numerous publications (2009, 2010, 2014, 2015, 2016) utilize this Eastern Pequot archaeology to emphasize the positive and reciprocal relationships possible, including several pieces written in conjunction with Eastern Pequot former Chairperson Kathy Sebastian Dring (2008; see also Sebastian Dring et al. 2019).

Out of 16 theses on Eastern Pequot archaeology completed to date in the M.A. Program in Historical Archaeology at the University of Massachusetts Boston, two are of particular importance to the research discussed here. Hollis (2013) focused on Eastern Pequot interaction with their built environment on the reservation. His work on the 102-123 site from the 2005 and 2006 field seasons proved effective in creating a cohesive timeline to understand the complex construction phases of this unique site. Conversely to Hollis' single-site fine-grained analysis, Hayden's (2012) thesis offers a diachronic comparison of three households across the Eastern Pequot reservation. Rather than focus on one particular site

over its use-life, Hayden chose three homes excavated during the 2007, 2008, and 2009 field seasons with overlapping occupational periods to understand Eastern Pequot daily familial life within their household spaces. She explored their negotiation within the challenging 18th and 19th centuries to comprehend long-term reservation spatial patterns. With a focus on the dynamic household cluster, Hayden focused on artifacts, particularly ceramics, and their spatial and distributional relationships to architectural features. Hayden then paired these results with her analytical theory to infuse agency, object meanings, and recursive relationships back into her approach. I aim to blend Hollis' (2013) fine-scale architectural analysis with Hayden's (2012) multi-household approach to gain a better understanding in the manners and methods in which Eastern Pequot built their ho

CHAPTER 3

RESEARCH METHODS

This chapter focuses on the architectural artifact and feature analysis of three Eastern Pequot residential sites and one nearby EuroAmerican site. It will first explore the manufacturing history of the artifact classes examined: nails and window glass. This marks a crucial step in understanding the analyses due to the artifact attributes imbedded through the various manufacturing processes. Then it extrapolates on the two types of analysis: nail modification and spatial. Finally, a discussion on the sites themselves in their chronological order of occupation, with acute detail afforded to architectural artifacts and features uncovered.

Research on Architectural Artifacts

Nails

Nails have had a relatively long duration in modern human history. From medieval European construction to even earlier usage in Norse shipbuilding and ancient Rome, nails have many applications and types, which offer insight into approximate site age and construction sequences (Fontana et al. 1962: 50; Young 1994; Wells 1998; Ball 1999; Lilley 2016). First sold by cost per hundred, nails have three main components: a head, shaft, and point. The style of each component is the direct result of the manufacturing process, and because these changed over time, they become temporally significant (Wells 1998: 81).

The three main types of nails are hand forged or wrought, machine cut, and wire. Hand-forged nails were the only type available from their inception during ancient times until the late 18th century, when the first patent for a machine that could cut nails from iron plates was awarded in 1775 (Reeves and Schweickart 2019). As the name implies, these iron nails were made almost exclusively by hand from start to finish including working the iron into usable rods. The exception appeared in the 17th century with the advent of forged nail rods square in cross section (Wells 1998:81). Hand-forged nails were known for their strength, long use-life, and wide-ranging sizes, thus making them versatile and ubiquitous. Their strength and usability derived from the direction of the iron fibers making up the nails themselves. Running from head to point the fibers provided the hand forged nails great clinching ability, as fibers did not break when the nail was bent at angles to secure themselves and hardware in place. This trait ensured forged nails remained the builder's choice even with the advent of machine cut nails.

Nail makers made forged nails with specialized blacksmithing tools including hammers, anvils and, most importantly, a header. Beginning by heating a rod of nail iron in a furnace, the worker would shape the rod to a point and then stretch the shaft to fit into the header. Then it would be twisted and broken off with a small amount left protruding out the top of the header. The aptly named header was then used to hold the almost-finished nail as the worker mushroomed the extended amount to finish the head (Fontana et al. 1962: 52; Wells 1998: 82). This process was a specialized skill which did not become firmly established in the United States until the late 18th century, during and following the Revolutionary War. This delay was in part due to the Iron Act of 1750 imposed by the British

Crown specifically to curb American steel production. With national independence came the freedom to build mills capable of rolling and shearing nail plates (Ryzewski and Gordon 2008: 60). The demand for nails was so high that most nails used during 17th- and 18th-century colonial construction had to be imported. This is what made the next phase in the nail evolution, machine-cut nails, so profound, and it led Thomas Jefferson to proclaim nail makers equivalent to European nobility (Nelson 1963: 2-8).

Early machine-cut nails began to emerge in the late 18th century; however, despite the advent of machinery and increase in production, flaws remained. Their primary drawback was their cross-grain inclusions and poor iron consolidation, a function of early machine-cut nails having their iron fibers running perpendicular to the shaft. This was determined by the width of the iron sheet itself, and this width was limited by the technology at the mill. The consequences of having small, narrow rollers in water-powered mills trickled down the production pipeline, creating flaws in the final product which decreased their clinching strength and helped to keep wrought nails popular (Wells 1998: 85). At nail factories, many machines still demanded workers to power both rollers in which the iron plates were squeezed and then to head the nail. First, a nail blank was cut from the nail plate after it passed through the crank-powered rollers. Then the un-finished nail was grasped in a clamp and individually headed by a worker. This manufacturing process left several distinct features on nails which Nelson (1963: 4-6) asserts are useful when studies include a late 18th- to early 19th-century structure. Features entail a two-sided taper from the cutting of the blank, a relatively flat point from the straight nail plate, and pinch in the shaft directly below the head from the heading clamp (Wells 1998: 83-85).

It was not until two key developments in the 1830s brought about full machine cut and headed nails. The first were the ‘one-operation’ machines at the turn of the 19th century. These were able to complete both phases in the nail making process; however, their execution was neither consistent nor satisfactory. Historical records indicate the early ‘one-operation’ machines produced low quality nail heads, often leading to machine heading stations left idle. Workers at the Salem Iron Factory, for example, were forced to finish the process by hand due to the machine’s difficult maintenance and set-up (Ryzewski and Gordon 2008: 54). Later reliable one-operation machines would first shear a nail blank from the iron stock, then transfer it to a heading station where it was firmly grasped by mechanical clamps, leaving just a small length of exposed iron at the top to become the head. The machine would then strike it or firmly press it with a die to laterally move the iron and form the head (Ryzewski and Gordon 2008: 54 – 56). This process was similar to how a blacksmith would hold an unfinished nail in their tapered heading tool before striking it with their hammer. Advancements in steam power, first in England and then in America, meant wide plates were economically feasible, thus creating better quality machine-cut nails than those made in the two decades before them. These nails benefitted from having their grain-in-line structure which gave them greater clinching power (Wells 1998: 85). They were not, however, without their drawbacks. Because they were cut and headed cold or at a low temperature as compared to hand wrought nails, the final heading process often caused cracks which were present until advances in the iron making of the 1840s (Wells 1998: 86).

The third and final major step in nail evolution came late in the 19th century with wire nails. As their name implies, iron wire nails required the use of iron wire, which was itself

made by pulling iron rod through gradually reduced holes in draw plates until a final diameter was met. Then, the iron wire, now on a roll, would be fed into a machine which clamped the rod on the future nail shaft, just below what will become the head of the nail. Next, pressure is applied to the iron wire sticking out past the clamps to mushroom and create the head. Finally, a pair of cutter dies squeezes the end of the shaft closest to the wire roll to form the point. Wire nails possessed grain which ran the length of the shaft, providing them clinching ability similar to hand-wrought and later machine cut nails. Despite being made since medieval times, iron wire was not largely utilized for nail production due to its higher manufacturing cost compared to iron plates and overall softness. It was not until the advent of French machines, imported to America in 1875, that wire nails began to be commercially produced (Wells 1998: 86 – 87). In the last quarter of the 19th century, steel manufacturers perfected their process, thus increasing steel's value. Steel's trajectory was congruent to the progression from cut iron nails to iron wire nails, with steel wire nails quickly dominating, owning as much as 92% of the nail market by 1920.

Traditional historic EuroAmerican home construction did not rely on nails exclusively to hold together the structure's framing – this was also accomplished by joints fastened right into the wood by the joiner and pegged in place. Their primary usage at this time was to join finishing elements to the main frame, and secure floor and wall planks, along with roof shingles and doors. Larger pennyweight nails were used in the structural openings such as window and door frames. This does not mean nails were never used to hold homes together (Garvin 2001: 23-26).

Each step in the technological evolution of nail making created artifacts with discernable and dateable features tied to specified functions and time periods. When understood and combined with creative analytic techniques, nails can offer an insight into a building's architectural style, construction periods, feature layouts and its condition as it entered the archaeological record.

Nail Attribute Analysis

The nail attribute analysis was conducted within known architectural deposits and was facilitated through the past works of Fontana et al. (1962), Nelson (1968) Hume (1969), and Wells (1998), whose research provided the literary guides and de facto comparison collection for all nails to be compared (Figure 6). Their publications offered scaled drawings, cross-sections, microscopic images, and descriptions for iron nails. This analysis focused on understanding and quantifying artifact features in nails as they spatially relate to architectural elements, including foundations, middens, chimneys, and presumed doorways. In particular, nail condition, method of manufacture, head type, head manufacture, cross section, point shape and pennyweight, or length, was determined – where possible – and recorded for each nail and nail fragment. These nail attributes were all categorized according to established criteria (Figure 7). Nail condition was established to record the state of the nail during examination as one of the three following possibilities: complete, with head and shank, or just with shank. To avoid any double counting of the same nail which might be broken into smaller pieces, a minimum number of nails was found for each site by combining the total number of complete nails and nails with head and shank.

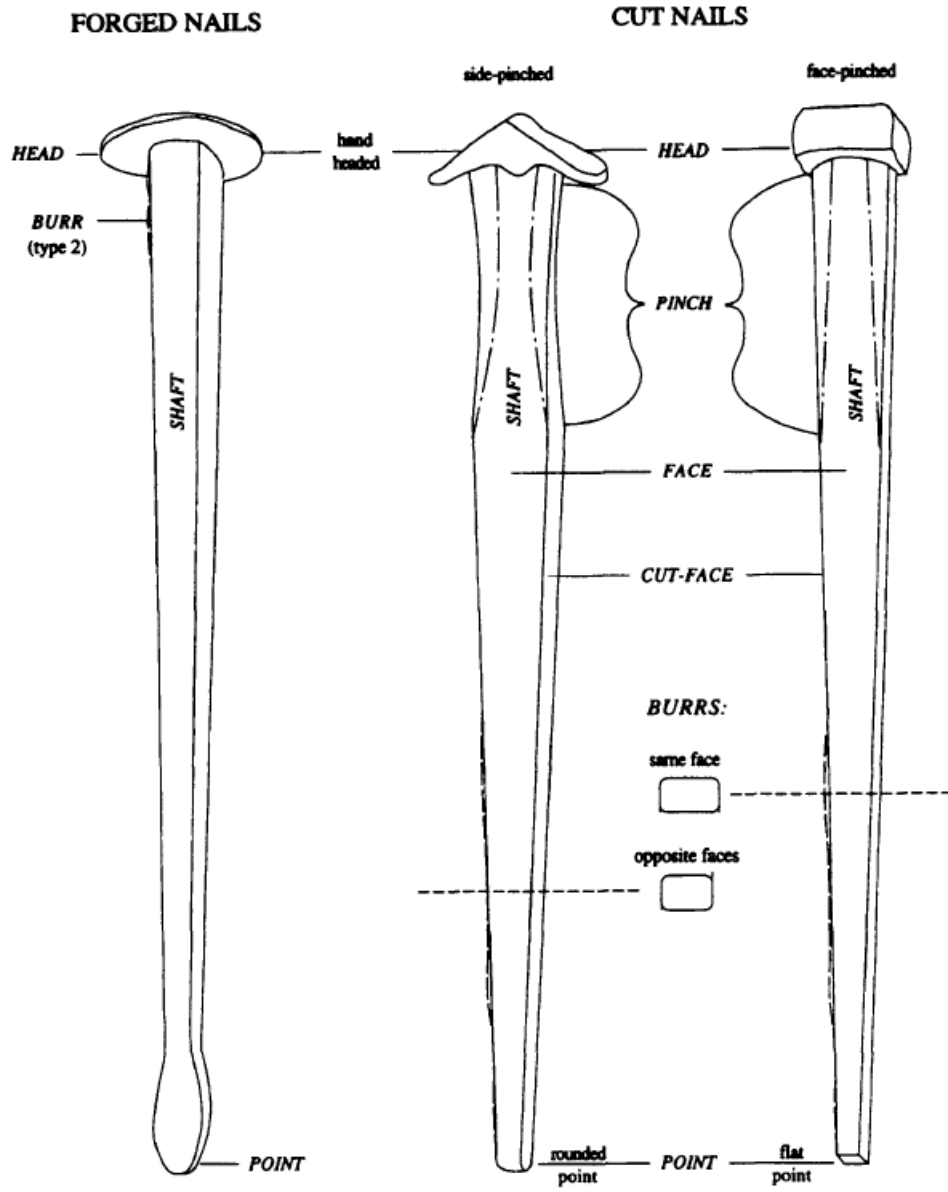


Figure 6. Forged and Cut Nails Diagram , Wells 1998

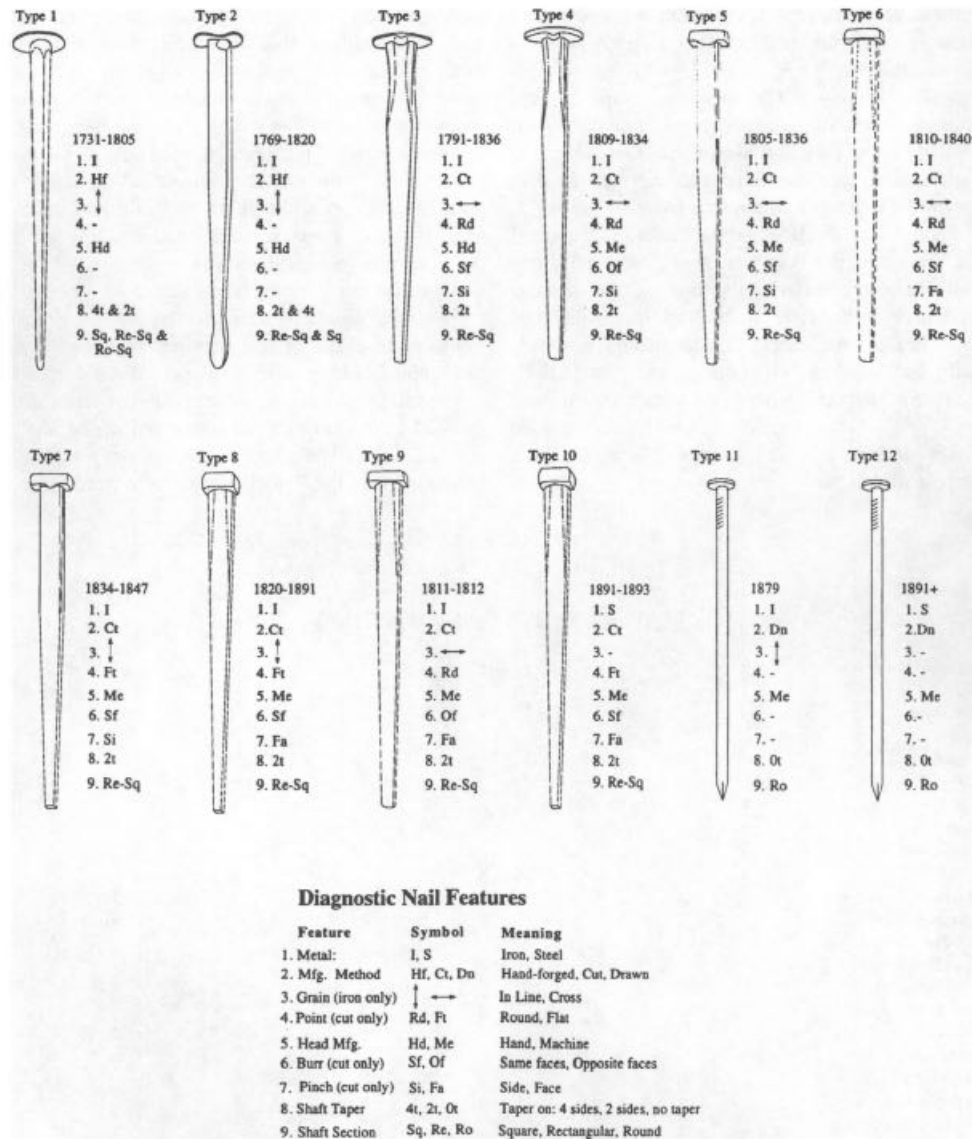


Figure 7. Historic Nail Types ,Wells 1998

Head type, minimum pennyweight, cross-section and point shape are perhaps the strongest indicator for nail usage. Pennyweight originally described number of pounds per 1,000 nails, but this descriptor eventually came to indicate nail length (Fontana et al. 1962: 55). Nail pennyweights range anywhere from two to sixty. Each step is longer and heavier than the last, requiring fewer nails to equal one pound (Table 1).

