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On the Cover (Clockwise from Top Left): Watson House Period I Frame (Sheridan); Oak Tree Shilling—Noe-1 Variation (Schmidt); Wind-Driven Saw Mill Interior (Lyon); and a Detail of an Ecclesiastical Band (Becker).

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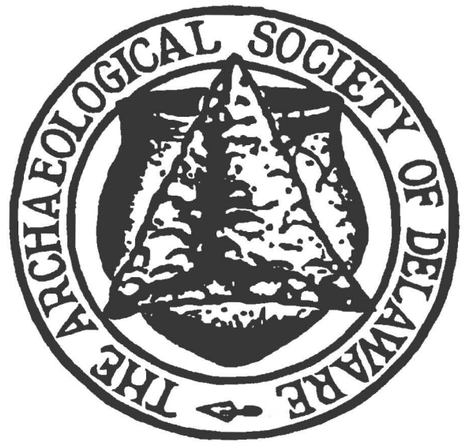

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CLIPPED SILVER COIN FRAGMENT AT AVERY'S REST

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ABSTRACT

This is a "Find Report" of a silver coin artifact from the Avery's Rest project. The intent of the report is to document the artifact and identify its probable origin. Other artifacts related to non-barter commerce (English copper coinage, Spanish silver, bullion weights) have been recovered from the site and are briefly discussed at the end of this report.

INTRODUCTION

Avery's Rest (7S–G–57) was identified in the late 1970's by surface survey as a native site and probable seventeenth century habitation, just outside present-day Rehoboth Beach, Delaware. With permission of the owners, the Archaeological Society of Delaware (ASD) excavated the site from 2006–2009. Analysis of the artifacts and historical research provide a current interpretation of two periods of occupation of the site—Period I from 1675 to 1682 and Period II from 1695 to the 1710's. Major features excavated were: Feature 11, a Period I well, partially infilled during that period; Feature 7, a Period II well; and Feature 63, a 12 by 16-foot (3.7 by 4.8-m) Period I cellar infilled during Period II. The site was occupied during Period I by John Avery and his family. Avery was a first generation English homesteader with substantial holdings in the area, a militia captain and Court Justice. The site was reoccupied during Period II by Avery's descendants (Figure 1).

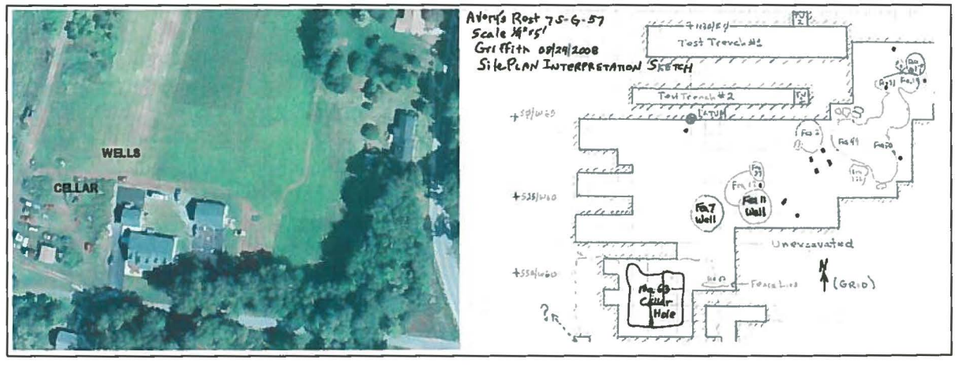

Figure 1: Avery's Rest Aerial View and Site Plan Sketch.

A fragment clipped from a silver coin was recently identified during weight and count analysis of artifacts of Feature 63. The artifact was excavated in catalog entry 2006.32.1145, the east wall of the cellar builder's trench, indicating that it was deposited during construction of the building during Period I rather than during structure demolition and cellar infill.

The coin fragment is shown on the right of Figure 2, photographed on ¼-inch (0.6-cm) quadrille paper with a copper William III halfpenny (Type 1—1695–1698), also recovered in Feature 63.

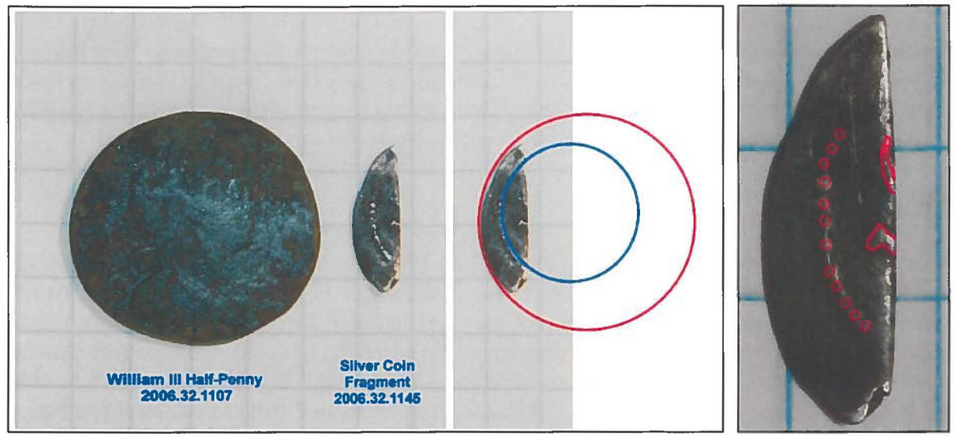

Figure 2: William III Half-Penny and Clipped Silver Coin.

The coin fragment weighs 6.2 grains (0.4 g) and is 0.03 inches (0.8 mm) thick[1]. It has obviously been "clipped" from a larger coin. The original diameter of the coin is estimated by the red circle in Figure 1 to be approximately 0.9 inches (26 mm). This estimate is not definitive—the original coin was ultimately "clipped", so its edges may well have been "shaved", resulting in a smaller diameter coin than that which was minted. The fragment has an arc of raised beads on its surface. The blue circle in Figure 2 is an attempt at a "best fit" diameter if the arc forms a full circle. The diameter of the blue circle is 0.7 inches (17 mm). The right-most enlargement in Figure 2 highlights the raised features on the fragment.

Hammered Silver English Shillings

In a first attempt to identify the original coin from which the fragment was clipped, English silver coinage of the period was investigated. Until 1662, English silver shillings were "hammer-minted." The technique was to place a coin blank ("planchet"or "flan") between two dies and strike the upper ("hammer") die to mint the coin. Planchets were necessarily thin, edges were irregular and it was not possible to define the edges with "milling." Higher pressure roller and screw presses replaced hammer minting in the 1660's, enabling thicker mill-edged coinage that was more difficult to shave and counterfeit.

Hammered shillings were only produced for two years after the Restoration and did not have any design feature similar to that on the Avery's Rest fragment. The shillings produced during the Commonwealth Period (1649–1660) did contain a beaded circle on the reverse of the coin. A well-preserved example of this coin is shown in Figure 3.

Figure 3: 1651 Commonwealth Shilling.[2]

This coin weighs 86.4 grains (5.6 g) with a diameter of 1.2 inches (29.5 mm), so its thickness calcuated to 0.03 inches (0.8 mm), comparable to the fragment. (By contrast, a modern U.S. dime is 0.05 inches [1.4 mm] thick, illustrating that these thin silver coins could be and were easily clipped or bent. Clipped English silver coins have been excavated at Jamestown, Virginia, the later occupation of which was contemporaneous with the Avery's Rest Period I.) By carefully measuring the image of this coin, the beaded circle is nearly 0.9 inches (22 mm) in diameter and there is nothing inside the circle that matches any detail on the Avery's Rest fragment.

Massachusetts Bay Silver Coinage[3]

While investigating English silver coinage for a match to the Avery's Rest fragment, it was suggested[4] that Massachusetts Bay coinage also be considered.

A mint was established in Boston in 1652 to alleviate the shortage of currency available for the growing commerce within the colony. The mint operated for 30 years, producing silver coins in three-pence, six-pence and shilling denominations (also two-pence from 1662). Coins bore the date of their authorization throughout the entire period of operation—"1662" for two-pence, and "1652" for other denominations.