Table 1. Nail Measurements in Pennyweight, Length and Per Pounds (Fontana et al. 1962)

Pennyweight	Length in Inches	Number of Nails per Pound
2	1	1,200
3	1 $\frac{1}{8}$ (fine blued)	
3	1 $\frac{1}{4}$ (common cut)	720
4	1 $\frac{1}{2}$	432
5	1 $\frac{3}{4}$	300
6	2	252
7	2 $\frac{1}{4}$	186
8	2 $\frac{1}{2}$	132
9	2 $\frac{3}{4}$	105
10	3	87
12	3 $\frac{1}{4}$	66
16	3 (casing)	
16	3 $\frac{1}{4}$ (all others)	51
20	4	35
30	4 $\frac{1}{2}$	27
40	5	21
50	5 $\frac{1}{2}$	15
60	6	12

Their size determined if it was eligible for a particular application (Table 2). Too small and a nail could not properly fasten components together; too large and it would over penetrate. Pennyweights for nails with just head and shank are minimum pennyweights. This means any pennyweight figure presented is the shortest length for that given sample. This attribute, in conjunction with nail condition, allows for more effective data querying. Nail modification, be it bending or clinching, was afforded a great deal of attention as well.

Table 2. Nail Application by Pennyweight (Lees 1986)

Pennyweight	Application
2d	shingling
3d	shingling
4d	shingling, slating, moulding, and finish
5d	moulding and finish
6d	clapboarding, light framing, finish
7d	moulding
8d	finish, flooring, boarding
9d	flooring, boarding
10d	boarding, window casing
12d	framing
16d	heavy framing: rafters
20d	heavy framing: joists
40d+	framing

One facet of the nail alone is not enough to determine when, how, or why it was manufactured, but taken in aggregate, they represent specific stages along the many years of technological progress. When examining an entire nail, determining its particular function is possible although rarely certain. Knowing its use and where the nail was found in the site can indicate a potential architectural feature. For example, a large number of t-shaped nails could indicate a floor (Fontana et al. 1962: 54). Smaller nails could have been used to hang things in the home, or even to finish furniture. Larger, stronger nails clustered around a foundation wall could indicate a door frame. Knowing artifact temporal relationships are equally as crucial for this analysis to be successful.

Nail Modification Analysis

Critical to this thesis are Amy Young's (1991, 1994) studies on spatial patterning. In these works, Young aims to understand the nail patterns observed in the archaeological record for a building versus a refuse site. As such, they provide a method to examine an artifact class most commonly overlooked and referred to by historical archaeologists as "nail rain" (Young 1991: 4). Her work indicates that "nail rain" provides a great deal of information thanks to her nuanced approach, capable of providing insight into the home lifecycle. By comparing results from an ethnoarchaeological study to artifacts recovered from sites in Tennessee and Kentucky, Young developed insight by examining the "physical forces that alter or damage nails" before they enter the archaeological record (Young 1994: 56). Young highlights four specific phases of the house lifecycle in which nails could enter the archaeological record: construction, razing, building decay, and refuse area decay (Young 1991: 5; Young 1994: 56). The emphasis is placed on all nail modification which occurs prior to interment, not those which occur because of interment.

Various historic actions left their mark on nails, similar to the attributes created through their manufacturing process. Nails driven in once and left, or unused nails, are often straight through the shaft with little to no bending (Figure 8). These are characterized here as unaltered. Removing nails by hand often bent them, resulting in a slight arc, or s-shape in the nail as it was attempted to be straightened in the opposite direction, post-removal (Figure 9). These are referred to here as bent. For superior clamping strength during construction, some nails were first driven into a wooden board with a portion of the end exposed, and then hammered over on the tip. The resulting nail now bent at an angle greater than or equal to

90°, is referred to as a clinched nail (Figure 10). To remove a clinched nail, it must first be unclinched, and then driven back through its original hole. Demolition could also create clinched nails. After wholesale board removal, in which protruding nails came with a board destined for transport and disposal, not only would the nails get bent in an arc, but workers would also clinch the nails as a safety precaution (Young 1994: 57).



Figure 8. Unmodified Nail from Eastern Pequot Reservation



Figure 9. Bent Nail from Eastern Pequot Reservation



Figure 10. Clinched Nail from Eastern Pequot Reservation

Young suggests each action, be it razing a structure or leaving it alone, results in discernable ratios of bent, unaltered and clinched nails. Rather than merely examining a single characteristic such as nail location, physical attribute or concentration, these ratios are

at the model's core, and Young states her data indicate a clear and expected ratio for each historic action or inaction. These ratios will be referred to in the following order as unaltered: bent: clinched. First, a building left to deteriorate in place possesses a large amount of unaltered nails, with low numbers of both bent and clinched nails, producing a ratio of 3:1:1. Second, nails related to a razed structure that was left in place, will exhibit high amounts of both unaltered and bent nails, with low levels of clinched nails, considering the necessity to straighten them for removal, thus creating a ratio of 3:3:1. Finally, nails indicative of a refuse pile – meaning material was moved to a second location during the demolition process – will contain low unaltered nails, with high quantities of bent and clinched nails, a ratio of 1:3:1 (Young 1994: 58).

Hollis (2012) found these ratios applicable to the Eastern Pequot reservation for the site he investigated. The sites studied within this thesis, combined with Hollis' work, could provide sufficient evidence to determine if the Young (1995) technique is applicable to southeastern Connecticut. Additionally, it could also be utilized on the homes reported by Stachiw, Dempsey and Paske (1997). Stachiw et al. reference homes whose nails had been salvaged, according to his judgment of those left behind.

Amy Young's (1994) piece received constructive criticism in Donald Ball's (1999) analysis of her proposed methods. While acknowledging her innovative technique to an often-neglected component of historical archaeological sites, Ball identified several factors that needed addressing before widespread usage (Ball 1999: 14). Ball's chief criticism was that Young's method failed to account for "real-world" variables, including those that could impact historical nail usage, their deposition, and eventual archaeological recovery (Ball

1999: 3, 4). Repeated maintenance, repair and building episodes over a building's lifetime could artificially swell nail counts despite the overall structure remaining the same. Additionally, Ball argued that including nails utilized for interior decorating in an assemblage would obscure an attempt at reconstructing an accurate idea of the structure (Ball 1999: 4, 15).

This leads to Ball's second critique: Young did not focus enough on the structure's type but rather its construction method. Ball claims Young's work would be enhanced with a greater attention afforded to the structure's type by analyzing nails in conjunction with features such as their location, window and door placement, structure shape, and any additions (Ball 1999: 9, 11). By understanding nail distribution in relation to feature presence and location, structure type is easier, and in turn improves Young's methods which focus on nail modification and size. Ball concludes Young's methods are best used by an archaeologist knowledgeable in vernacular architecture, working in a known architectural context capable of recognizing features with a priority to understand architectural type. Young's approach therefore fills a "gap in our bank of analytical methods and should be carefully examined and seriously considered" (Ball 1999: 14).

Nail Spatial Analysis

In keeping with Ball's assessment, the nail analysis performed here was conducted within known architectural deposits and incorporated geospatial components designed to mitigate Ball's chief critique. Analysis utilized the aforementioned tables joined to the corresponding unit centroids in ArcMap. These joins enabled ArcMap to facilitate a Spatial

Autocorrelation analysis. This determines if an observed pattern of features and attributes is clustered, dispersed, or random. It produces both a z-score and p-value to evaluate the null hypothesis common among pattern analysis tools. This null hypothesis predicts complete spatial randomness while the p-value and z-score seek to prove or disprove it. The p-value marks the probability the pattern is random, with a smaller value representing a smaller likelihood of randomness. The z-score represents the standard deviation with large negative and positive values, and when coupled with a small p-value, it can strongly suggest a low chance of randomness.

This process aimed to understand if the observed patterns of nail and glass dispersal across the sites happened randomly or by another means, such as human activity. This test is designed to indicate if features or artifacts, such as nails, were discovered in a statistically significant pattern, be it clustered or dispersed. Determining these artifacts to be in a non-random assortment would mean something, or more likely someone, caused them to be in their particular locations. This in turn helps address the concerns raised by Ball (1999) in his follow up to Young (1994) and allows archaeologists to propose possible explanations for the occurrence, including intentional demolition or abandonment.

Lastly, a Natural Neighbor Interpolation based on total nail count per unit was generated for each of the three sites. This process completed in ArcGIS Pro 3.0 created a raster that fills in the missing data between points. It helped to identify points of acute nail counts and to understand the distribution across the site. In the rasters presented here, higher nail counts are represented by red shades, while lower counts are represented by darker blue colors.

Window Glass

Much like the Stachiw et al. (1997) determination on the Mashantucket Pequot reservation, it is known that at least some Eastern Pequot homes were fitted with glass windows due in no small part to the archaeological excavations that produced it (e.g., Anderson 2022; Hayden 2012; Hollis 2013; Silliman 2009; Silliman et al. 2013, 2014). This is an important facet of reservation composition, considering that Massachusetts Governor Bernard in 1763 stated “nails, glass lead, locks, hinges and many other materials” (Davis 1949: 25) were entirely imported from Great Britain. The numerous attempts throughout the 17th and 18th centuries to launch an American glass industry capable of competing with Great Britain’s productions failed due to poor demand and weak distribution networks (Scharfenberger 2004: 59-61). Therefore, the numerous window glass shards recovered in homestead contexts from the Eastern Pequot reservation were undoubtedly made in Great Britain and brought to the Americas. These shards provide ground-truthing to support overseer records documenting window purchase and repair.

Window glass in historic North America was chiefly made with the crown method until the early 19th century (Scharfenberger 2004: 62). This process involved spinning and expanding a mouth-blown glass ball while still plastic into a circular disc. Diamond, rectangle and square sections of glass would then be cut from the disc, and each would be slightly tapered in thickness with characteristic bubbles – worm-shaped – and concentric circular stress marks following the curve of the disc. These pieces can be roughly dated to post-1690 and could be sold at various prices, based on their color and quality which was inversely related to their distance from the center “bull’s eye” (Scharfenberger 2004: 63). It

was not until 1832 when Lucas Chance improved the broad method which allowed for the glass to be made in cylinders, cut along its axis to make sheets and then polished. This “sheet process” allowed for much higher quality and larger window panes of up to 10 square feet (Hume 1969: 17, 233-235). Plate glass, another historic production technique, was contemporaneous to the sites, yet, only began American production in 1856, and was solely used for coaches and mirrors (Scharfenberger 2004: 64). Modern, flawless window glass production was perfected in the early 20th century, and similar to wire nails, their presence would indicate a more recent occupation period (Scharfenberger 2004: 62).

Window Glass Attribute Analysis

Similar to nails, window glass possesses several key features capable of aiding in relative dating due to typology. Technological developments changed the consistency, color, thickness, and air bubble inclusion over time, creating discernable characteristics within the glass. A crucial point, however, is that while Scharfenberger (2004) argues glass price was determined by its place on the color, thickness, and clarity spectrum, he believes worm or rice-shaped air bubbles are the best indication for production method. Glass degradation can occur while buried for centuries and even be accelerated once excavated from the ground, thus effecting glass color, thickness and clarity. With these factors in mind, attribute analysis examined and recorded glass color, manufacture type, size, and if it was worked. Size was recorded through an established lab standard of five categories of maximum length (<1 cm, 1-2 cm, 2-3 cm, 3-5 cm, >5 cm), previously developed to ensure accurate cross-site comparisons without time-intensive shard measurement. This was vital to prevent a false

cluster in one unit. A dozen glass shards is a large quantity; however, a simple shard count can skew results, creating the need to understand unit artifact density.

Window Glass Spatial Analysis

Glass spatial analysis began by identifying window glass identification and then understanding its spatial distribution. Once digitally mapped by quantity via ArcMap, a Spatial AutoCorrelation analysis can provide a statistical assessment of whether the artifacts are random, clustered, or distributed. An answer other than random is sought, for it would point to deliberate placement driven by home construction or razing.

CHAPTER 4

SITES & RESULTS

This chapter provides the results of the analysis performed utilizing techniques discussed in the preceding chapter, along with site descriptions for each sample. Each Eastern Pequot site receives its own section featuring total nail counts, a table for the various analyzed attributes, report on nail modification totals, and highlights or causes of any interesting or important findings as they relate to the site's other architectural features, including window glass. Then, the sections present the spatial autocorrelation results necessary to determine randomness.

Sites

All three Eastern Pequot sites discussed here were identified and excavated with similar methods. First, they were found with pedestrian surveys conducted during University of Massachusetts Boston field schools and subsequently excavated from 2011 to 2015. They were excavated utilizing standard 1 x 1 m and 1 x 0.5 m archaeological units dug in five-centimeter arbitrary levels, unless natural stratigraphic breaks were present. All soil was sifted in the field with 1/8-inch screens for artifacts which were then stored for transport and later processing (Silliman et al. 2013:5-13; Silliman et al. 2014: 5-13). The materials were analyzed at the University of Massachusetts Boston campus, and have since been returned to the Eastern Pequot Tribal Nation (see Sebastian Dring et al. 2019).

Site 102-118

Site 102-118 was the earliest of these sites occupied from approximately 1760 to 1780. The site was initially detected during pedestrian surveys in 2003 and excavated in 2015. The site consists of a foundation depression with chimney fall. The 13 1.0 x 1.0 m and 9 0.5 x 1.0 m units accounted for almost 2,000 individual artifacts, including 86 grams of shell and 163 grams of charcoal. The bulk of the observable site was occupied by the cellar depression and somewhat slim chimney fall within (Figure 12). It did not possess a clear stone-lined foundation like that found in site 102-82, or even foundation stones similar to site 102-126. Instead, the depression appeared relatively deep, composed of earth embankments with a slightly larger mound adjacent to the north by northwest. During excavation, the greatest amount of time and energy were dedicated in and around the cellar depression. To best comprehend the site history while avoiding the concentration of chimney fall in the center of the cellar, units E, K, and Q were opened in the southern portion. Despite containing chimney fall, the decision was made to avoid digging in the northern half of the foundational depression, due to a unit having already been excavated there in 2003. Unit E was excavated to a full meter with numerous artifacts recovered including nails, window glass, ceramics, metal components, utensils and even a 1754 British half-penny. Large rocks were present throughout the first half of the unit with artifacts continuously found in and around them, and the lower reaches revealed a stone-lined area.

A pattern of middens located southwest of houses was observed elsewhere on the reservation; therefore, three units were opened south of the cellar near the beginning of excavation. An interesting component to this site was its lack of a clearly defined midden

scatter or discrete pit. Initial observation could identify the depression and chimney, but the ringing half-meter units failed to key in on a definitive central refuse pile. Units G, H, and I were the first of these exploratory units and failed to provide evidence of a doorway or midden. Units M and F on the western edge of the cellar were placed to define the edge of the home and in doing so, revealed the closest feature to a midden on the site.

To the northwest, Unit P was opened to understand the berm next to the cellar. Numerous artifacts were recovered throughout the unit, but the greatest revelation was the soil itself. Beneath the organic top soil, unexpected soil horizons were uncovered. Rather than the usual A to B to C horizon progression typical in this region, this unit exhibited a redeposited B horizon directly below the organic layer and then a second A horizon. This indicated the soil excavated from the cellar was redeposited in this spot, thus creating the large berm.

SITE 102-118 TOTAL NAIL COUNTS PER UNIT

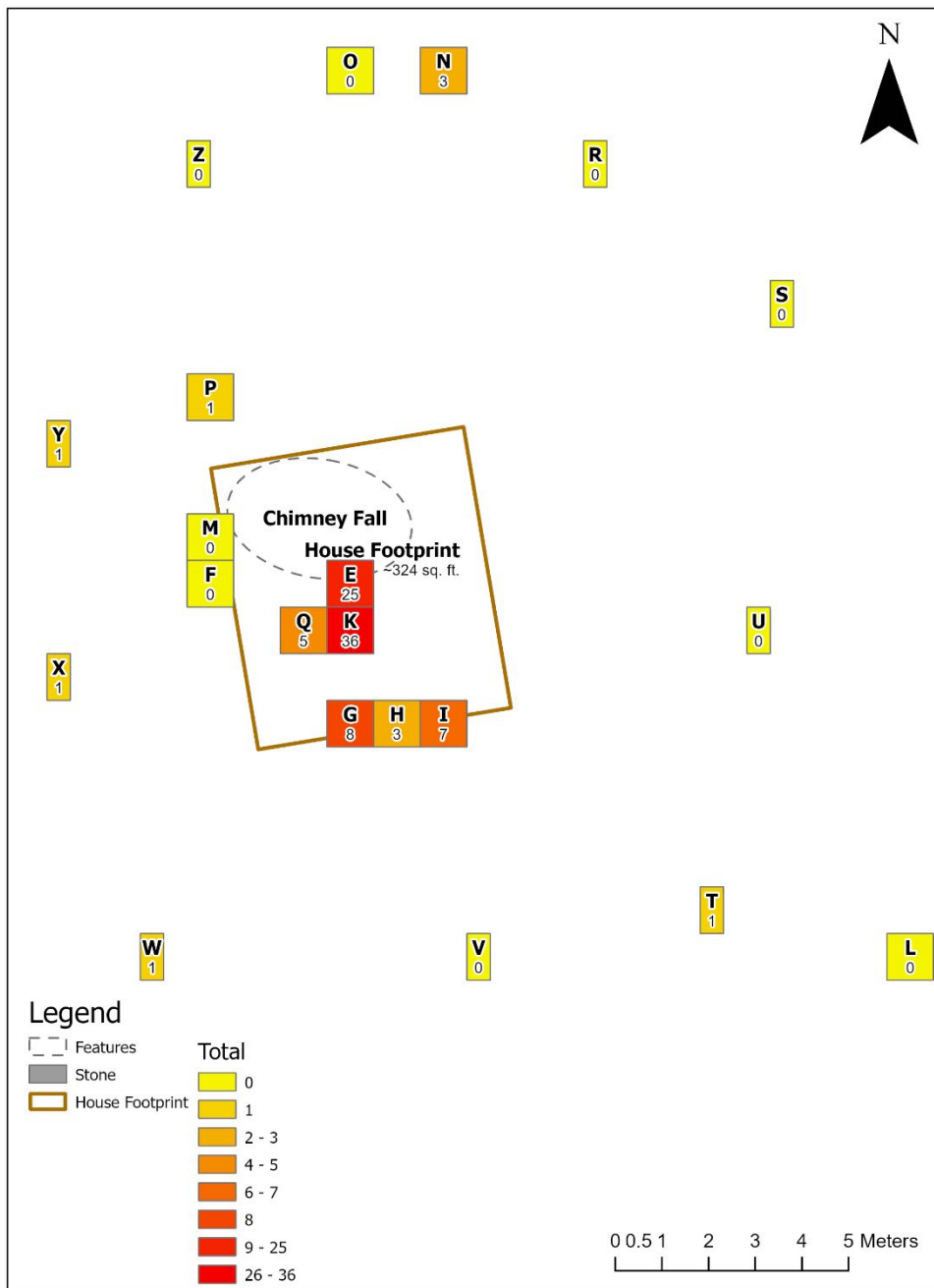


Figure 11. Nail Choropleth Map of Site 102-118



Figure 12. Site 102-118 Facing East, View from Approximately Unit Y Looking Southeast. Courtesy of Stephen Silliman

Nail Attribute Results

Site 102-118 contained 96 complete and incomplete classified nails with a minimum 77 nails. Of all 96 nails, 88 (91%) are hand wrought, and 8 (9%) are machine cut. The 35 complete nails recovered were comprised of 29 (82%) hand wrought and only 6 (18%) machine cut. The 42 nails with just head and shank were comprised of 41 (98%) handwrought and 1 (2%) machine cut nails. Another major component of the analysis was understanding nail length, or minimum pennyweight (Table 3). As described by Colonial Williamsburg Foundation (2014) and supported by Reeves and Schweickart (2019), one would expect to find at minimum, three times more smaller pennyweight roofing nails than larger pennyweight siding nails. This is caused by the sheer amount of nails required for

shingles, of which the smaller nails are better suited for, as compared to the larger 6d and up nails typically required for clapboards which utilize less nails (Colonial Williamsburg Foundation 2014).

As expected, a larger quantity of smaller 2d and 3d pennyweights, 56 in all were recovered, as compared to 6 larger pennyweight nails appropriately sized for clapboards. These larger counts of smaller pennyweight nails to lower counts of larger pennyweight nails support the notion that this was a framed wooden house with a shingled roof and clapboard siding. Higher pennyweights are associated with tasks requiring great strength, such as portal framings. These larger pennyweight nails could have been more difficult and costly to acquire, especially during this time period. The added cost of more windows and doors was undoubtedly a factor in the decision-making process as well. Additionally, these larger nails, if used for securing clapboard to the frame, could have been harvested or remained in the board if it was removed for recycling or deconstruction and taken elsewhere.

Table 3. Site 102-118 Nail Counts

Pennyweight	All Nails and Fragments		Complete Nails		Head + Shank	
	Count	Percentage	Count	Percentage	Count	Percentage
2d	42	43.8	8	22.8	22	52.3
3d	14	14.6	4	11.4	7	16.6
4d	20	20.8	11	31.4	8	19
5d	8	8.3	3	8.5	5	11.9
6d	3	3.1	2	5.7	0	0
7d	3	3.1	2	5.7	0	0
8d	2	2.1	1	2.8	0	0
9d	2	2.1	2	5.7	0	0
10d	1	1.0	1	2.8	0	0
12d	1	1.0	1	2.8	0	0
Total	96	100	35	100	42	100

Multipurpose rose heads comprised most of the hand wrought nails at 35%. This figure is expected and in line with the manufacturing process at that time. The entire fabrication of these nails from start to finish was accomplished by hand. Most of the complete cut nails were not able to have their head type identified; however, their head manufacturing was still accomplished by hand. This once again aligns with the known manufacturing processes and coincides with dates established by other artifact types from the same site. Most of the nails were recovered within the square foundation and their density is visible on a per unit basis above (Figure 11).

Nail Modification Results

In addition to recording nail attributes left behind by the manufacturing process, analysis also concentrated on evidence of nail modification, for all complete nails, and those with head and shank (Table 4). For Site 102-118, nails were distinguished by their interior or exterior context. For units within the foundation, that being units E, F, K, M, P, and Q, a ratio of 34 unmodified to 17 bent to 4 clinched was found. Simplified, this ratio is 8.5:4:1 and resembles the Young ratio of an intentionally torn down structure with its components left on site. There were double the number of unaltered to bent nails, possibly indicating a modified deconstruction method. Young's ratio of 3:3:1 asserts a 1:1 relationship between unaltered and bent, whereas Site 102-118 offers a 2:1 ratio. The exact cause is unclear, but whichever specific action it was, it produced a much greater occurrence of unmodified to bent nails. As interesting as this similarity is, an additional trend needs to be considered: the types of nails being modified. As expected, due to their increased durability, all recorded clinched nails from the foundational context were hand forged totaling 4, as were the majority of the bent

ones, comprising 11 of the 17, or 64%. These were found close together, most within a 3-m radius of Unit K, which itself only first revealed its clinched nails at level 11 and below. All other clinched nails were found no deeper than five levels below ground surface. If used to secure exterior vertical planks to wall frames, their presence nearest the surface could indicate the walls were the last component to enter the archaeological record.

For the other units outside the foundation, the complete, and head and shank nails offered a ratio of 12 unmodified to 8 bent to 2 clinched. A simplified version of this is 6:4:1, a ratio similar to Young’s expectation of a razed structure. While these nails were not found in a midden context, they could have been deposited or lost around the cellar during deconstruction.

Table 4. Site 102-118 Nail Modification for Minimum Nail Count Across Entire Site

Pennyweight	Unaltered	Bent	Clinched
2d	22	7	1
3d	7	3	1
4d	12	6	1
5d	4	4	0
6d	0	0	2
7d	0	1	1
8d	0	1	0
9d	0	2	0
10d	1	0	0
12d	0	1	0
Total	46	25	6

Nail Spatial Results

To address concerns raised by Bell (1997) regarding inflated nail counts and a potential lack of structure type, two steps were taken. First, nails were compared with window glass. Second, ESRI’s ArcMap Spatial AutoCorrelation geoprocessing tool was

utilized to determine if the recovered nails were in fact random, or if they could be attributed to a deliberate human action. The result of this analysis determined the nails were clustered enough to be statistically significant. Results include a p-value of .0001 and z-score of 4.4. The low p-value is equal to a low probability of random chance, meaning the likelihood of the same pattern naturally occurring multiple times is unlikely. The resulting positive z-score represents a clustered distribution – a negative z-score would have indicated a dispersed distribution. This is due in large part to 63% of all nails coming from only two units, E and K. Due to both their concentration of nails and central location, it is unsurprising the largest nails with pennyweights 10d and 12d were recovered in these units. These larger nails were used to frame both openings and larger studs and concur with the idea the door and window were along the southern exposure. The high nail count within Units K and E can be attributed to three main factors: their central location within the foundational depression, their overall number of levels excavated, and lack of a clear midden. They represent just 9% of all excavated units, by footprint, and when coupled with their location and depth, the cause of their high nail density become clear. Being inside the foundational depression meant the top of these units were vertically much lower than those which ringed the foundation, allowing more opportunity for artifacts to fall into their boundaries. Being within the foundation also meant they were in the central usage area, and higher activity could have resulted in a higher depositional rate. A Natural Neighbor interpolation map, created in ArcGIS Pro and designed to fill in missing gaps in the data, can be seen below (Figure 13).