Although Massachusetts Bay coinage is generally referred to as "Pine Tree Shillings," the history of the Boston mint can be divided into four distinctive coin designs ("NE"with minimal design and no date, Willow Tree, Oak Tree,and Pine Tree). Three or four technologies were used for coin mintage: hammer, roller or rocker arm, and screw. With the use of screw press equipment (which was used only for later minting of Pine Tree coinage), smaller and thicker planchets were used for coins.

A clipped and shaved Pine Tree Shilling is shown in Figure 4. This variety—referred to as "large planchet" to diffentiate from later smaller and thicker coins—is thought to have been produced between 1667 and 1674. This example has a maximum diameter of 1.0 inches (27.5 mm) and a weight of 63.3 grains (4.1 g). Due to the heavy clipping, the original weight of the coin was probably close to the authorized weight of 72 grains (4.7 g) established for the mint. That weight would give a coin thickness of 0.03 inches (0.8 mm), consistent with the Avery's fragment.

Figure 4: Pine Tree Shilling with Wear and Clipping.[5]

The first thing to note is the beaded circle around the date on the reverse of the coin. Measurement of the circle gives a diameter of 0.7 inches (17 mm), consistent with that estimated for the Avery's Rest fragment. A portion of the "1652" numerals inside the beaded circle also provide a putative match to detail on the fragment. The oblong aspect of the individual beads on the circle , however, do not provide a good match to the artifact.[6]

Oak Tree Shillings

Oak Tree shillings (along with two-, three-, and six-pence) coins were minted from 1662–1667, prior to the "Pine Tree" variations. Opinion differs as to whether "roller" or "rocker arm" presses were used to produce Oak Tree coinage. Roller presses had dies mounted on continuously rotating rollers, analogous to wringers on early-twentieth century washing machines. The dies used and the method of operating a rocker arm press are shown in Figure 5.

Regardless of whether "roller" or "rocker arm" presses were used to mint Oak Tree coinage, each necessitated using thin "large planchet" blanks and often produced oblong coins due to the action of the press mechanism. Another feature of the coins produced with these presses is that the dies were not necessearily centered on both sides of the blank for any particular coin due to difficulty in maintaining orientation of the dies in the press.

Figure 6 illustrates an Oak Tree Shilling. Taxonomy of Massachusetts coinage generally follows Sidney Noe's 1948 nomenclature, and this is a "Noe-1" variation indicating that

they are struck from the first obverse and reverse dies used to produce the Oak Tree shillings. A characteristic of the early Oak Tree dies is that the diemaker scribed a circle before inscribing the beads (which were round, rather than oblong) on the circle. The inscribed circle is evident on both sides of the coin in Figure 6.

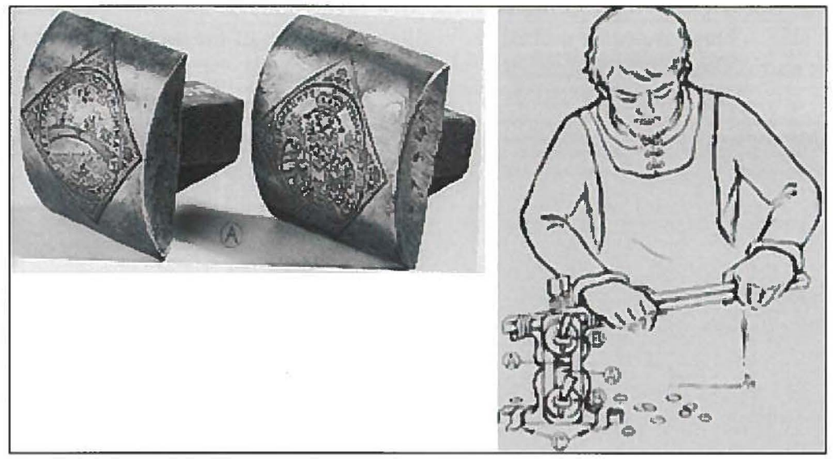

Figure 5: Rocker Dies and Rocker Arm Press Operation.

Figure 6: Oak Tree Shilling—Noe-1 Variation.

Figure 7 shows an image of the reverse side of the coin, with an enlagement of a portion of the beaded circle and date. Comparing this to the Avery's Rest fragment suggests that the detail on the fragment inside the beaded circle could be a portion of the numeral "1" (particularly with the horizontal serif on the top of the numeral) and a faint remnant of the numeral "6" above that. The scribed circle "under" the beaded circle is evident on the

Avery's Rest artifact, adding to its identification as an early Oak Tree shilling, if not specifically a Noe-1 variation.

The other side of the Avery's Rest artifact (what would be the obverse if the identification as an Oak Tree shilling is correct) contains less detail than the side discussed above. Figure 8 shows the Noe-1 Oak Tree shilling with the area highlighted in Figure 7 transposed to the obverse side. (This assumes a normal "coin flip" orientation of the dies, which was the case with this particular variation).

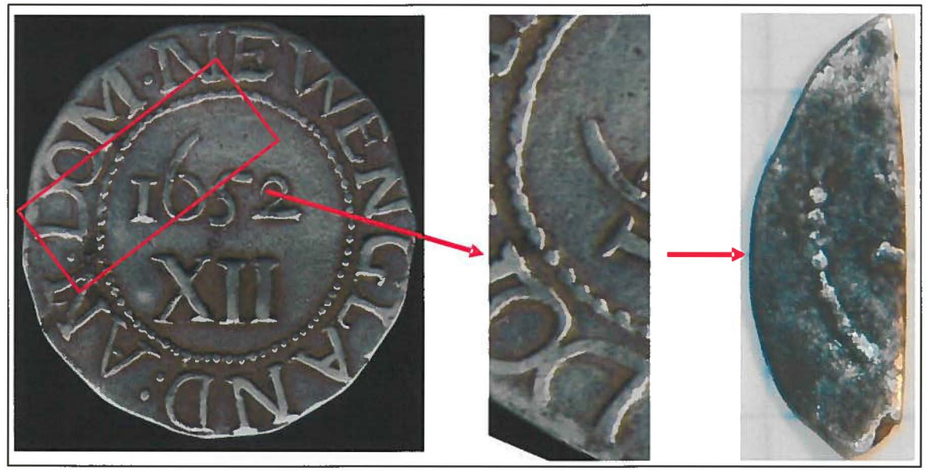

Figure 7: Oak Tree Shilling—Reverse Detail Mapped to Avery's Rest Fragment.

Figure 8: Oak Tree shilling—Highlighting the Areas with Features Seen on the Avery's Rest Fragment.

Figure 9 shows the enlarged Noe-1 obverse portion next to an image of the Avery's Rest fragment obverse. The right-most image interprets the features on the fragment to be a portion of beaded circle. Although not as distinct as the features on the reverse of the fragment, the fact that features on the obverse of the fragment are, at least, not inconsistent with an Oak Tree shilling identification bolsters that interpretation.

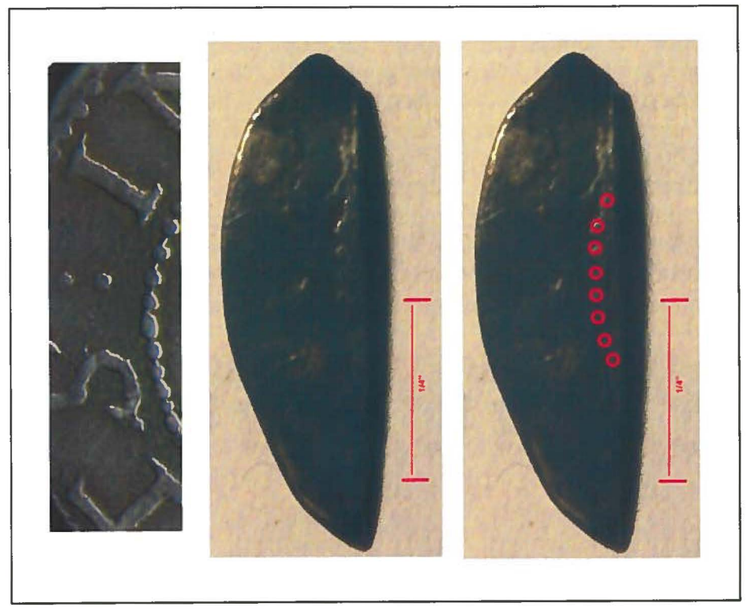

Figure 9: Enlarged portion of Oak Tree Shilling Obverse and Avery's Rest Fragment, Showing Beaded Detail.