SITE 102-118 NAIL TOTAL INTERPOLATION

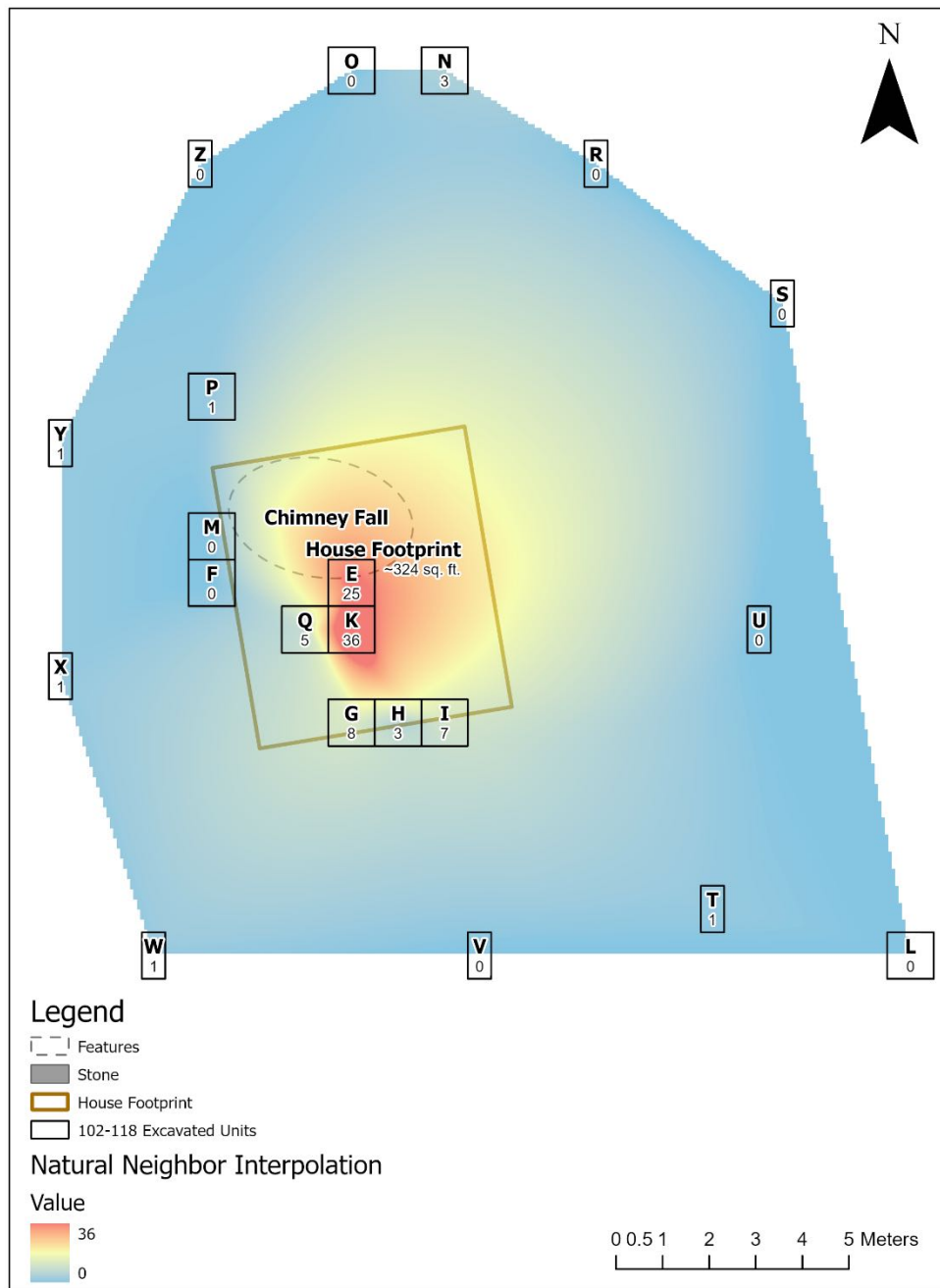


Figure 13. Site 102-118 Natural Neighbor Nail Interpolation

These units also contrast the vertical distribution findings from other units. While Units K and E were still revealing nails 75 centimeters and 85 centimeters below ground surface, the next deepest nail depth was Unit F a ringing unit with an exterior context, at 35 centimeters below ground surface. The cause of the discrepancy is the other units' location. Most other units were not in the depression and revealed sterile soil much sooner than K and E. This could indicate a lack of any floor structure or expansion of the house footprint outside the foundation itself, meaning a clear delineation between the interior and exterior contexts, similar to Site 102-126's units H and P. If the home went beyond the foundation, nails and other architectural elements would have been found in higher frequencies and greater depth.

Of the nails found at these greater depths within K and E, the majority was unaltered, 10, while 2 were bent and 1 was clinched. The higher unbent count can be the result of a construction event where nails were lost or dropped. Additionally, and more probable, they were deposited when the house deteriorated. Nails remain unaltered for one of several reasons. They could have been lost or misplaced and never used, or used and only driven in once. Any attempt to remove a nail individually with a claw hammer results in bent nails. Considering the large amount of unaltered nails in one locale, it is unlikely they were all dropped at the same event. Instead, the nails fell to the bottom of the foundation still attached to their original pieces of wood. They would have been covered over time with the organic wood rotting away and the ferrous nails remaining.

Site 102-118 is the only one of the three sites which currently lacks a clear midden, with its mostly square foundation producing the majority of its nails. This increases the

concentration seen in Units E and K. Within these two units, there were several interesting occurrences. First, in unit E, right against the most-likely southern foundation wall, there was a substantial lapse in nail presence. Approximately 0.60 m below present ground surface, nails vanish for around 0.25 m before appearing again at an estimated 0.85 m below the surface. This could be caused by two distinct deconstruction events one below 0.85m and the other above 0.6m. The nail-less fill between the two nail horizons could represent natural fill over time, or the gap between when the first set and second set of nails were deposited in a single event.

Another interesting occurrence was the pattern observed in the larger pennyweight nails. The 10d and 12d nails found were nearer within the top third of Unit K, while the other intermediate and smaller nails found throughout the unit levels. This corroborates the notion of the need for larger pennyweights to frame portals, meaning they were elevated off ground, whilst the smaller flooring or siding nails were at lower levels. Their sequencing in the archaeological record parallel their historical vertical position.

Window Glass Attribute Results

In addition to nails, window glass was also examined to aid in determining structure type and layout. Site 102-118 produced a total of 29 glass shards, weighing a combined 11.5 g. The main colors exhibited were aqua and clear, with aqua alone accounting for 25, or 86.2% of the total. The remaining four shards were clear, and no green shards were present. All shards were unable to have their manufacturing method identified. The majority of shards were in the 1-2 cm category, with 23, or 79% totaling 5.7g. The remaining 21% of the

window was comprised of 6 shards weighing a combined 5.8g. It is important to highlight the higher count of smaller shards is almost identical in weight to the total weight of larger shards. The overall low shard count could indicate a low window count for this home.

Table 5. Site 102-118 Window Shard Sizes

Size (cm)	Count	Percentage
<1	11	37.9
1-2	12	41.3
2-3	2	6.9
3-5	4	13.7
>5	0	0
Total	29	99.8

Window Glass Spatial Results

Much like the nail artifact class, a geospatial analysis was performed on window glass through ArcMap. Perhaps through the overall dearth of window glass, the artifact class was deemed not to be significantly clustered (Figure 14). Its z-score of 0.46 and p-value of 0.63 indicate a random distribution not clustered enough to be statistically significant. This does not, however, prevent observations on other spatial aspects of window glass. First, similar to nails, window glass concentrated within a single location, Unit L. This stands in stark contrast from the nail concentration, in that the nails were focused within the foundation whilst window glass was primarily outside, several meters away. The site revealed 29 total shards and 19 of them, comprising 6.9g of the total site weight of 11.5g were found within

this single unit, most at level 4. Unlike the other sites which feature nail and glass together within the foundation, this site saw window glass and nails almost mutually exclusive of one another. The exact cause and reasoning why the window glass was so far from the home is unclear, especially considering the architectural debris that was already being put in the cellar depression. It could have been a failed recycling effort, dropped in transit to its new destination, depositing in what became Unit L. With only a single shard found north of the foundational depression, and the majority among the southern half of the site, the assemblage indicates there was only a sole window with glass, and it was part of the southern wall, likely to maximize sunlight.

SITE 102-118 TOTAL GLASS SHARDS PER UNIT

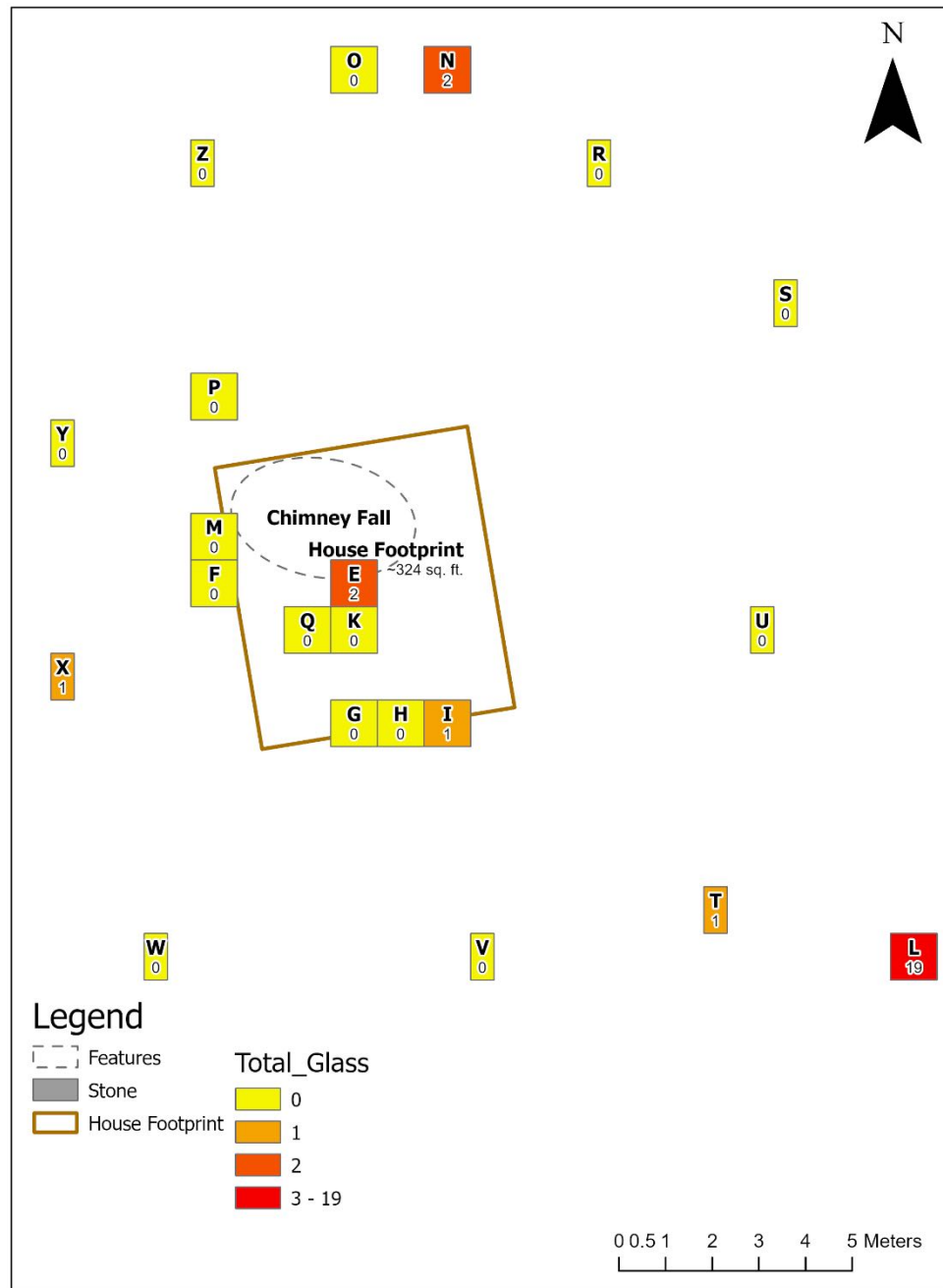


Figure 14. Glass Choropleth Map of Site 102-118

Site 102-126

Site 102-126 dating from 1775 to 1800, was found in 2003 but only fully excavated in 2011. It was initially overshadowed by a nearby house foundation, but STPs determined 102-126 could provide a deeper window into the reservation's past. As evidenced by its window glass, cut nails and chimney collapse, this site was a wooden plank-framed house which contained almost 8,000 individual artifacts and ecofacts, including a wealth of charcoal and shell, over 14,400 g. Prominent features from 102-126 included a rock wall enclosure surrounding the site, a partially lined foundation with deep cellar, collapsed chimney, and a midden where 99 percent of its shell was recovered (Silliman et al. 2013: 14-21). Overall, 26 1.0 x 1.0 m units and 1 0.5 x 1.0 m units were excavated around the site in locations deemed most appropriate to uncover both interior and exterior architectural features (Figure 15).



Figure 15. Site 102-126 Prior to Excavation, View to the Southwest from Northeast Corner of Foundation, Just Outside of Unit N. Courtesy of Stephen Silliman



Figure 16. Site 102-126 Foundation Stones in Foreground, View to Northwest from Unit T. Courtesy of Stephen Silliman

SITE 102-126 TOTAL NAIL COUNTS PER UNIT

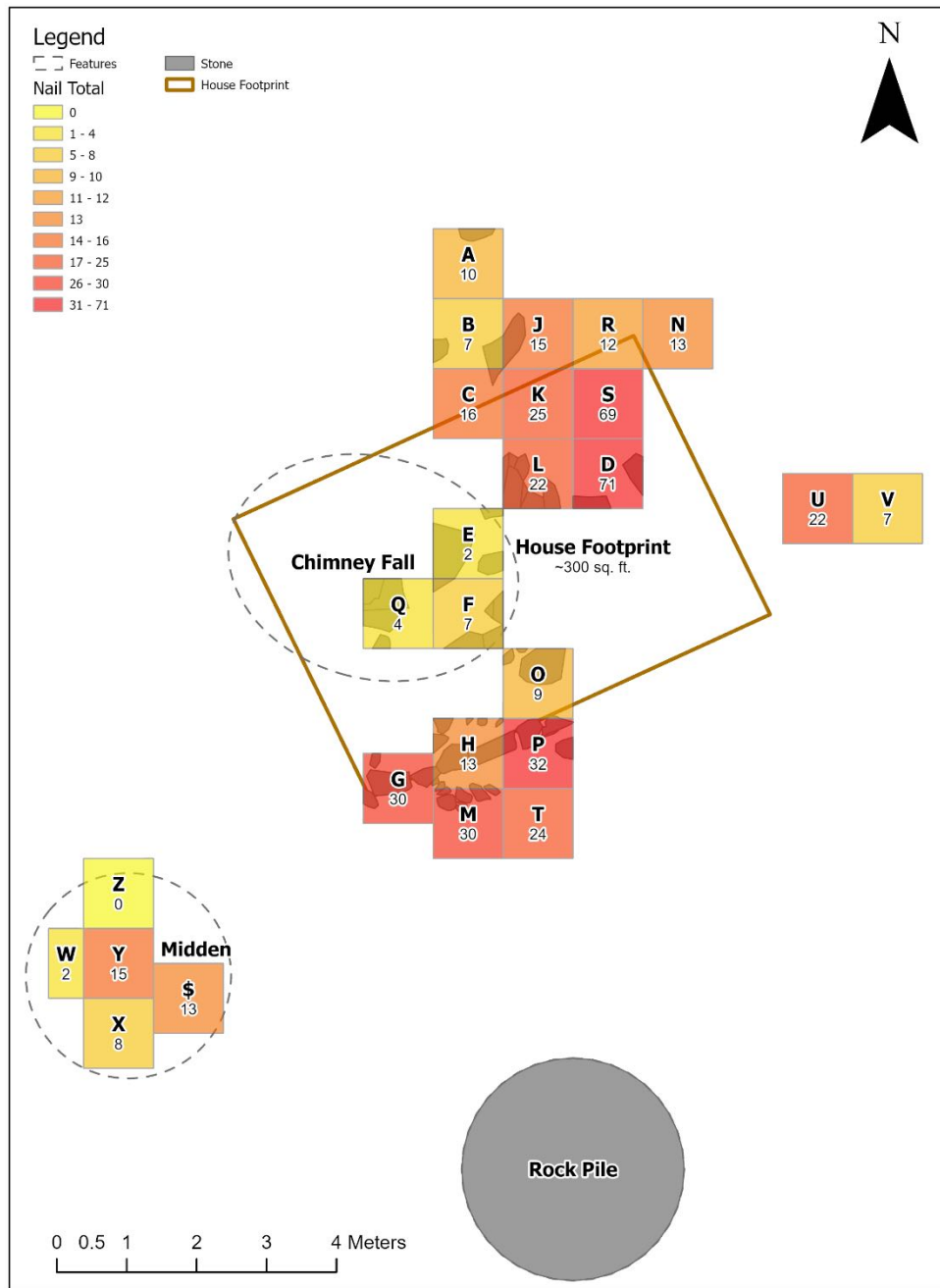


Figure 17. Nail Choropleth Map of Site 102-126

Six units along the southern edge of the house yielded both foundational stones and a large quantity of architectural materials (Figure 16), over 1,700 artifacts, most found within the first 0.30 m below ground surface (Silliman et al. 2013: 21-26). These excavation units were opened in a south by southwest trajectory utilizing the partially visible foundation stones as guidance. Adjacent units P and H uncovered a possible floor or walkway of rocks at 0.16 m below the surface (Silliman et al. 2013: 22), with unit H even offering strong evidence for an interior and exterior context. The northern portion of the unit, the interior of the structure, exhibited personal adornment and faunal artifacts in sandy clay while the southern portion, the exterior, possessed nails and window glass in a clay loam matrix. Unit M, just south to unit H, also revealed interesting characteristics, including smaller stones running parallel to the foundation stones along the unit's northern wall and a strange ash-like soil presumed to be fill from the depression to the north (Silliman et al. 2013: 23-24). Unit G also contained an extension of the southern wall with most of its artifacts found outside of the structure (Silliman et al. 2013: 24). Unit T was entirely outside of the building and did not produce as many artifacts as the other southern wall units (Silliman et al. 2013: 25). In all, the most evident foundation stones were found running diagonally through units P, H, M and G which also all held the highest architectural artifact quantities on the site (Silliman et al. 2013: 25).

Artifact densities were not replicated in the search for a northern foundation boundary. Unit artifact counts and densities were lower along the presumed northern foundation edge. These six units produced a dearth of architectural artifacts expected for a foundation edge and all large stones did not present enough evidence to be considered

foundation related. Nail and window glass shards were few and far between, failing to be found in any significant pattern (Silliman et al. 2013: 29). In addition to the frequent ceramics found throughout most layers, the most significant find in the northern excavations was a straight row of ten nails found between units J and R, indicating the possible presence of a board (Silliman et al. 2013: 30-31). Unfortunately, without further evidence, this was not enough to indicate a definitive northern edge of the house. Remaining units in the northern edge of the site failed to uncover a clear edge and gave archaeologists reason to believe the home was most likely dismantled after occupation (Silliman et al. 2013: 33).

Eastern units U and V were less fruitful than the northern foundation units. Neither unit was excavated deeper than 0.45 m and with nails ceasing at 0.25 m, each failed to produce enough nails or window glass attributable to a house edge. This means the units were either inside or outside the home, but unfortunately not at its eastern edge (Silliman et al. 2013: 34-36).

Several units were opened near the chimney fall base to better understand this feature as it related to spatial usage. Units F and Q even contained clear examples of mottled stratigraphy, interpreted as a pit (Silliman et al. 2013: 37). Artifacts were frequent in unit F until 0.4 m below the surface and a concentration of nails was observed in the northwest corner between 0.15 m and 0.20 m deep, and then again in the center of the unit, one level down. The pit, or pits, between units F and Q were inconclusive in their exact usage; however, the units themselves held numerous nails, window glass shards, and even a horse shoe and metal rod (Silliman et al. 2013: 43).

The center of the home's cellar was exposed utilizing four excavation units positioned to get the best coverage possible. Large rocks plagued the top halves of all four units, with artifacts and charcoal increasing past 0.20 m in depth. Units S and D combined to offer a new perception of the depression with their deeper than expected overall depths and consistently changing matrixes indicating a full-size cellar, filled over time during occupation. Artifacts recovered in groupings throughout the full 1.10 m depth oppose the notion the cellar was filled post-habitation (Silliman et al. 2013: 47).

The midden to the southwest of the house contained vast quantities of artifacts including almost 3,000 artifacts and ecofacts, with 14,000 g of the site's total 14,424 g (Silliman et al. 2013: 19). Hunter (2012) provides a more in-depth analysis but in brief summary, concluded the shell midden was most likely dug at initial site occupation, filled overtime, and eventually expanded into a general refuse pit (Hunter 2012: 67).

The nearby rock pile was excavated in a single unit, and while the deposits underneath it are contemporaneous to the home, the rock pile itself but was deemed to be unassociated with the primary occupation of site 102-126 and most likely post-dated it (Silliman et al. 2013: 53-55).

Nail Attribute Results

Site 102-126 contained almost 500 nails, both complete and incomplete (Figure 17). Their minimum pennyweights are displayed in Table 6. There were a minimum of 357 nails: 99 complete and 258 with head and shank. From those 357, 277 were able to have their

manufacturing process positively identified. There were 271 handwrought (98%), and 6 machine cut (2%).

Table 6. Site 102-126 Nail Counts

Pennyweight	All Nails and Fragments		Complete Nails		Head + Shank	
	Count	Percentage	Count	Percentage	Count	Percentage
2d	152	31.8	3	3	101	39.1
3d	129	27.0	39	39.3	67	25.9
4d	78	16.3	16	16.1	37	14.3
5d	36	7.5	5	5	18	6.9
6d	27	5.6	6	6	13	5
7d	28	5.9	12	12.1	15	5.8
8d	17	3.6	11	11	5	1.9
9d	5	1.0	2	2	2	0.7
10d	3	0.6	3	3	0	0
12d	3	0.6	2	2	0	0
Total	478	100.0	99	100	258	100

Amongst the minimum 357 nails, there were 226 rose headed, a general purpose head type, with all but 3 being hand wrought nails. This coincides with contemporaneous manufacturing techniques and is expected. Despite equal numbers of cut nails found in this site and the earlier 102-118 site, the 102-126's cut nail percentage pales compared to the hand wrought nails. The ubiquity and preference for hand wrought nails cannot be overstated: within the two sites examined thus far, machine cut nails have been almost non-existent, producing similar results to Hollis (2013). Similar to results in Site 102-118, there was an overwhelming majority of smaller pennyweight nails, indicating the presence of shingles.

Another crucial component to understanding nail usage was head manufacture. Over time, the heading step went from a manual exercise to one incorporated into the machining process of cut nails. Thus, if a nail has both a machine cut shank and head, it is more

probable than not it was produced later than a transitional, machine cut, hand-headed nail. Later nails recovered amongst older nails could indicate longer occupation with more construction or repair episodes than simply the initial construction. This is important to emphasize, as all six classified cut nails at this site were hand-headed, meaning they are part of this transitional period. Because all the details needed to understand head manufacture can be found within the head and shank alone, all nails containing at least those two components were eligible for review.

Nail Modification Results

To best understand activity in this site, as it related to the Young ratios, nails were separated into two main locales: the foundation and the midden (Table 7). For both this analysis and historic usages, each of these areas served a distinct purpose, and the resulting nails found within each context revealed their own ratio. The goal was to establish the relationship between the nail locations and their potential modification. The previous site, Site 102-118, did not have a clear midden, thus eliminating the need to distinguish between the two.

Complete, and head and shank nails from the foundation units, totaling 202, uncovered a ratio of 116:77:9, simplified to 13:8.5:1, somewhat consistent with Young's razed building ratio of 3:3:1. With unaltered and bent nails outpacing clinched nails by a factor of 9, these artifacts are in fact an extreme example of Young's ratio and help reinforce the idea the building was razed in place. The midden, totaling 32 complete or head and shank nails, was determined to have a ratio of 7 unaltered nail, 19 bent nails, and 6 clinched,

simplified to 1:4:1. This means the assemblage is somewhat like Young's expected ratio of 1:3:3 for a refuse pile, a finding reinforced through their presence within the midden. In particular, it shares a low number of unaltered nails and a high number of bent nails. Young (1994) argues clinching nails was mainly performed during the material transporting component of the razing process for safety concerns. It is possible the short distance at site 102-126 from the house to the midden reduced the need to clinch many nails. The nails here indicate that architectural components were deposited during deconstruction. The exact cause or reason of the deconstruction is unknown. It is possible the foundation could not fit all remains or there was a desire to fill and close the midden. Another consideration could be the nails are from old, rotten boards that required replacement during the house's use life.

Regardless, these findings portray a razed home with its parts divided, leaving some to enter the archaeological record still within the foundation, and others within the midden. These are distinct from a home which simply deteriorated and collapsed on its own, which would exhibit a ratio of 3:1:1.

Additionally, these results coincide with Silliman et al.'s (2013) findings as seen from a dearth of northern foundation stones. Their absence points to possible recycling episodes, most likely coinciding with the razing of the rest of the house. This mass disturbance would have left behind nail modifications, but potentially would have spread out the nails themselves in a wider pattern than expected. This would in turn effect the geospatial analysis results.

Nail application and intended usage often dictated the chosen pennyweight, quantity, head shape, and material of nail. Its ability to be effectively clinched should also not be overlooked. Within the 21 total clinched nails where the manufacturing process was determined, 19 (95%) were hand forged. The 131 bent nails consisted of 125 hand forged nails, or 95%, with the last 6 being cut nails. While the hand forged nails are found vertically in all contexts, 5 of the 6 bent cut nails are found within the first 3 levels of the midden. The dichotomy between the two manufacturing methods speaks to both the ubiquity of hand forged nails and their ability. They were known for their strength to both clinch and bend; due to the internal direction of their grains, bent clinched nails in a later context corresponds with their later adoption.

Table 7. Site 102-126 Nail Modification for Minimum Nail Count Across Site

Pennyweight	Unaltered	Bent	Clinched
2d	66	36	2
3d	60	40	6
4d	19	29	5
5d	5	15	3
6d	3	12	4
7d	10	11	6
8d	5	10	1
9d	3	1	0
10d	2	1	0
12d	0	1	1
Total	173	156	28

Nail Spatial Results

Unlike Site 102-118 which saw its nails significantly clustered, Site 102-126 was deemed not statistically different than random. This indicated a high likelihood of

randomness through its 1.6 z-score and 0.10 p-value. A dearth of a defined nail concentration could be the cause. This site has the most nails overall, but other sites have units with more nails in a central locale than observed here. In this case, too many nails recovered across the site drops the likelihood for a clustered pattern. This pattern matches Silliman et al (2013) speculation that the home was dismantled. Razing could have spread out the home materials to fill in its foundation and in doing so, disrupted the historical placement. This site saw its maximum window and nail concentration within the foundation itself. Despite almost 500 nails, the nail distribution - like that of the glass - was not statistically clustered; however, visual inspection of the two rasters (Figure 18) proves their similarity cannot be overlooked. Both experience their greater numbers just north and south of the chimney fall. Surprisingly not a great number of architectural debris is found within the midden. This could attest to its initial and almost exclusive function as a food waste midden.

Despite not being a direct reflection of historical conditions, the nail placement and size of said nails might still offer some insight. For example, the presence of one larger nail usually meant there were more either in the same unit or in neighboring units. Unit D and neighbor unit S to the north held one 12d, one 10d, two 9d and five 8d nails between them. To the south, units M and T, neighbors to each other, revealed one 12d, one 10d and two 8d nails. As the distribution pattern currently stands, these two regions could represent door or window locations, especially when the window glass is taken into consideration. These larger nails were necessary to create the portal framing required of doors and windows. The potential for a door's placement along the southern wall is supported by the midden's southerly location and increased sunlight from the southern exposure.

SITE 102-126 TOTAL NAIL INTERPOLATION

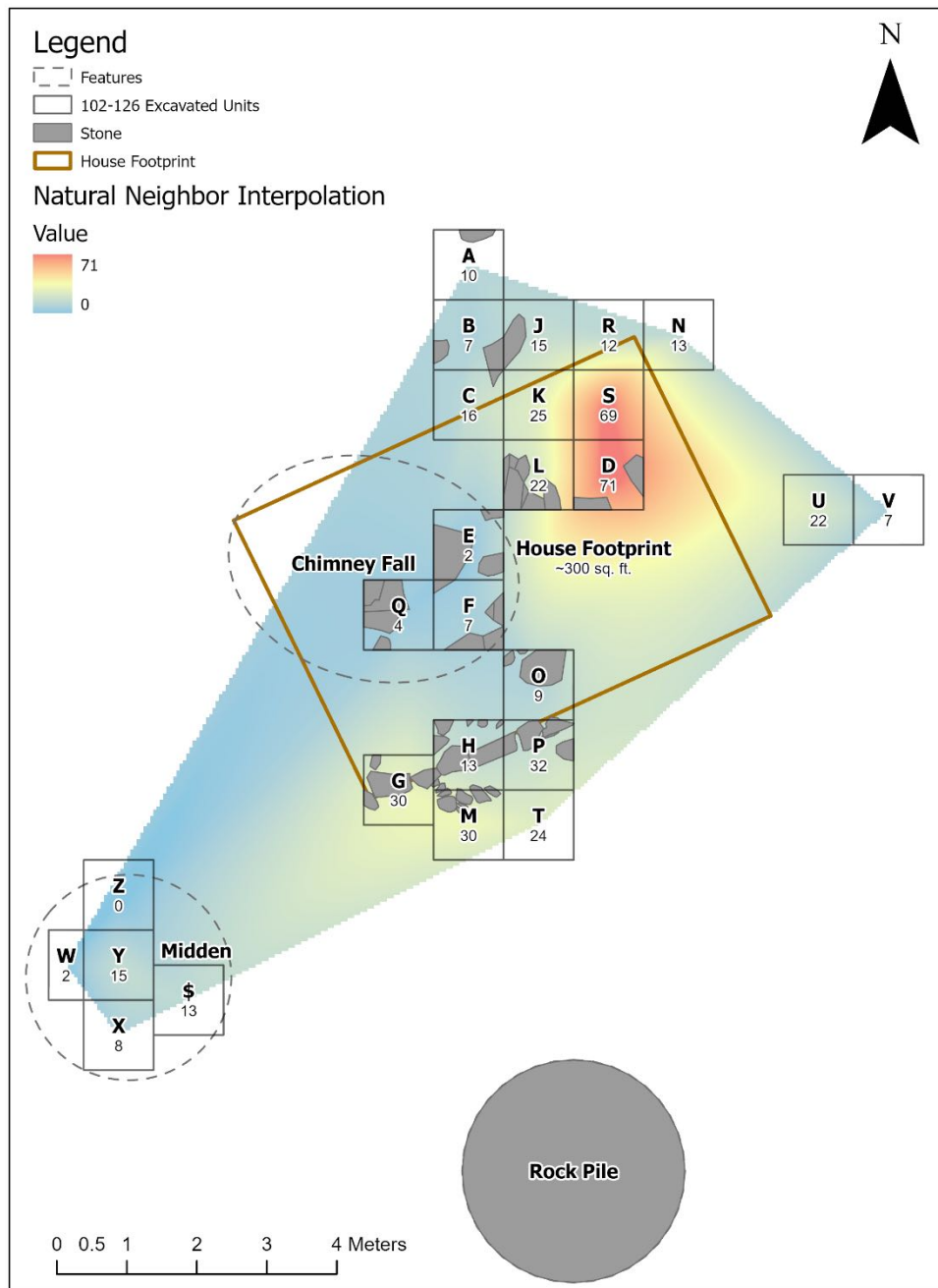


Figure 18. Site 102-126 Natural Neighbor Nail Interpolation

Window Glass Attribute Results

Site 102-126 produced a total of 155 window glass shards ranging in size from below 1 cm to greater than 5 cm. The majority were aqua in color with 128, or 82.5%, 20 green shards comprising 12.9%, and clear finishing with 7, or 4.5%. These percentages are expected considering the time period and prevailing manufacturing methods. As previously discussed, clear glass was not yet ubiquitous. For these glass shards, however, manufacturing process was unable to be determined. Despite this, the mere presence of these glass shards help to confirm the presence of at least one window at the homestead and inform archaeologists when and where they were utilized, presumably along the southern wall.