Conclusion

Although not conclusive, the identification of the Avery's Rest fragment as being clipped from an early mintage Oak Tree shilling is compelling. Features that match the Noe-1 variation of the Oak Tree shilling support that specific identification, but given that the fragment is so small and worn (particularly that no lettering between the beaded circles is discernible), it is probably not productive to attempt identifying a particular variation to this fragment to the exclusion of all other large planchet Massachusetts shillings. Even if the fragment were in much better condition, classification of worn Massachusetts coins to specific taxonomic variations is often difficult due to the constant wear, retouch and re-engraving of dies, and the usage of dies after sustaining cracks and breakage.

Related Artifacts

A number of coinage/bullion-related artifacts were excavated at Avery's Rest and are illustrated in the same scale in Figure 10.

- One ounce trade weight—Marked with London hallmark and a "Crowned C", for King Charles (probably Charles II). Recovered from level 2 (top 6 inches [15.2 cm]) of the Feature 7 (Period II) well.

- William III halfpenny. Three copper halfpence, were recovered: two in plow zone units and one in level 2 of the Feature 7. These, all minted in the 1690's, confirm the date range for Period II.

- Clipped silver coin fragment, the subject of this report. This artifact was recovered from the builder's trench of Feature 63, indicating that it was deposited during the construction of the building. Being close to 1/12 the weight of a Massachusetts shilling, this fragment may have been accepted in trade with a one penny value, rather than being weighed as "loose silver".

- A copper alloy weight with three annulets and a "lion passant" hallmark. This is a three-pennyweight coin weight, recovered from a plow zone test unit.

- A Spanish ½ real silver cob, identified[7] as a Charles II (of Spain) coin minted in Mexico City (1665–1701). This coin was recovered from Feature 12, which is currently interpreted as predating the construction of the Period I well (Feature 11).

These artifacts indicate that coinage of Spanish, European or Boston mintage, either accepted at face value or weighed with a personal balance, augmented the largely barter economy of the pre-Revolution Atlantic coast. These dated artifacts from Avery's Rest, along with analysis of ceramics, clay pipe fragments and other artifacts, will be the subject of future research and reports.

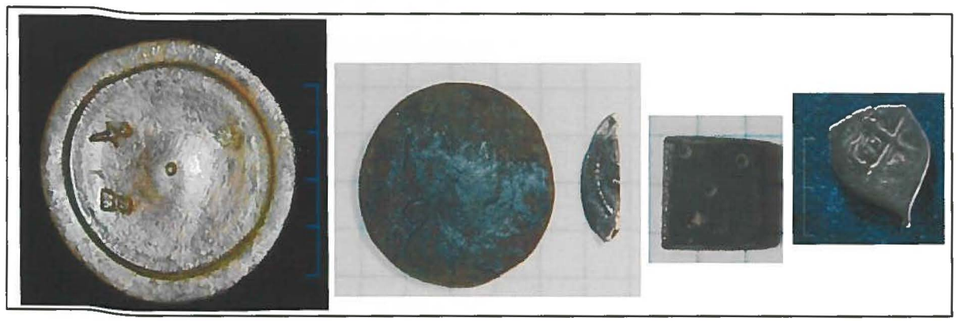

Figure 10: Artifacts Excavated from Avery's Rest Sized to the Same Scale.
Left to right: 1 ounce (28.4 g) Trade Weight, William III Halfpenny, Clipped Silver Shilling, three-Pennyweight Copper Alloy Coin Weight, ½ Real Spanish Cob.

Mid-Atlantic Context

Massachusetts coinage was dispersed outside that colony during and after the operation of the Boston mint and was accepted as legal tender in the Atlantic coast colonies, West Indies and even in England. The extent to which Massachusetts coins persisted in the colonies is

illustrated by the silver recovered from the *HMS Feversham,* which received an allocation of silver from the British treasury office in New York City in September 1711 and subsequently wrecked off Nova Scotia, en route to invade Quebec. A portion of the silver was salvaged in 1984 and the recovery consisted of about 20 percent Massachusetts coinage—nearly 30 years after the mint ceased operation.

Massachusetts silver was present in New York in the early-eighteenth century, and presumably during the entire period after cessation of operation of the Boston mint. It is found only occasionally in the Mid-Atlantic archaeological record of the period, but was present. Although Ann Arundel (Maryland) Lost Towns Project has recovered Spanish silver from their excavation of seventeenth century sites, they have not encountered Massachusetts coinage. Two Oak Tree shillings have been recovered in St. Mary's City, Maryland excavations (one is illustrated in Figure 11.) The Colonial Williamsburg numismatic curator knows only of metal detector finds of three clipped coins in the Richmond area (with the lack of provenience that goes with detector finds.) No Massachusetts coinage has been encountered at Jamestown, however archaeological efforts there have been concentrated on the earlier decades of the seventeenth century.

Figure 11: Oak Tree Shilling Recovered from St. Mary's City, Maryland.[8]

The term "barter economy" is regularly used to describe the trade and accounting in the period, but the assemblage of artifacts shown in Figure 10—English copper, silver of various mintage, weights (which imply scales)—may well be typical of the propertied and merchant classes of the period, who carried barter ledgers with each other, but settled daily transactions with coin (whole and clipped), cobs, weights and scales.

Acknowledgements

I gratefully acknowledge the assistance of archaeological and curatorial professionals, without which I would not have been able to conduct this research:

- Dan Griffith, retired archaeologist, Delaware Department of Historical and Cultural Affairs. Dan has been the Principal Investigator for the Avery's Rest Project since 2006 and has volunteered thousands of hours guiding the project.
- Chuck Fithian, Delaware Curator of Archaeology, made the initial suggestion to pursue Massachusetts Bay coinage. Chuck has provided constant support of the Avery's Rest project, particularly in the identification of obscure artifacts, since we began excavation in 2006.
- Louis Jordan, Department of Rare Books & Special Collections, University of Notre Dame, provided prompt and detailed answers and commentary far beyond my initial query, which was for permission to use images from the www.nd.edu website. Louis was easy to find since he has built the most extensive and authoritative website on colonial coins and currency at www.coins.nd.edu. Although I have not quoted or closely paraphrased from the website text, I acknowledge here that it is the basis for my knowledge in subject matter. As I noted in footnote 2, images in Figures 5 to 9 are in whole or part from www.coins.nd.edu. They are reproduced from the original held by the Department of Special Collections of the University Libraries of Notre Dame.
- Erik Goldstein, Curator of Mechanical Arts and Numismatics, Colonial Williamsburg Foundation, has reviewed my report draft and provided valuable comments, providing a Mid-Atlantic regional perspective, and also identified the Avery's Rest Spanish cob. Eric maintains an extensive and very user-friendly "Coins and Currency in Colonial America" at www.history.org/history/museums/coinExhibit/.
- Thanks also to Al Luckenbach (Ann Arundel Lost Towns Project Director), Sara Rivers-Cofield (Maryland Archaeology Conservation lab federal curator), Silas Hurry (Historic St. Mary's City archaeologist), and Beverly Straube (Historic Jamestown senior curator) for review and comments.

[1]Although the standard presentation for weights and measures following numismatic practices utilizes the metric system, conversions are also given here to render the data consistent with other articles in the ASD system in general and this journal, specifically.

[2] Image can be found at www.coins-of-the-uk.co.uk.

[3] Most of the historical detail in this and following sections was developed from the University of Notre Dame Special Collections website (www.coins.nd.edu.). All images (except for figure 4) are reproduced from the original held by the Department of Special Collections of the University Libraries of Notre Dame.

[4] Chuck Fithian, via e-mail correspondence.

[5] Image from www.coinfacts.com.

[6] An aside concerning the weight of the Massachusetts coinage: The London Mint and the Royal Treasury were undoubtedly aggravated that Massachusetts was minting its own silver coins. This perhaps had less to do with the violation of royal prerogative than the fact that the Massachusetts General Court authorized the coinage at 72 grains (4.7 g) per shilling—22.5 percent under the English standard. This allowed the colonists to sell silver (largely Spanish coinage, but also household silver) to the mint at a profit, with the mint still collecting a sizable commision for its operation. The weight of the coinage was also meant to discourage its export to other colonies—the idea being if these shillings were known to be underweight they would not be accepted at full value elsewhere. However, Massachusetts silver proved to be popular in other colonies, at full value and even at premium, so Massachusetts instituted a law prohibiting export of more than 20 shillings of their coinage and appointed "searchers" at the borders "to search all persons…and finding any mony shall seaze the same…"

[7] Via e-mail correspondence from Erik Goldstein.

[8] Image courtesy of Historic St. Mary's City.

EARLY COLONIAL STRUCTURES, THE BASE EIGHT TIMBER SYSTEM, AND SAW MILLS[1]

Elva Kathleen Lyon, Ph.D.

The dimensions of early colonial structures were dependent upon the building materials available, how those materials were processed, and the cultural background of the carpenter or customer. Most of the archaeological work on European structures in the early thirteen colonies has been done at sites where the carpenters and occupants were presumed to have been English, and the assumption has been that much of the timber work must have been done by hand.[2] Recent finds identified as European but non-English, as well as other sites with apparent strong non-English influences, challenge the utility of the English model along with the assumption of manual timber processing. Those sites have made it more difficult to use English data from either side of the Atlantic as the foundation for archaeological historical analysis. The use of non-English European site data from the middle colonies provides some clarification, but it requires an understanding of the "base eight system" of timber measurement, especially as standardized by saw mills, and how it was used in Europe and the colonies. The base eight measurement system can help to extract information from a culturally challenging archaeological site where post holes and other features reveal the dimensions of a structure.

A base number system progresses in multiples of that number, and such systems are commonly used for measurement or currency. Thus, a base two system is in multiples of two, such as four, six, eight, 10, and so on. A base eight system is in multiples of eight, progressing from eight to 16, 24, 32, and onward.

The base eight system for timber measurement was standardized and reinforced by the many horse and water driven saw mills that were common during the high middle ages in northern continental Europe.[3] Many grain mills also doubled as saw mills seasonally. By the 1580s, the wind driven saw mill was introduced.[4] This sophisticated mechanical device rapidly increased in numbers over the next several decades, growing to hundreds in just one small region in the Low Countries, and by the 1630s the largest wind driven saw mills could do the work of more than 20 men.[5] Technological improvements transferred to the earlier water driven mills. As a result, the volume of milled timber produced by saw mills in northern continental Europe locked the base eight system of wood measurement into place.

Saw mills were introduced into the American colonies at the same time that they were being technologically improved in continental Europe. In the early American colonies a wind-driven saw mill was under construction on the tip of Manhattan Island in the late 1620s.[6] Intended as a great labor-saving device both to mill the timber for the colony and for export, it was used as well to produce ship's trim.[7] There were over a dozen other horse-, wind-, or water-driven saw mills in operation near the virgin forests of the coastal middle colonies, and more up the Scottish settlement shores above Massachusetts.[8]

None of these saw mills were introduced into the colonies by the English since there were no saw mills in England.[9] The English had a firm history at home of protecting the rights of individual labor, which extended to providing work for the two-man saw gangs that produced construction wood. But in England, skilled manual labor was costly and timber was in short supply, thus the smallest possible amount of wood was used in house construction. Most of the timber for merchant and naval ship construction, for major projects, and for framing out large houses was imported into England from Norway. There the trees were cut down by the Norwegians who reduced them to logs and turned them into boards and planks using the water-driven saw mills in streams along the fjords.[10] In northern continental Europe special ships were built with doors in the stern that opened to accept Scandinavian logs and timber, and such ships may have been used in the colonies as well.

The forests in the colonies presented new prospects for the English to obtain timber both for use on site and for export, but the easy availability of the raw material was slow to change English cultural habits, especially in the stressed economies of the earliest days. The settlers continued to build half-timbered, wattle and daub houses to dimensions they could afford with the equipment and manpower available until they were financially able to order milled timber from the adjacent colonies for more sizeable house construction. The significance of the milled timber in the economies of the English colonies can be read later in wills where the unused construction wood was highly valued and listed as part of the estate of the deceased.

The steadily increasing supply of mechanically milled timber in the colonies was accompanied by an increasing number of highly mobile and enterprising non-English European carpenters, many with family connections to the saw mills. The most common occupation among the non-English after administrators, sailors, and soldiers, was that of a carpenter or other individual working with timber.[11] Their names can be found early in the English records in Virginia, Massachusetts, Maryland, Delaware, Pennsylvania, and New Jersey, and there are many references to them in the translated and English language records of New Amsterdam/New York City from 1654 onwards.

The change from hand hewn, split, and hand sawn wood to milled timber for house construction in the English colonial areas began in earnest around 1650, though there are earlier purchases mentioned in documents.[12] The records from the 1650s and on show quantities of milled timber sold to the English, the hiring of non-English carpenters for house construction, and the hiring of non-English experts for the construction of saw mills.[13] By the late 1670s there were hundreds of saw mills throughout the colonies and more than a thousand of them by the 1700s, resulting in the majority of house construction timber coming from saw mills. This does not mean that *all* construction timber was milled, but it does require that the reasons for the use of hand sawn timber be examined closely. Manual sawing may suggest that the settler had limited financial resources, or that he possessed the skills to do the construction himself, or that a wealthy plantation owner had trained the slaves to work as sawyers, or that the land grant was distant from a saw mill, and many other possibilities.

Milled timber on both sides of the Atlantic was produced in multiples of eight. All mills abided by the standard measures as dictated by the governing bodies and as expected by the customer. The colonial records show dimensions in Rhineland feet (German measure for wood sourced down the Rhine to the Low Countries), Zaandam feet (used in the Holland region where the largest number of wind-driven saw mills were located), Amsterdam feet (the basis for timber measure in the namesake colonial city of New Amsterdam), and English feet, among others. These varied by roughly plus or minus one modern inch (2.5 cm) from a modern foot (0.3 m). Boards were one thumb thick, or about one modern inch, and planks were two thumbs thick. Both were ideally 1-foot (0.3-m) wide and always at least 8-feet (2.4-m) long.

Common trade boards of the least expensive pine wood were called "deal" by the northern continental Europeans, the Scots, and the English. These deal boards could include rough, uneven, and knotty pieces, sometimes narrower than the standard board, and often coming from the outer cuts of the log which meant they were more likely to warp. A person sorting through deal boards had to have a trained eye to get the best quality.

Usually the intentions and financial standing of the customer ordering milled timber may be deduced from the type of wood he or she desired. An order for deal boards might be for a tobacco shed or ordinary sheathing, while an order for oak planks suggests flooring for a substantial house under construction. In either case, the timber came in standard lengths. The unit for the length of a board, clapboard, or plank was 8 feet (2.4 m), and construction timber was procured in that standard length except by special order. Even when ordered at other lengths, it was in multiples of eight, such as 16 feet (4.8 m). One order for logs was for 32-foot (9.6-m) lengths to be cut 60 boards to the log, or 15 boards to each cross cut that was 8 feet (2.4 m) in length.[14]

Colonial historians often encounter references to "a hundred foot of timber." A hundred foot was 12 boards, each 8 feet (2.4 m) in length, which would yield a clean measure of 96 feet (29.3 m) of 8-foot (2.4-m) long boards. But boards were often a little more than 8 feet (2.4 m), especially if they came from the last crosscut, so there was an allowance of 4 feet (1.2 m) in the 100 foot (30.5 m) order that accounted for variation and that also prevented the customer from selecting only the longest boards.

The standard base eight measurement system of lengths for boards, planks, or beams dictated the size of a house or other structure. When made of milled timber, the house dimensions were usually in multiples of eight. These dimensions could vary slightly from the base eight values according to the cut and diameter of the posts or major load-bearing beams to which the boards or planks were attached, generally an overall structural dimension difference of less than 1 foot (0.3 m). A house might be 16 by 16 feet (4.8 by 4.8 m), or 16 by 24 feet (4.8 by 7.3 m). Sometimes a house was in multiples of eight but included measures of one-half of eight (Table 1).

Table 1: Early Modern European Base Eight Timber Measurement Terminology.