Table 8. Site 102-126 Window Shard Sizes

Size (cm)	Count	Percentage
<1	35	23.1
1-2	67	44.3
2-3	37	24.5
3-5	12	7.9
>5	0	0
Total	151	99.8

Window Glass Spatial Results

Similar to Site 102-118, Site 102-126 discussed here did not possess window glass clustered enough to be considered statistically significant (Figure 19). Its 1.01 z-score and 0.31 p-value portray a distribution not statistically different than random. Regardless of the geoprocessing results, the visual spread of glass window shards cannot be overlooked. When compared to nail distribution, their similarities emerge. Both experience their highest numbers north and south of the chimney fall with little of either found in the food waste midden (Silliman et al. 2013).

SITE 102-126 TOTAL GLASS SHARDS PER UNIT



Figure 19. Glass Choropleth Map of Site 102-126

Site 102-82

Site 102-82 dating from 1800 to 1820 was first identified in a 2003 survey, subsequently excavated in summer 2013, and is an example of early reservation homestead complete with stone-lined foundational depression, and chimney fall, and contained over 6,400 artifacts and faunal remains and over 4,600 g of shellfish (Figure 20). The dominant features from this site included a 3.0 m² midden which produced 71 percent of all artifacts and 4.71 m² house units aligned with the natural shape of the architectural areas called “Foundation Southeast Quadrant” and “Foundation Upper East” which held 17.8 percent of all artifacts (Silliman et al. 2014: 18-20). The midden was uncovered 6.2 m southwest to the house foundation entrance using shovel test pits. Three excavation units were opened to understand its extent, and it stands as the only concentrated trash disposal at the site. Of note was the high quantity ceramics, shellfish and vessel glass, which Silliman et al. (2014) credit to food disposal. Foundation SE Quadrant and Foundation Upper East were the two main units within the residential structure itself. Foundation SE Quad contained numerous residential and architectural artifact classes including, but not limited to, ceramics, faunal remains, buttons, charcoal, nails, and window glass. This unit only contained 10 percent of all artifacts recovered from the site, yet it housed over half of all charcoal (Silliman et al. 2014: 37).

The Foundation Upper East excavation unit is believed to have been below a covered flooring section and not as artifact-rich as its neighbor to the east, yet it did provide a great deal of information regardless. It revealed a similar artifact array to the Foundation SE Quad unit, but with smaller quantities. Nails, window glass, ceramics, charcoal and even beads

were recovered from Foundation Upper East. This unit, combined with Foundation SE Quad account for over 75 percent of nails at the site and almost 75 percent of its metal (Silliman et al. 2014: 42-43). Outside the scope of this thesis but important regardless were two artifacts of interest: a reworked shard of window glass and a stone pendant from approximately 5,000 to 3,000 years ago (Silliman et al. 2014).



Figure 20. Site 102-82 Stone-Lined Cellar, View from Southwest Corner of Foundation, Looking Northeast. Courtesy of Stephen Silliman

SITE 102-82 TOTAL NAIL COUNTS PER UNIT

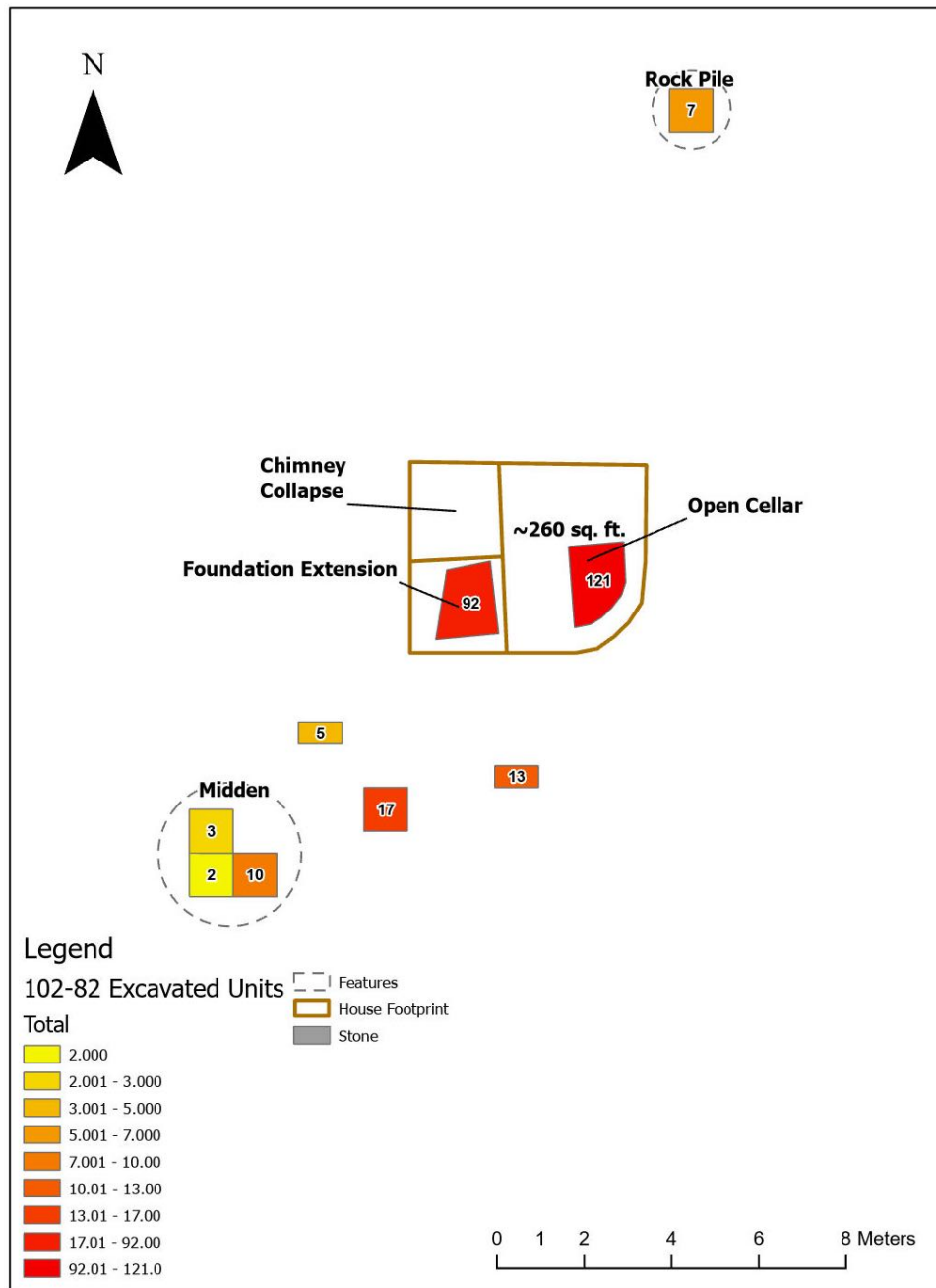


Figure 21. Nail Choropleth Map of Site 102-82

Nail Attribute Results

While similar in most respects, Site 102-82 did present its own individuality when compared to the two previous sites. The site produced 271 nails with the following minimum pennyweights seen in Table 9 (Figure 21). These nails results in a minimum number of 193, 38 complete and 155 with head and shank. Of those 193, 118 were able to have their manufacturing type positively identified, including 41 handwrought (35%) and 77 cut (65%).

Table 9. Site 102-82 Nail Counts

Pennyweight	All Nails and Fragments		Complete Nails		Head + Shank	
	Count	Percentage	Count	Percentage	Count	Percentage
2d	116	42.8	4	10.5	77	49.6
3d	53	19.6	9	23.6	25	16.1
4d	37	13.7	9	23.6	17	10.9
5d	9	3.3	1	2.6	6	3.8
6d	19	7.0	4	10.5	10	6.4
7d	9	3.3	0	0	9	5.8
8d	13	4.8	3	7.8	5	3.2
9d	3	1.1	2	5.2	1	0.64
10d	7	2.6	3	7.8	4	2.5
16d	2	0.7	1	2.6	1	0.64
20d	3	1.1	2	5.2	0	0
Total	271	100.0	38	100	155	100

This deviance from the pattern of more hand wrought than cut that had established through the other sites can best be attributed to a later occupation and technological change. Within the 41 hand wrought nails, 25 were rose headed, 2 were A headed, 2 were L headed, and 1 was flat.

In Site 102-82, the 77 machine-cut nails presented a mix of both hand and machine-heads. There were, however, a larger quantity of machine-headed nails which outnumbered the other by a factor of three: 48 machine to 13 hand. The presence of both head manufacture

types was expected, and while the majority was found in the second level of units, the two being found in all excavation levels suggests continual use throughout. Similar to the previous two sites, the smallest minimum pennyweights compose the largest share of the assemblage. This reinforces the notion of wooden shingles on a framed home. This site separates itself from the others due to the frequency of larger pennyweight nails. It revealed the only 16d and 20d minimum pennyweight nails across the three sites, and this is unusual because nails normally decrease in number as they increase in size. Are they perhaps using modified building techniques, incorporating more portals, or perhaps larger nails are becoming more ubiquitous through advancements in manufacturing and therefore more frequently used? The former seems more likely, especially given that this house has more architectural investment than the previous two as indicated by a completely stone-lined cellar and much heavier and quarried stones used in the construction.

Nail Modification Results

The high count of almost 200 complete or head and shank nails at this site - with 150 in the foundation alone - did produce ratios that resemble Young's expected results for a razed home - in both the foundation and midden. Much like Site 102-126, this site did possess a midden, and for the purpose of ratio analysis, its nails were distinguished accordingly. While the midden presented nails in a ratio of 2:7:2 (simplified to 1:3.5:1), is not a direct match to any Young ratio, it is similar to Young's (1994) ratio of components from a razed structure that have been demolished and moved: 1:3:3. Sharing quantities for low unmodified and bent nails is a similarity to the razed and moved ratio - lacking in clinched nails could be explained by the short distance from the foundation to the midden

and reduced safety concerns. Nails from within the confines of the foundation produced a ratio of 83:53:14, or 6:4:1, similar to Young’s results indicating a home torn down, categorized by large numbers of unaltered and bent nails overshadowing clinched nails, 3:3:1. These findings are substantiated by the large amount of ash found below the majority of nails and could indicate an event related to the structure’s teardown.

Table 10. Site 102-82 Nail Modification for Minimum Nail Count Across Entire Site

Pennyweight	Unaltered	Bent	Clinched
2d	63	14	4
3d	19	11	4
4d	14	11	1
5d	1	6	0
6d	1	9	4
7d	3	6	0
8d	2	4	2
9d	1	0	2
10d	0	6	1
12d	0	0	0
16d	1	1	0
20d	0	1	1
Total	105	69	19

Nail Spatial Results

Site 102-82 was heavily clustered and determined to be significantly so. With a p-value of 0.0544 and z-score of 1.9, it can be deduced there less than a 10% chance the pattern of nails observed could have occurred by random chance. A strong reason for the cluster comes from retrieving most of the nails in two units, Units Foundation Upper East and Foundation SE Quad. The 211 of a possible 271, or 78% were found in these two units alone. Despite only accounting for 25% the number of open units excavated, these two were larger than standard excavation units and both were within the foundation (Figure 22).

SITE 102-82 TOTAL NAIL INTERPOLATION

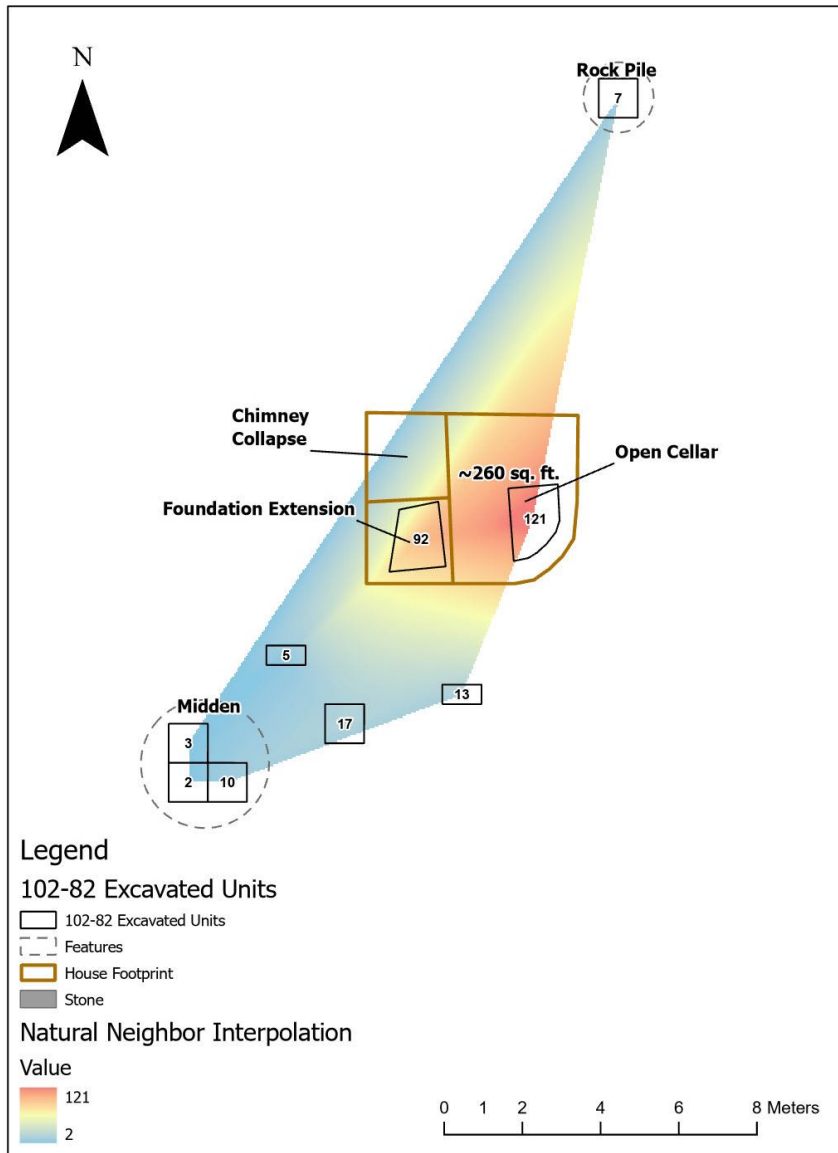


Figure 22. Site 102-82 Natural Neighbor Nail Interpolation

Their similarities do not extend much further. The Upper East unit was historically below a wooden floor, while SE Quad was part of the open cellar depression. The wooden floor might not have restricted the types of artifacts, but it affected the dispersal of them,

especially in comparison to SE Quad to its east. The SE Quad revealed 121 nails to the Upper East's 90, and while the numbers are similar, their artifact gradients are quite different. The Upper East, for example, had 87.6% of its nails in the first three levels, while the SE Quad revealed 76% of its nails after the first three levels. Within the 90 nails from Upper East, 69 or 77% were shingling 4d or smaller nails. Two complete 20d nails were also recovered in the top two levels, and within the context of the extension, could indicate their application as flooring joist nails. The SE Quad revealed 90 of the 121 nails, or 74% were shingle nails and the larger 20d, 16d, and 10d boarding or sheathing nails made up only 9%. These results are a microcosm of the entire site's results: significantly more smaller nails than larger nails. The front-loaded nature of the Upper East can be explained by the floor above that would have allowed artifacts to enter the archaeological record in limited quantities with little opportunity to be covered. This coincides with the rest of the site, in which over 50% of nails were found within the first three levels. This, combined with the matching nail ratios and midden possessing low nail counts, reinforces the idea this home was left in place to deteriorate.