Log: A tree trunk required to have a fairly uniform diameter for a distance of slightly more than 8, 16, 24, or 32 feet (2.4, 4.8, 7.2, or 9.6 m) when used in saw mills.

Balk: The term *balk* meant a log or a beam. The word is the same in English, Dutch, Norwegian, Icelandic, German, and many other languages. A *balk* (beam) could be produced at a saw mill where it was the solid middle section of a log that had been trimmed of boards or planks on four sides. A *balken huys* was a house made of logs.

Board: 1-inch (2.5-cm) thick (one thumb thick). Each was routinely 1 foot (0.3 m) wide and 8 feet (2.4 m) long.

Plank: 2 inches (5 cm) thick (two thumbs thick). Each was routinely 1 foot (0.3 m) wide and 8 feet (2.4 m) long.

Deal boards: Pine trade boards. These could vary in quality. 8 feet (2.4 m) long.

Wainscoting: From the Dutch *wagonschot,* referring to short board lengths. These were easily transported by cart into cities for use by carpenters and other craftsmen. For interior use as wainscoting, they were trimmed to 4 feet (1.2 m), or one half of eight.

A hundred foot of timber: Similar to a baker's dozen of boards, or 8 feet (2.4 m) times twelve boards equals 96 feet (29.3 m). Since the last crosscut of a log could give an overall length of more than 8 feet (2.4 m), some boards might be slightly longer than others. To prevent unscrupulous selection by the customer, the total length was capped at 100 feet (30.5 m).

Wood or timber: The correct early modern and colonial terms for construction units cut from trees. The term "lumber" was not used until past the mid-nineteenth century.

Saw mill: Any device that could do the work of two or more men but that was not operated by manpower. Many grain mills served seasonally as saw mills. Some were portable.

Boards less than 8 feet (2.4 m) in length were called *wagonschot*, a term that indicated timber pieces short enough to be hauled inside a cart or small wagon. This word is the origin of the term "wainscoting." These short pieces were trimmed to a uniform size of 4 feet (1.2 m) when used to line the walls of a room. They were much less expensive than boards, thus a conservative buyer might mix in pieces of *wagonschot* to get a house length of 20 feet (6.1 m), or to incorporate a door opening.

The vertical boarding or planking of a house saved costs in the framing out of the structure, avoiding using many studs but then requiring very strong angle supports at the corners, a typical northern continental European method of construction. If sheathed in vertical deal boards, these were the least expensive and could be overlapped at the irregular seams by other deal boards for weather tightness. Planks made a stronger and better insulated house but at a slightly higher cost compared to the doubled up deal boards. Some of the earliest houses at the tip of Manhattan Island were of this construction. Interior walls were often sheathed in boards, and soil, clay mixed with straw, or bricks were placed between the inner and outer wood sheathing.

The cost or value of deal boards was eight boards to the beaver, or one Dutch guilder for each board, or about 10 boards for one English pound.[15] Pine planks cost roughly twice as much. Oak was especially dear because it was often a choice for export out of the colonies. Virginians were better able to obtain boards and planks or to hire non-English carpenters than the settlers in New England because, by the 1650s, the tobacco economy was well established. Most Virginian purchases of boards and planks were from individuals in the West India Company colony of New Netherland where tobacco could be used as the medium of exchange. New England purchases were from both New Netherland merchants and from the Scots up the northern coast of the Atlantic.

While there were no saw mills in England, there were substantial saw mills in Scotland by at least the 1630s.[16] This does not mean that there was an easy transfer of the technology to the English in the colonies. It was just the contrary. The Scots were as alien and undesirable to the English as were the Danes, Norwegians, Germans, or Dutch. Historically more Scots had interacted with the northern continental Europeans than did the English, many serving as soldiers in the Low Countries, many more developing mercantile ties, and still more following the continental custom of seasonal work at the fields alternating with seasonal work on fishing vessels.[17] It is not surprising that the Scots picked up the usage of saw mills from the continent and managed to develop a pattern of obtaining timber from Norway and elsewhere.

Scottish saw mills in North America along the coast of what is now New Hampshire and Maine were underwritten in some circumstances by members of the extensive Beck family, a northern continental European trading network that reached from the Low Countries to England, Scotland, Brazil, New Netherland, Curacao, and the Delmarva Peninsula.[18] Ownership in the original Scottish mills gradually included the English by shares as the decades passed, an ownership pattern also seen in ship's shares.

At the high end of production, the output of a big saw mill was over 20,000 boards a year. That is based on saw mills that placed orders for 400 logs a year and that operated with multiple saws in one or more frames (Figure 1). At the smaller end of production, using a mill staffed by two men on a limited water source, 40 boards a day could be produced seasonally from April to November, or roughly 6,000 boards a year.[19] Multiplied by the hundreds of mills, production in the colonies in the late-seventeenth century was conservatively at least a million boards a year, and the money involved exceeded that of the fur trade and rivaled even the tobacco trade.[20]

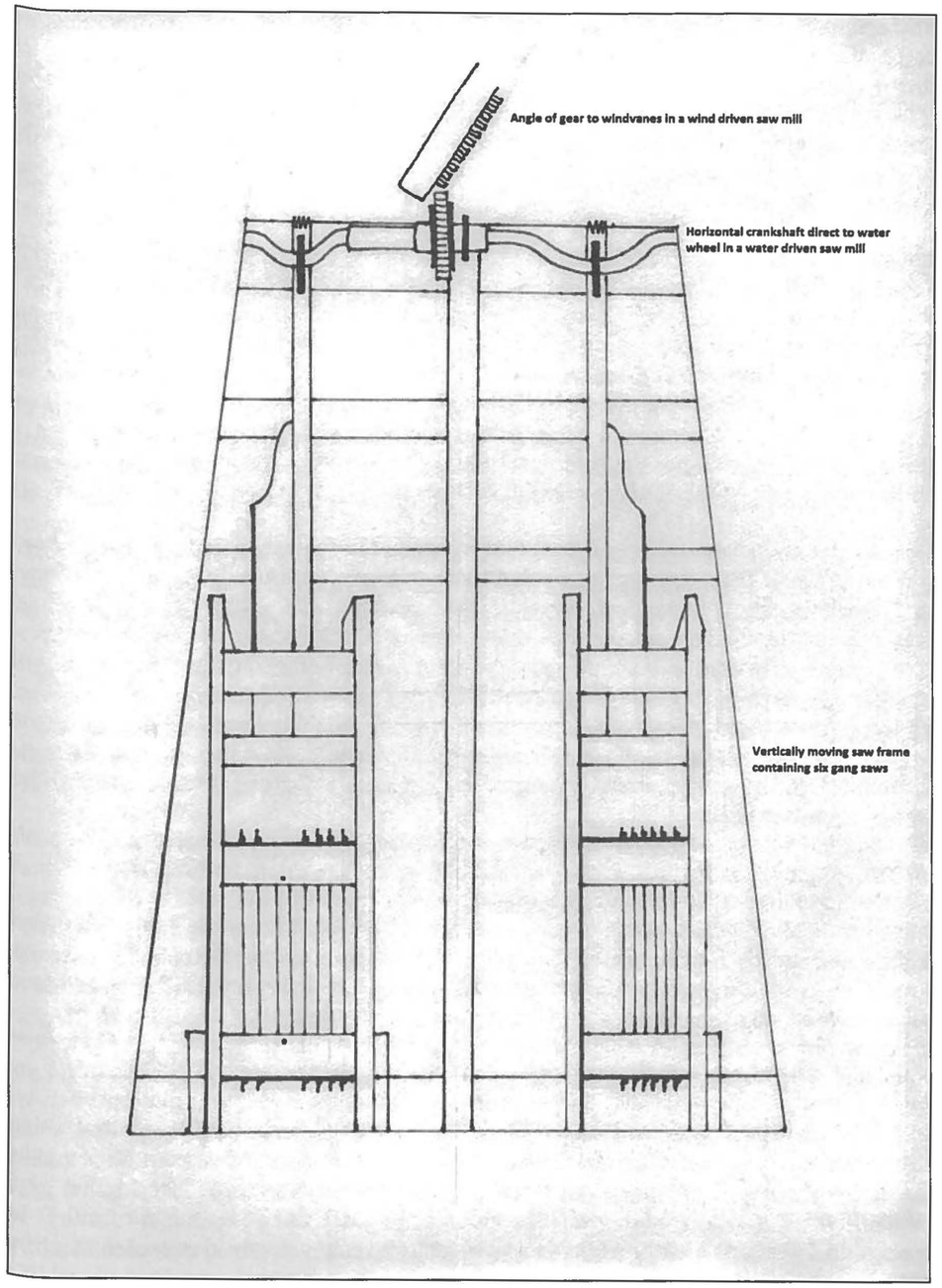

Figure 1: Wind-Driven Saw Mill Interior.
The two saw frames holding a total of fourteen gang saws did the work of twenty-eight men. This was the same design as for a water driven saw mill except for the driving gear orientation and exterior shape.

Post hole construction was not limited to the English. Large areas of the water-logged land in North Holland, Friesland, and West Friesland required deep supports, and houses were built by driving posts into the ground first. Generally speaking, logs destined for timber production or for use as posts were water-cured by allowing them to sit in holding ponds for several months. The same practices were used in New Netherland where barns and sheds were usually built by setting posts. Hay barracks (hay ricks, *hoy bergen*) also required posts with the post hole patterns in small groups of three, four, five, and, for large farms, even six posts. Occasionally English structures did not use posts, as was true for an early-seventeenth century English-built Manhattan tobacco shed that blew over because it was not fixed in the ground.[21]

Northern continental Europeans often built wooden houses so that they could be disassembled and moved elsewhere, explaining why many Dutch language documents use the expression "earthfast," meaning everything that was firmly part of the ground, distinguishing between permanent and mobile structures. That this was the case in New Amsterdam is supported by documents demanding from certain residents why they have not yet moved their houses to conform to the city's plan.[22] A horse-driven saw mill was also portable.

Even when a house deteriorated, everything that could be salvaged was removed and used again by the non-English: wood, bricks, stones, tiles, and hardware. Evidence of a structure burning to the ground should be explained with caution, since it was common among the northern continental Europeans to torch a structure and sift through the ashes for the nails, as was done in the case of the wind-driven saw mill at the tip of Manhattan Island that was burned deliberately in the mid-1650s.[23] The presence of nails and burnt personal or household items would suggest an accidental rather than a deliberate fire.

At the sale of a house the parts that were "earthfast" were listed generally, but if a seller wanted to take up a portion of the "earthfast" features, they were specified, such as the hearthstones and fixed andirons Jacob Kip chose to remove from his Manhattan house in 1657:

> Conditions and terms on which Jacob Kip proposes to sell publicly, to the highest bidder, his house, kitchen, hen or hog yard, and lot lying in the city of [New] Amsterdam, over against the house of Heer Oloff Stevense [Van Cortland], as the same is occupied by him. The house two and thirty feet long and twenty feet broad, inclosed with thick planks and a glazed pantile roof, has a garret and floor, cellar walled up three, four or five feet with stone, and has a brick chimney in the front room, also a shop, the partition walls of bricks, the inner room built up with brick all around [*rondtom*], bedstead, counting house, and larder therein; besides the aforesaid house, there is a kitchen eight or nine feet wide and seventeen or eighteen feet long, on the side of the house, with a brick chimney, in use by him, together with a hen or hog yard in the rear, and the place paved with bricks, and an apple tree therein, also a common gangway on the west side of the house six feet wide, and a common well, and what more is thereon and fast in earth and nailed, except the andirons [*Jiandizer*] and hearth stone.[24]

Notice the use of the base eight measurement system for the house dimensions. The house was 32-feet (9.8 m) long (eight multiplied by four) and 20-feet (6.1 m) wide (eight multiplied by two, plus four feet which was probably for a door). The kitchen was 8-feet (2.4 m) wide and "seventeen or eighteen feet long" (eight multiplied by two, plus the projection of the cooking fireplace and chimney outward).

Bricks were being produced at the same increasing rate as that of timber in the colonies. The first large brickyards were up the Hudson River in the 1650s at what is now Albany, and one of the families that originally settled there branched out in subsequent years to produce bricks near what later became New York City. Bricks were not likely to have come over from Europe in sufficient numbers to account for all the buildings that used them in the colonies in the seventeenth century. Brick linings, as was true in the Kip house, were highly desirable in a cold climate.

The widespread utilization of milled timber meant that mechanization created standardization, forcing house and other building construction to abide by set dimensions. Not set styles, but set dimensions. This happened so early and so systematically in the colonies that by the 1650s nearly every substantial wooden structure began to be built to conform to the dimensions dictated by standard timber sizes. Thus the dimensions given by the location of the post holes at a site may be an indication of the use of milled timber in the construction, and irregular dimensions may raise questions about the age of the original structure or the special circumstances of the owner or builder. Knowing that buildings were constructed to set dimensions that were multiples of eight also suggests where archaeological test units might be made to locate the entire foundation or to find the placement of posts.

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[1] This paper has been excerpted from the presentation made at the May 14, 2011 conference, *The 4th Annual Symposium on the Early Colonial Archaeology of the Delaware Valley Region,* held at Newcastle, Delaware, with information included that addresses questions raised by the conference participants.

[2] Words such as timber, wood, plank, board, clapboard, and wainscoting are either ancient in use in England or borrowed by the English from northern continental Europeans. The term "lumber" should be avoided for the colonial period since it first came into use in the nineteenth century in the American mid-west and Canada. "Timber" or "wood" is more correct, referring generically to all construction materials processed from trees and logs but not distinguishing between beams, posts, planks, or boards.

[3] Francis and Joseph Gies, *Cathedral, Forge, and Waterwheel: Technology and Invention in the Middle Ages* (New York, New York: HarperCollins Publishers Inc., 1994), 197–198 and 217. The Gies include illustrations from the Gothic book by Villard de Honnecourt from Picardy and point out that master constructors and their skilled labor force traveled widely on the continent.

[4] Simon Hart, *Geschrift en Getal* (Dordrecht, Netherlands: Hollandse Studien 9, Historische Vereniging Holland,1976), chapter "Cornelis Cornelisz. van Uitgeest en de oudste industriewindmolens in de Zaanstreek," 93–108.

[5] Hundreds of patents for wind-driven mills of every sort were filed in The United Republic (The Netherlands) from the end of the sixteenth century to and through the eighteenth century. Many were to pump water from the land or to mill grain, but others were to cut boards and planks, including creating grooves and other features. G. Doorman, *Octrooien voor uitvindingen in de Nederlanden uit de 16e–18e eeuw* (Gravenhage, Netherlands: Martinus Nijhoff, 1940).

[6] Timber shipped out from New Netherland from at least 1626 when Pieter Schagen, in a letter to the States General, listed the furs sent back to *Patria*, adding that the ship also held "considerable oak timber and hickory." November 5, 1626, Algemeen Rijksarchief, Den Haag, as cited in Jaap Jacobs, *Een zegenrijk gewest: Nieuw–Nederland in de zeventiende eeuw* (Netherlands:Prometheus-Bert Bakker,1999), 182 (there is now an English version of this book, and see it as indicated for the full bibliography). Francois Fesaert was hired by the West India Company to build saw mills in 1625, which he had accomplished by 1631, constructing at least one horse driven and two wind driven saw mills. Document C, Instructions to Verhulst, January, 1625, in *Documents Relating to New Netherland: 1624–1626*, translated and edited by A. J. F. Van Laer (San Marino, California: The Henry E. Huntington Library and Art Gallery, 1924), 64, and Nicolaes Van Wassenaer, *Historisch verhael aldar gedenck–weerdigste geschedenissen die van de beginner des jaeres 1621...tot 1632 voorgefallen sijn*, a contemporary Amsterdam pamphlet.

[7] In 1632 Adam Willemszen from Leiden returned to Amsterdam as a boatswain on a vessel built in the Dutch colony that he referred to as the *Nieuw Nederlandt*. GAA NA 306/123v., notary Fred. van Banchem, 24 February 1632 and GAA NA 946/43, 2e pak, notary Gerlof Jelles Selden, March 20, 1632. The English were amazed, Captain James Mason writing to Secretary Coke that the Dutch in New Netherland "have built shipps there, whereof one was sent into Holland of 600 tunnes or thereabouts." April 2, 1632, letter to Mr. Secretary Coke, London Trade Papers, State Paper Office, X. 1., reproduced in *Documents Relative to the Colonial History of New York; Procured in Holland, England, and France*, by agent John Romeyn Brodhead (Albany: Weed, Parsons and Company, 1853), Vol. 3, 16–17.