Window Glass Attribute Results

Site 102-82 held a total of 198 window glass shards ranging in size from below 1 to greater than 5 cm. An overwhelming majority were aqua in color with 190, or 95.9%, and clear consisting of 8, or 4%. No green shards were unearthed. All shards were unable to have their manufacturing method identified; however, their presence indicates this home contained at least one window.

Table 11. Site 102-82 Window Shard Sizes

Size (cm)	Count	Percentage
<1	79	39.8
1-2	79	39.8
2-3	27	13.6
3-5	11	5.5
>5	2	1
Total	198	99.7

Window Glass Spatial Results

Site 102-82 repeats the trend of window glass distribution not significantly different from random with its 1.13 z-score and 0.25 p-value (Figure 23). Once again, this does not mean the known location of window glass is useless. It can still point to window location, especially considering the majority of the shards were found within the Foundation Upper East and Foundation SE Quad, with 104 and 43 respectively. The midden only accounted for 13, or 6.5% of all shards. All units were top-heavy, with 59.5% of all shards found within the first two layers, and 79% in the first three. Their concentration along the southern section of the home could be caused by an attempt to maximize sunlight along the southern wall.

SITE 102-82 TOTAL GLASS SHARDS PER UNIT

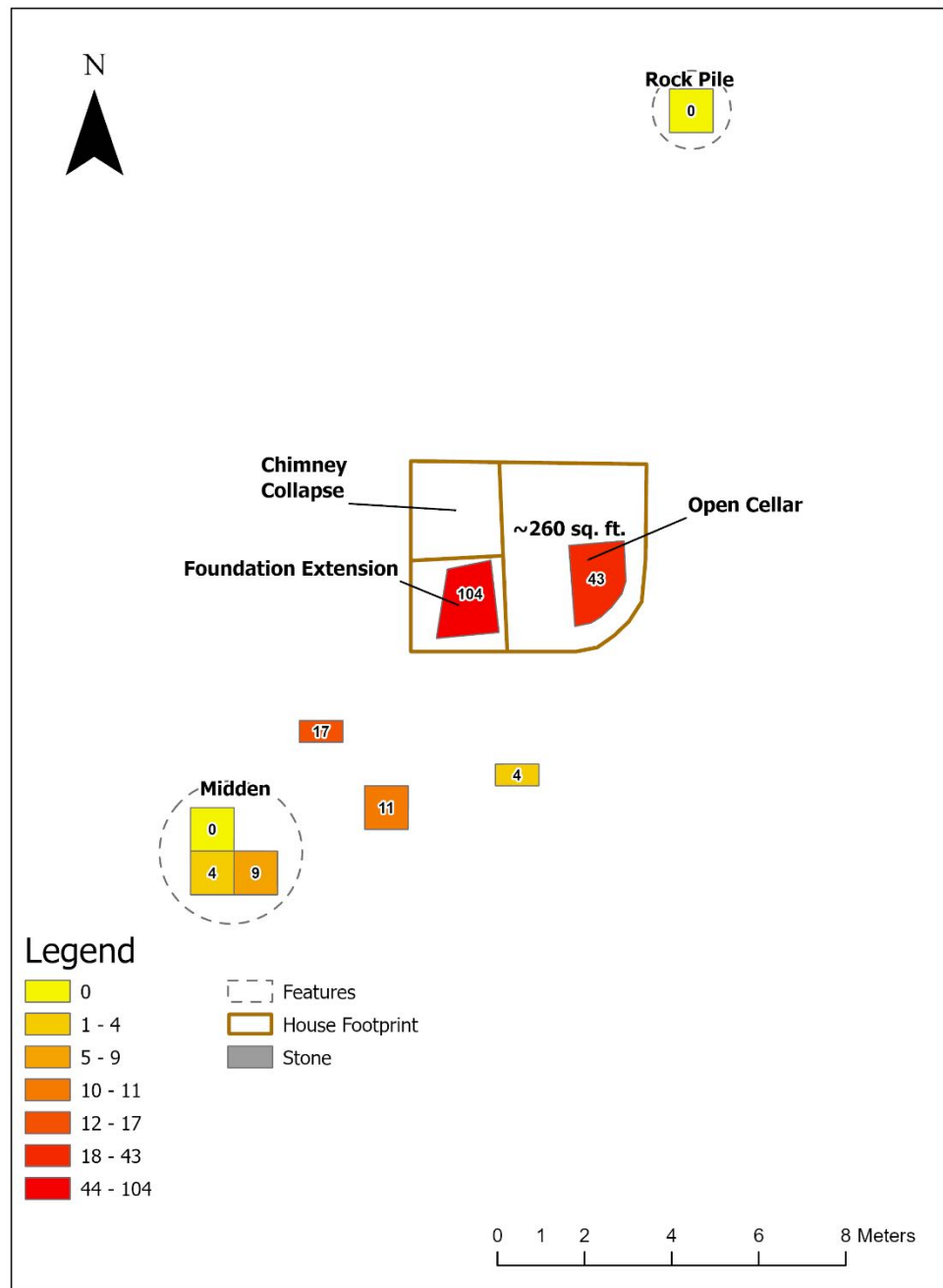


Figure 23. Glass Choropleth Map of Site 102-82

CHAPTER 5

DISCUSSION

Intersite Comparison

Once the sites were better understood on an individual basis, the three sites were compared to one another. After establishing the general layout of the Eastern Pequot structures and how they each entered the archaeological record through the Young ratios, the sites were compared to each other. This diachronic intra-reservation analysis was possible due to the approximate 50-year coverage across the sites. It examined structure construction, degradation, and deposition and how this process varied over time. Each possessed its own unique history, but there are several similarities.

Primarily, all three were built with some form of a cellar. Some, such as 102-126, were more sophisticated with its stone lined walls, but their presence at all three suggests some level of congruity. On top of those depressions stood the main similarity: they were all single-chimney, single room, timber-framed houses. These framed houses, with at least one window each, were covered by wooden planks, boards, and shingles, held in place by their biggest commonality: nails. While all three sites contained the full spectrum of nail sizes, they also contained roughly the same proportions. On average, there was 3 to 4 times the number of smaller shingle nails than larger nails used in portal framing. Two sites indicate a

non-random pattern of nail dispersion, pointing to intentional human activity behind the observed patterns. All three sites revealed dozens and even hundreds of nails.

As each site represents a successive quarter century, so do the changing compositions of each site. Machine cut nail numbers within the latest site, 102-82 from 1800, stand in stark contrast to the middle site, 102-126 from 1775. The earliest of the three sites 102-118 and 102-126, were mainly comprised of hand forged nails, 91% and 97%, respectively, while site 102-82 was composed of primarily machine cut nails at 66%. This change in nail assemblages across the reservation can be directly correlated to the advances in American manufacturing technology. Initially constrained by British law, American manufacturing only began to mature following the Revolutionary War. This gave rise to more machine manufactured nails as opposed to hand forged ones, a pattern observed within these sites. The cause for this begins to come into focus when a broader context is understood: site 102-82 is the first house likely constructed post-American independence. The federal government – which did not exist at the time of 102-126’s initial construction episode – had spent the past decade encouraging and aiding American manufacturing efforts. New England was the perfect environment for water powered mills with its abundant rivers, and they sprouted up all over the region. Machine cut nails were able to be manufactured in America without restriction, and as their availability spread, homes such as 102-82 saw a marked uptick in their usage.

Another key distinction between these three Eastern Pequot sites is the usage of a concentrated trash midden. Of the three homes, only sites 102-126 and 102-82 had pit middens with general spread around them, both south of the foundation. This does not mean

site 102-118 did not have a midden, but instead invites the possibility for two alternatives. Either the residents utilized a sheet midden as Hayden (2012) and Cipolla et al (2007) observed at sites 102-128 and 102-113, respectively, or the trash pit was historically placed outside the radius of the modern excavation or was rather small and simply missed by the excavation sampling strategy. Current analysis does not suggest site 102-118 utilized a sheet midden, or these materials would have been in higher densities around the house. The two pit middens were strikingly similar, consisting largely of shellfish. Site 102-126 started as strictly shellfish and trended towards general refuse over time (Silliman et al. 2013: 14-21); with the midden at 102-82 containing shellfish, ceramics, and vessel glass (Silliman et al. 2014). The contrast between the sites represents a changing usage of space over time, and highlights the individual decisions of the homeowners.

The usage of pit middens is crucial for the next comparison as well: Young's ratios. A main focus of this research was to examine how these homes entered the archaeological record by understanding their historic modifications. Modifications were isolated into three categories, and the resulting ratios of modifications were compared to Amy Young's work. Two sites possessed the same ratios, due to one main distinction: middens. The nails and their modifications underwent inter-site analysis, but also intra-site analysis. When stratified by their recovered location within the actual site, in this case the foundation versus the midden, each site exhibited matches to two of Young's ratios as razed in place and razed then moved, respectively. These results could have been from the result of mere convenience when it was time to raze the home; that is, tear part of the house down and put those pieces in the midden to help fill it in, and then leave the remaining components in the foundation to

help fill that in as well. Knowing how the home entered the archaeological record does not tell us why the home entered it or its exact condition. It could have been abandoned due to an expired occupant and torn down years after it was last inhabited, damaged beyond repair, or a simple desire to change residence. Whatever the cause, we do know how it entered; it was ultimately intentionally torn down, with the materials used to fill in the foundation depression and middens.

Archival Insights

When juxtaposed critically with the archaeological information, the historical record offers another component to aid in our understanding of 18th- and 19th-century Eastern Pequot life. Despite the research noted above, the question remains: who actually built the homes occupied by the Eastern Pequot? This question bears weight when trying to understand how much influence the Eastern Pequots had on their own homes. Were they making the wigwams themselves, as they had prior to European arrival, and relying on help for the EuroAmerican framed homes? Were hired carpenters responsible, and if so, were they perhaps constructing homes considering Eastern Pequot cultural practices or were they following English building norms? Were these houses modified at all post-construction by Eastern Pequots? Numerous historical examples from the mid-19th century preserved in surviving overseer records could offer possible answers.

During the 18th and 19th centuries, administrative positions known as overseers were created to be superintendents and guardians of the reservation and act as liaisons between the tribe and the government of Connecticut. In addition to documenting and reporting back to

the Connecticut Congress on Native American happenings, these overseers were responsible for acquiring aid by either leasing sects of land to non-Native individuals or lobbying politicians, entities, and private citizens for goods and aid (Handsman 2008: 9). Once distributed, the payment, good, or service would be recorded within the overseer record. These firsthand accounts provide insight into historical southeastern Connecticut, but their context must be taken into consideration when weighing their significance. They were written by individuals with their own biases, agendas, and shortcomings. Even though they are fascinating resources for historical archaeologists to utilize in conjunction with excavated artifacts, they too must be viewed as artifacts, rich in detail but undoubtedly curated in some manner by their author. Fortunately, numerous relevant records relating to home or structure construction, maintenance, and supplies still exist and excerpts are provided below (Table 12).

Table 12. Eastern Pequot Overseer Architecture Records, Connecticut State Library

Date of Record Entry	Overseer	Amount Overseer Paid	Entry Summary
1824	Henry Chesebrough	13" 60	Paid for making line wall and repairing line fence
July 25, 1829	Silas Chesebrough	N/A	2 window sashes with 24 lights in them for Cryus [sic] Shelly
August 20, 1832	Silas Chesebrough	N/A	Paid Shubacl Whitney for repairing Betsy Tykins house
April 12, 1833	N/A	75/day	Repair of line fence
March 18, 1834	Ezra Hewitt	\$4.83	Labor and boarding paid for two workers making wall and fence
October 13, 1834	Ezra Hewitt	N/A	Carpenters paid for material and services
October 10, 1835	Ezra Hewitt	N/A	Lumber for repairing B. Robbins house and nails
December 27, 1838	Ezra Hewitt	N/A	Paid Col. P.W. Hull to make wall
November 1843	Ezra Hewitt	N/A	Nails for Cyrus Shelly
June 14, 1846	Elias Hewitt	N/A	Paid Black man for repairing fences
January 30, 1850	Elias Hewitt	N/A	Paid William Main for putting up house that blew down including nails and pad lock
November 19, 1851	Isaac Miner	\$1.13	Paid for 1 day work in Samuel Shuntaup's house and large quantity of nails
March 1853	Isaac W. Miner	N/A	Paid Thomas Maine for work done on chimney
April 1, 1853	Isaac W. Miner	N/A	Paid Whitford for building Shuntaups home
October 1855	Isaac W. Miner	N/A	Paid repairing wall and making barposts
March 17, 1860	Isaac W. Miner	N/A	Repairing fence, Indian Town

These records indicate home features by acknowledging and preserving the maintenance performed in the four decades from 1824 to 1860, which admittedly post-dates the three houses considered here. They represent a past with overseer involvement in all phases of the building process. The entry from 1829 which details Cyrus Shelly's two window sashes with 24 lights in them indicates that some homes had window glass, a characteristic that the archaeological record corroborates. The fact they needed to be purchased and not necessarily replaced or repaired could hint at their presence as a change or modification to Cyrus Shelly's home from its original format. Another key feature referenced

by the overseer comes via the March 1853 entry in which Thomas Maine was paid to work on a chimney. While there is no mention to it being stone or brick, this excerpt does still corroborate evidence found within the archaeological record – multiple houses have been excavated with collapsed stone chimneys – and demonstrates chimney presence through the mid-19th century. Five more entries, each relating to reservation homes and their repair, are of great relevance to this study.