[8] Charles Henry Pope, *The Pioneers of Maine and New Hampshire, 1623 to 1660 A Descriptive List, Drawn from Records of the Colonies, Towns, Churches, Courts and Other Contemporary Sources* (Boston, Massachusetts: Charles H. Pope, publisher, 1908). An annotated alphabetical list.

[9] By 1675 saw mills had been introduced into England, the Privy Council concerned for them due to the uprisings against the cloth weaving "engine looms." The Council was hopeful that "...Ingenuity will find encouragement in England," referring to engines of all sorts. As quoted and discussed by Michael Berlin in, "'Broken all in pieces': artisans and the regulation of workmanship in early modern London," Geoffrey Crossick, ed., *The Artisan and the European Town,* Historical Urban Studies Series (Aldershot, England and Brookfield, Vermont: SCOLAR Press, 1997), 86 and 89n.

[10] Samuel Pepys repeatedly obtained naval timber from Norway for prices in the thousands of pounds. Following the Great Fire of London he and William Penn decided that they would "look into Scotland about timber" because "it will be a good commodity this time of building the City." Some ship timber was also obtained from the King's land holdings or other private sources, but otherwise the bulk of it came from Norway first and then Scotland. See Samuel Pepys Diary, October 12, 1664; October 18, 1664; November 2, 1664; January 12, 1664/65; December 16, 1665 (referencing a contract from April 15, 1663); and September 26, 1666. William Penn was the father of William Penn of Pennsylvania. By 1731 almost 85 percent of all Norwegian milled timber exports went to England. Simon Hart, *Geschrift en Getal*, 86, note 46.

[11] Statistical analysis derived from this author's database.

[12] In the 1640s the Englishmen Henry Sately and Adam Mot bought 125 boards in New Netherland for 50 guilders. The West India Company Director Pieter Stuyvesant sent a shipload of timber to Boston to sell for the benefit of the company, and wood was being exported to Virginia as well. The outward movement of timber as a material for export was a source of concern. The English at Gravesend on western Long Island in the New Netherland colony complained in 1650 that "some men falled a greate many timber trees to make use of in saweing them, and selling them to other places, when the inhabitants might want necessary timber for building." New Netherland *Council Minutes 1638*; 221, 346, 379, and *Correspondence* 11:24a, after March 1650 but before 1651, undated. See bibliography, Jaap Jacobs.

[13] Jacob Swart, a New Netherland carpenter from Helligesont in Sweden, sued for wages owed him when he had been employed to build a saw mill in Virginia. In the New Amsterdam court on September 16, 1652 he demanded that the defendant pay him the 48 beavers he was owed, an amount equal to 384 guilders or more than 38 English pounds. E. B. O'Callaghan, trans., *Calendar of Historical Manuscripts in the Office of the Secretary of State, Albany, N. Y., Volume I, Dutch Manuscripts, 1630–1664* (Albany, New York: Weed, Parsons and Company, 1865), 127, September 16, 1652.

[14] Van Laer, *Reg. Prov. Sec. 1638–1642*, 225–226, # 161, September 13, 1639. A standard 8-foot (2.4-m) log of average diameter usually yielded 20 boards. See Jaap Jacobs bibliography.

[15] By the 1650s the timber economy seems to have used a conversion rate of roughly one pound for every 10 guilders at a time when other trading vacillated around a one-to-eight ratio. The one-to-ten ratio was also reflected in the cost of timber houses which ran from 200 guilders to 500 guilders (20 to 50 pounds) in the earliest years, rising to costs from 600 guilders to 1,500 guilders in the 1670s (60 to 150 pounds). This very generous exchange rate for the pound may be due to the much higher availability of timber in the colonies compared to the situation in England.

[16] There had been a saw mill in Scotland by the end of the sixteenth century and they became increasingly common, some of them wind driven by the 1630s, one contract arranging for the construction of "an saw water miln or a saw windmiln" in 1638 at Deeside, Aberdeenshire. By 1675 Scotland was producing timber through mechanization at the rate of many thousands of boards a year. John Shaw, *Water Power in Scotland, 1550–1870* (Edinburgh: John Donald Publishers Ltd., 1984), 95–96.

[17] That is, there were more Scots in the Low Countries as a percentage of their population in Scotland.

[18] A member of the Beck family was married to a member of the Delmarva Peninsula Hack family.

[19] Minutes of the Court of Rensselaerswijck, untranslated, missed by Van Laer, New York State Library. Books: 40a, folder 7, folio verso 95, November 16, 1651. Evert Pels wants Hans Jansen van Rotterdam back to work operating the saw mill for him since the summer is over and the stream no longer lacks water.

[20] The Domesday Book of 1086 lists 5,624 grain watermills south of the Severn in England, one for every 50 households, thus these sawmill and board numbers are realistic. Joel Mokyr, *Twenty-Five Centuries of Technological Change: An Historical Survey* (London: Harwood Academic Publishers, 1990), 20.

[21] For house construction and hay barracks, see *New World Dutch Studies: Dutch Arts and Culture in Colonial America, 1609–1776,* edited by Roderick H. Blackburn (Albany, New York: Albany Institute of History and Art, 1987), and *New Netherland Studies,* Bulletin KNOB, Tijdschrift van de Koninklijke Nederlandse Oudheidkundige Bond, Jaargang 84, No. 2/3, June 1985. There are multiple articles in each. For the tobacco shed, see Van Laer, Register of the Provincial Secretary, Vol. III, item 110, December 5, 1641.

[22] This was an on-going problem that takes up many pages in the New Amsterdam records beginning with the city's official status in 1654. See Fernow, Register of New Amsterdam, as cited in Jaap Jacobs.

[23] The sawmill was burned down just after the expedition against the Swedes, the event illustrated in a contemporary painting now housed at the New York Historical Society in New York City.

[24] From Purple, Edwin R., *Ancient Families of New York*, p. 53, document dated 1657.

WAMPUM ON THE FRINGE: EXPLAINING THE ABSENCE OF A POST-1600 NATIVE PRODUCED COMMODITY IN DELAWARE

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ABSTRACT

Production of wampum, the marine shell beads of a relatively standardized size and shape, began in the 1590s. By 1610, this native-made commodity had become a significant part of the Dutch mercantile network throughout the Northeast. The principle production area was around Long Island Sound. The economics of the pelt trade, however, created the greatest demand for wampum in the region of the three great confederacies: Susquehannock, Five Nations Iroquois, and Huron. This region became the Core Area of diplomatic wampum use.Peoples with territories adjacent to the Core used wampum in lower volumes and primarily for ornamentation. The lands of these peoples formed a Periphery in which wampum was used rarely for political purposes, and then only in dealing with peoples of the Core. The Lenape and Lenopi were among the cultures of the Periphery, where the principle use for wampum was in ornament. Among the Sekonese, living south of Bombay Hook in Delaware, the use of wampum has yet to be found in the documentary or archaeological records. The background and context for this cultural boundary are reviewed in this paper.

INTRODUCTION

Beauchamp's[1] brilliant late-nineteenth century observation that there is "no instance of any of the small council wampum before the beginning of the seventeenth century" was confirmed by several studies a century later.[2] At the time of Beauchamp's writing, the literature relating to wampum focused on its use and limited aspects of its history among the peoples of the Iroquoian Confederacy.[3] Only recently has the region controlled by the Five Nations Iroquois been recognized as the epicenter of what some termed a "Core Area"[4] (Figure 1) in which wampum became central to diplomatic interactions. This shell bead commodity, with a standardized size and shape, entered the picture during the period circa 1590–1604 as the various mechanisms of the pelt trade had become well established.

The evolution of wampum, a relatively standardized white marine shell bead form, was a technological development correlated through the trade with Dutch merchants. As this trade became more extensive and complex, a basic European product in much demand was the awl (*mux*), which when used like a drill allowed very small beads to be pierced by hand.