A key excerpt from the available overseer records is the entry dated August 10, 1832, and mentions payment to Shubacl Whitney for repairing Betsy Tykins house (Chesbrough 1832). While sparse on specifics including the type or duration of repair, this entry aids in understanding overseer involvement of the residential building process. Between March 18, 1834, and June 11, 1835, Overseer Ezra Hewitt recorded paying several individuals for their services on the Eastern Pequot reservation. Of particular interest is Hewitt's entry from October 13, 1834, in which he details payment to carpenters for boards, shingles, and 100 3-lb nails and for the cost of boarding these carpenters¹ (Hewitt 1834). The final entry to be highlighted is the April 1, 1853 payment to “Whitford for building Shuntaups home” (Miner 1853). When coupled with the January 1850 payment to William Main for putting up a house that had blown down, the question regarding Eastern Pequot home construction appears answered.

¹ This entry represents a direct contradiction of the Stachiw (1997) claim that Native homes lacked shingles. The discrepancy could be created by the decades between the two activities in question, as well as by an overseer clerical error. Perhaps Hewitt mischaracterized the material actually purchased, or rather it may mean the 19th-century Eastern Pequot were now able to incorporate siding or roofing shingles into their construction practices.

However, several aspects must be addressed. First, there is no evidence indicating overseer payment for entire home construction throughout the entirety of the reservation's existence. In fact, two of the three houses studied as part of this thesis precede the earliest overseer's record about housing materials by at least a generation. Second, for everything the overseer does include, the archive's greatest shortcoming is what it does not include: individual Eastern Pequot purchases with private money or through an exchange of service. This is a similar issue raised by Mrozowski et al (2015) with the Sarah Burnee/Sarah Boston Site in Grafton, Massachusetts: private bartering for additional materials might not have been fully documented. Handsman's (2018) research also indicates there were numerous interactions between Pequot tribal members and merchants, separate from overseer involvement. These individuals would have maintained accounts with the merchants, and used them to purchase a variety of goods and materials. Handsman (2018) argues the balances owed were sometimes paid by the Pequot themselves or by others in exchange for Pequot services. These interactions represent direct Native agency with minimal overseer involvement. Therefore, this practice of relying on overseers, exhibited within the archival records cannot be established as a rule, but rather it represents at least one instance where the Eastern Pequot had their homes shaped by outside hands. An overseer paying for repairs in 1834 and 1853 does not necessarily reflect a continuous or common occurrence throughout the entire reservation occupation.

Outside and overseer involvement did not end with personal habitation. Several other instances were recorded which point to a superintendent responsible for paying for repairs on non-residential structures reservation-wide. Numerous examples, including the five shown

above, are recorded in which the overseer paid for needed wall and fence repairs over four decades. These could have required due to natural wear and tear on an outdoor structure or from intentionally inflicted damage.

Extant historical documents, including a 1750 grievance, available through the Native Northeast Research Collaborative (www.thenativenortheast.org) portray a tribe constantly at odds with their EuroAmerican neighbors. This 1750 incident decried destructive EuroAmerican neighbors and called for a formal survey to confirm reservation boundaries (Huntington and Backus 1750). While unknown whether the surveying ever occurred, this document is contemporaneous to Site 102-118 and demonstrates a contentious relationship with EuroAmerican neighbors which spans centuries.

The historical record also indicates intentions to build a permanent schoolhouse for the “Indians in Stonington” (Fish 1773). Following the loss of a borrowed room belonging to Edward Nedson, a need arose for a permanent purpose-built structure (Fish 1771). The October 22, 1773, letter from Reverend Joseph Fish to Andrew Oliver details needed glass and nails to be sent to Joshua Babcock to finish the list of needed materials. Several nail types are specified including 1800 clapboard nails and 3500 shingle nails, and over 6000 are required in total. Despite only being “18 or 20 feet square,” 7 x 9 glass squares were also requisitioned from Andrew Oliver. This reveals the large number of nails required for a framed structure, even a small one. It also emphasizes the low nail survival recovery rate in New England historical archaeology. With a known ordered quantity of over 5,000 nails for a small structure, most comparably-sized sites on reservation produce a fraction of that amount during excavation. Most importantly, it indicates the intermittent building process and great

delays which can occur from beginning to end of a building project. Fish's first mention of a need for a permanent school and his letter to Andrew Oliver were over two years apart. The timber needed for the board, shingle and clapboard were to be provided by downed trees from Captain Cyrus Wheeler's land (Fish 1772). The entries in his journal speak to the piecemeal effort needed to complete this building, and the great investment a home of any size at the time would have been. Unfortunately, no extant map provides a possible location for this structure, and no schoolhouse-related archaeological evidence has been recovered to date.

One last observation from a 1901 book can advance our understanding of overseer-Native American interactions. According to John Avery's (1901) account, a Pequot leader, friendly with English residents, lived in house much larger than other Pequot members: 40 feet by 20 feet (McBride 1990: 115). This is much larger than the documented 22 feet by 14 feet that was previously discussed (Committee Report 1856) and considerably larger than almost all excavated houses on the reservation. This is a documented instance of a Pequot member potentially being offered preferential treatment. Although some scholars (Carroll 2016) attest these actions may serve as reward or compensation for prior military service, the exact reason here remains unclear.

Rather than observe these records individually, a holistic approach is required. Solely reading overseer records could be falsely interpreted as a community completely reliant on the generosity or capabilities of an appointed overseer. Not only is this notion false, but multiple resources can be combined to create a fuller history to understand the social milieu of the period. Indeed, overseers were paying to repair fences, but EuroAmerican neighbors

who disrespected Eastern Pequot boundaries and encroached on their farmland caused the damage. Their grievances to the Connecticut Congress are a testament to their daily aggravation and frustration.

It is clear that a complicated relationship existed between the appointed overseers and Eastern Pequot people and must be fully contextualized. There are numerous examples of Eastern Pequot's communicating their requests for basic necessities such as food, shoes and tobacco, which the overseer then had to facilitate for purchase and procurement. These overseers who maintained their finances and served as liaison to the Connecticut government were empowered individuals, and negotiating those relationships must have been of paramount importance to some Eastern Pequot people. The power dynamic was heavily in favor of the overseers, and for those Eastern Pequot reliant on them for assistance, homes became the physical manifestation of their relationship. Poor relations could result in the inability to maintain one's homes and grounds. Therefore, the presence of window glass shards, or entries describing nail purchases and therefore indicating additional construction events, could represent privately-funded work or a homeowner well-aligned with the overseer. Chronically damaged walls or fences could indicate a tribal member unable to secure funding from the overseer. Due to the connections and power inherent to the overseer position, successfully navigating this dynamic was analogous to negotiating the larger colonial Connecticut environment.

An inherent flaw in the historical record is its failure to record any denied or rejected requests. We unfortunately do not know the ratio of approved to unapproved requests regarding home maintenance and construction. Knowing this information would provide an

interesting perspective on the difficult decisions or rationing by an overseer, if at all. It is most important to emphasize that while these records offer a strong first-person account into Eastern Pequot and overseer relationships, they do not preserve any incident of private funds spent on maintenance and construction efforts. This is to state that tribal members possessed the agency to – and were certainly capable of – paying for their own materials and repairs, but these actions would not have been recorded by the overseer.

Attempting to tease out which of the two funding methods – public or private – facilitated construction and maintenance on the three homes in this study is difficult without knowing precisely the named individuals who lived in them and when. If we did, and their name did not appear in the overseer ledger while they lived at the home, we could deduce private funding. The opposite is true if one of our three particular homeowner's name appeared in the overseer records. Without knowing the exact procurement process, but assessing their numerous nails and at minimum one window, the owners could have had a fruitful relationship with the overseer, or were successful in facilitating construction on their own.

All the overseer entries point to a clear conclusion: the relationships between overseer and Eastern Pequot member were required but complicated. They held great power and wielded the ability to provide aid financially and materially. However, at no point, despite any financial help, or receipt of EuroAmerican staples, did the Eastern Pequot people stop being Eastern Pequot. Some lived in EuroAmerican style homes, built and repaired by EuroAmericans, and containing stereotypical EuroAmerican goods, but they were still Eastern Pequot. The way they interacted with these homes, chose to maintain them, and

when to deconstruct them were all uniquely Eastern Pequot. Their cultural identity never ceased due to the mere presence of EuroAmerican objects or dwellings. They lived in, shaped, modified and interacted with these physical things as Native Americans on their reservation, and in doing so made those things their own.

CHAPTER 6

CONCLUSIONS

The three homes examined here, Site 102-118, 102-126, 102-82, provide a glimpse into reservation life of 18th-and 19th-century southeastern Connecticut. Through a dual examination of the written and archaeological record, we can better understand not only more about the homes themselves but their inhabitants as well. This work has sought to answer three research questions. First, what did the homes look like historically? Second, what was the relationship between Eastern Pequot homeowners and overseers? And third, what did the homes look like when they entered the archaeological record?

First, as for the homes, they were all framed plank houses enclosed in clapboards and roof shingles. Each possessed a cellar, chimney, and at least one glass window. Based on the pattern and location of the fall, the chimneys were placed in corners and specifically the northwest corner in at least two of them. These chimneys seemed to be made entirely of stone given the near absence of brick fragments. There was some variation between the sites, but archaeological evidence, in conjunction with the historical record, indicates they were single-room, single-story homes built with timber-framed construction, roughly square in shape, ranging from 260 to 320 square feet. Based on dating of ceramics, iron nails, and other materials, they seemed to be occupied only for short durations, likely 25 to 30 years, and did not offer evidence of extensive construction episodes compared to the rather unique later 18th-century reservation house discussed in Hollis (2013). All three possessed a cellar, likely

used for food and other storage, but these manifest differently in their archaeological signature. One had no semblance of a depression on the surface and had been filled in with dirt, one had a slumped depression that gave way to partial stacked stone lining, and one remained wide open with notable stone lining around its entire perimeter. Glass shards point towards at least a single pane window. Sprawling chimney fall are all that remain from the former chimneys, other than the hearths beneath them that have undergone some limited excavation. The large quantity of smaller nails in relation to the smaller number of larger nails affirms the use of a timber frame skeleton covered in shingles and clapboards. Contemporaneous overseer records confirm the purchase of congruent building materials and mention various maintenance episodes, at least in the 19th century.

With regard to layout, the majority of glass shards and larger nails were recovered along the southern wall of the homes. This coincides with Hayden's (2012: 104) observations at Site 102-128, and could represent a conscious decision by either the builders or homeowners to place such portals to take advantage of increased sunlight and warmth along the southern exposure that occurs in winter in the northern hemisphere.

With these factors considered, the three sites generally represent a EuroAmerican style of construction that was common in the New England landscape but that may have been tailored to meet reservation cultural needs. It is crucial to emphasize here that it would be wrong to interpret a loss or diluting of Native American identity simply because of domicile type. Structure size, material, and style are dependent on a variety of factors, including economic status and product availability. Despite being built in EuroAmerican fashion, these homes were located on the reservation and lived in, cared for, and modified by Eastern

Pequot people and their family members, making them fundamentally Native American (Silliman 2009).

Following their use life, these homes became part of the archaeological record. By examining the nail modifications at each site, it is clear all the sites were intentionally torn down – none of them were left to rot in place and collapse in on themselves. Site 102-118, without a midden, experienced a home torn down and materials thrown in the foundation. The two other sites with midden saw foundations and refuse pits filled with wood removed from the house.

A key distinction in their razing is where the components came to rest and correspondingly were left to enter the archaeological record. This is crucial because they were placed in their final resting place by someone, presumably a reservation resident, thereby revealing a person's historic act of razing and deconstruction. In this instance, the artifacts are architectural remains, particularly nails, and they can tell us how Eastern Pequot modified their physical landscape, not once, but three times. Three instances of intentionally torn down homes is not a coincidence; it is a pattern, a pattern that occurs to homes spanning 50 years. A practical reason for tearing these homes down might have been for material recycling, or even safety concerns. Reservation land was sometimes leased out for agricultural use and a household in the center of the reservation brought multiple acres under cultivation in the second half of the 19th century, and the possibility of someone or something getting injured could have motivated Eastern Pequot to fill any exposed middens or cellars with available material – in this case, housing components. This desire to fill both would also explain why middens match Young's (1995) ratio of materials moved to refuse pile and

foundations match the ratio of materials left on site. Hollis (2012) found similar results in his examination of a root cellar intentionally filled in to allow construction of a home addition.

Beyond aiming to understand Eastern Pequot life, this work has also provided further evidence to Young's nail ratios and their efficacy in the Northeast. Further steps beyond the scope of this work could include a deeper examination into historical records to identify more instances of overseer involvement in home construction and repair. Reviewing records earlier and later than the periods studied here could reveal a potential larger pattern of overseer behavior. There were also Native American reservations, including the Mashantucket Pequot and Narragansett in neighboring Rhode Island. An inter-reservation comparison of historical records could expand the knowledge base of historic overseer-Native American interactions. Do Mashantucket Pequot, Mohegan or Narragansett overseer records offer similar or different insights? Would we expect them to be different, and to what degree? Applying the same research methodology on the nail assemblages from these neighboring reservations would provide more material towards the critical mass to further confirm or deny the applicability of Young's methodology to New England.

Despite knowing how these homes entered the archaeological record, questions remain. It is still unclear why these homes were torn down when their construction method is known for its robustness and modularity of repair – after all, extant contemporaneous examples remain. When boards or planks rot, it is possible to remove the decaying component and replace them. And as Hollis (2013) shows, there are examples of continual occupation on this reservation. We know from archival records that obtaining material often required navigating overseer, merchant, or donor relations. The material and labor required to

construct a home was an investment. For these homes to only show signs of 20 to 30 years of occupation is not expected. Did this pattern of shortened home occupation simply not persist into the 19th century, and instead overseers took a more active role in home maintenance? Did the home's occupants have to leave the reservation for an extended period of time, leaving their dwellings' maintenance to suffer? Were these homes scavenged for usable components and razed after the recycling event? Regardless of the exact reason, these shorter occupation periods from the late 18th- and early 19th-century contradict the pattern that historical documentation and standing buildings exhibit. With the numerous examples of repair and maintenance recorded by overseers, one would expect these homes to have prolonged, multi-generational occupations, most likely evidenced by multiple construction episodes. This is simply not the case with these three homes, and the exact reason remains an interesting query.

Through an architectural lens, three research questions were answered as fully as possible with the available evidence. These homes exemplified Eastern Pequot persistence as they adapted their physical environment to the changing societal environment. With land cleared and the saplings needed to make wigwams gone, they utilized framed homes. When the foundational and midden holes needed to be filled in, the structures were pulled down. Yes, these homes were EuroAmerican-style timber framed homes, but the people who lived in them never ceased interacting with these environments as Native American members of the reservation community. They created and razed their built landscape through conscious choices reflective of their changing needs. Overall, these sites are significant because of the

window into reservation life they provide and allow us to understand a fraction of their complex, multifaceted negotiation of the world around them.

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