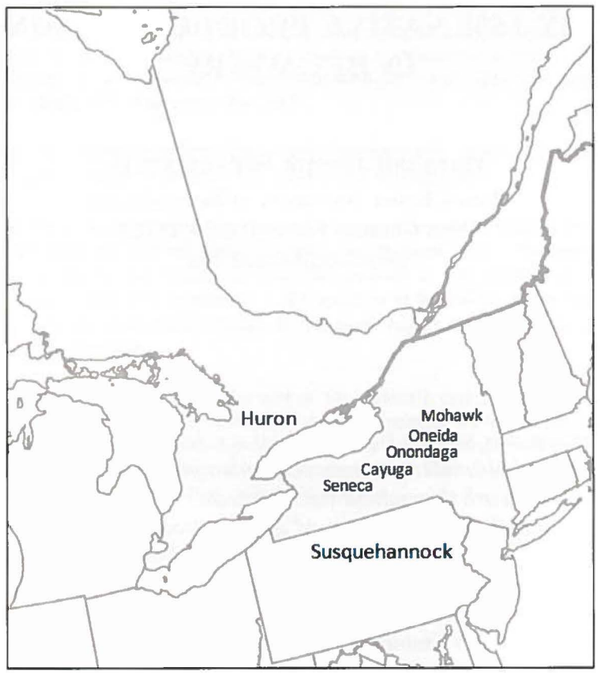

Figure 1: Map of the Core Area of Wampum Diplomacy in the Northeast.[5]

This native drilling process, called double drilling, enabled individuals whom the author believes to have been only males, to produce a roughly standard-sized item. Although wampum could, in theory, be drilled using a tiny reed and fine grit, the beads could not be pierced using stone "drills." The term "wampum" refers only to the standardized product, roughly 0.1 inches (3 mm) in diameter and 0.3 or 0.35 inches (8 or 9 mm) in length. Clarification in use of the term is often found in the literature, with "true" or "council" or "belt" wampum being distinguished from other types of white shell beads that differ in size and shape.

The importance of wampum as a commodity is evident from the monetization of the beads by law in most of the colonies.[6] Wampum served as convenient small change within most of the colonies. The value of this product, and the need for increasing amounts of it by both natives and colonists, for complementary reasons, led colonists to "industrialize" production. By the 1700s drilling and shaping using machines appears to have developed among the colonists in Albany and possibly in northern New Jersey. This generated a drilled hole of even diameter that passed completely through the bead. Since many natives continued to produce wampum by hand, a small percentage of double drilled examples continued to be made throughout the main period of wampum use, circa 1620–1820. Wampum's use as small change was only one of the two principal roles played by this commodity.[7]

Diplomatic uses for wampum, it's other major function, was first recorded very early in the 1600s. Diplomatic uses are evident from statements in the early documents indicating the formal presentation of strings of these beads.[8] By the 1620s there is some evidence for the weaving of "bands" of wampum for both ornamental as well as diplomatic uses (Figure 2). The numbers of diplomatic belts and strings recorded in the many treaty records continued to increase throughout the 1600s. By the 1740s the numbers of belts and strings of wampum presented at treaties (meetings between two or more cultural groups) had become so large that a simple listing is recognized as a daunting task.[9] Despite the vast numbers of bands and strings used in diplomacy prior to 1800, Beauchamp suggested that the use of wampum for religious purposes "seems of a yet later date" (after 1800).[10] This extraordinarily astute observation now can be more explicitly stated. Only secular uses for wampum, in economic matters and in political diplomacy, can be documented prior to 1800.[11]

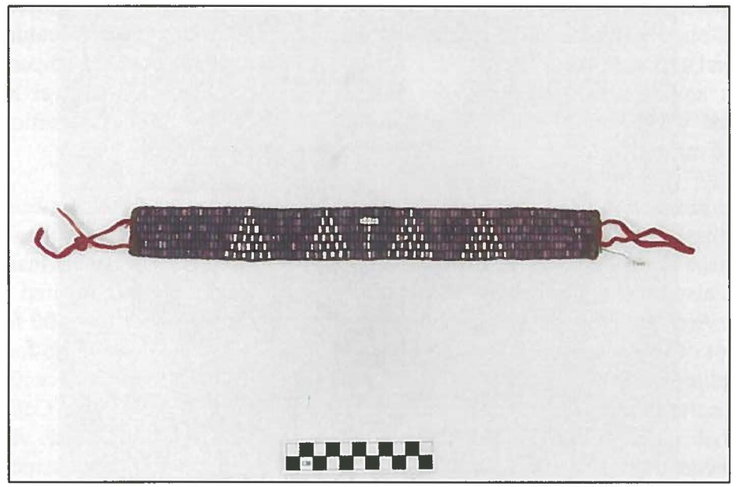

Figure 2: Ornamental Penobscot Band.[12]

Those studies indicating that "true" wampum came into use in the Northeast in the decade 1590 to 1600 also seems to correlate well with the dates for the formation of the League of the Iroquois, as determined by Kuhn and Sempowski.[13] Their study is based on the use of the calumet and various mechanisms of exchange. Strings of wampum may have been part of this transformation in diplomatic processes. It is postulated here that strings were used as early as 1600, with woven bands appearing between circa 1615 and 1620.[14]

The Core Area

Throughout the region formed by the "territories" of the three great confederacies (Wendat/Huron, Five Nations Iroquois, and Susquehannock; see Figure 1) the specific type of shell beads identified as wampum evolved beyond the traditional functions known for marine shell beads. The earlier uses of marine shell beads within the Core Area had included examples that were invariably larger in size than those beads specifically identified as

"wampum." Smaller examples of shell beads were uniformly discoidal in shape rather than tubular. We may infer that the earlier uses of marine shell beads included ornamentation, but some contexts suggest possible trade and/or ritual functions. After wampum beads emerged as a specific type, or as a commodity, they soon became central to diplomatic protocols. Wampum diplomacy in the Core Area, as a mode of political interaction, may have begun as early as 1610 to 1615. By the 1650s wampum "prestation," or a formal presentation made in conjunction with a specific request, had largely superseded calumet ceremonialism at inter-cultural meetings in the Core Area. While calumet rituals continued to be powerful aspects of diplomacy in the western Great Lakes region and beyond, within the Core Area of wampum use the smoking of the calumet at treaties soon became vestigial.

A number of cultural attributes specific to the Core Area during the Late Woodland Period explain the rise and concentration of extensive wampum diplomacy in that zone.[15] First, those Iroquoian peoples in the Northeast who had developed maize horticulture were resident in regions removed from the sea and two important coastal features: marine resources and a moderate climate. By 800 to 700 BP maize had become an important dietary supplement among some interior tribes. These people developed low-level horticultural systems that were very distinct from coastal foragers, who at best "gardened" small quantities of maize.[16]

Second, the production of significant food stocks such as maize and perhaps beans required protecting these resources against predation.[17] Thus the rise of palisaded villages was part of, or perhaps soon followed, the expansion of resource production and maize storage. Village life also involved population expansion.[18] All of these features prepared the cultures of the Core Area for processes involving confederation, which soon after 1500 followed the development of the pelt trade. Joining together enabled each confederation to form a secure network linking native pelt collectors and traders in the western regions with European buyers in eastern coastal areas, or at ports along rivers such as the Connecticut or Susquehannah. The relatively substantial long houses within palisaded villages also provided secure storage for peltry awaiting shipment to market.[19] These same conditions also provided safe storage for the large numbers of bands of diplomatic wampum received by each tribe.

Approximately 250 to 300 surviving bands of wampum are known today, most of which were diplomatic in origin (Figures 3 and 4). Some archaeologically recovered bands may have been ornamental bands or presented as mortuary offerings. This latter category is nowhere documented in the archival records but may be inferred from what is known about funerary gifts. When considering the use of wampum bands within the Core Area, three central questions must be asked: who made it, why was the "belt" made, and, if for diplomatic reasons, to whom was it given or presented? Strings of wampum beads, either as a single strand (which could be of variable length) or a cluster of two or more strings bound at one end (called "hands" or "branches") also were fashioned for diplomatic and other purposes. In diplomatic contexts strings served as "low-end" items in the process of formal wampum prestation.[20] Diplomatic wampum bands, commonly called "belts" in English and *colliers* in French, were the most commonly noted woven type used at councils, or what in the English literature are identified as "treaties."[21]

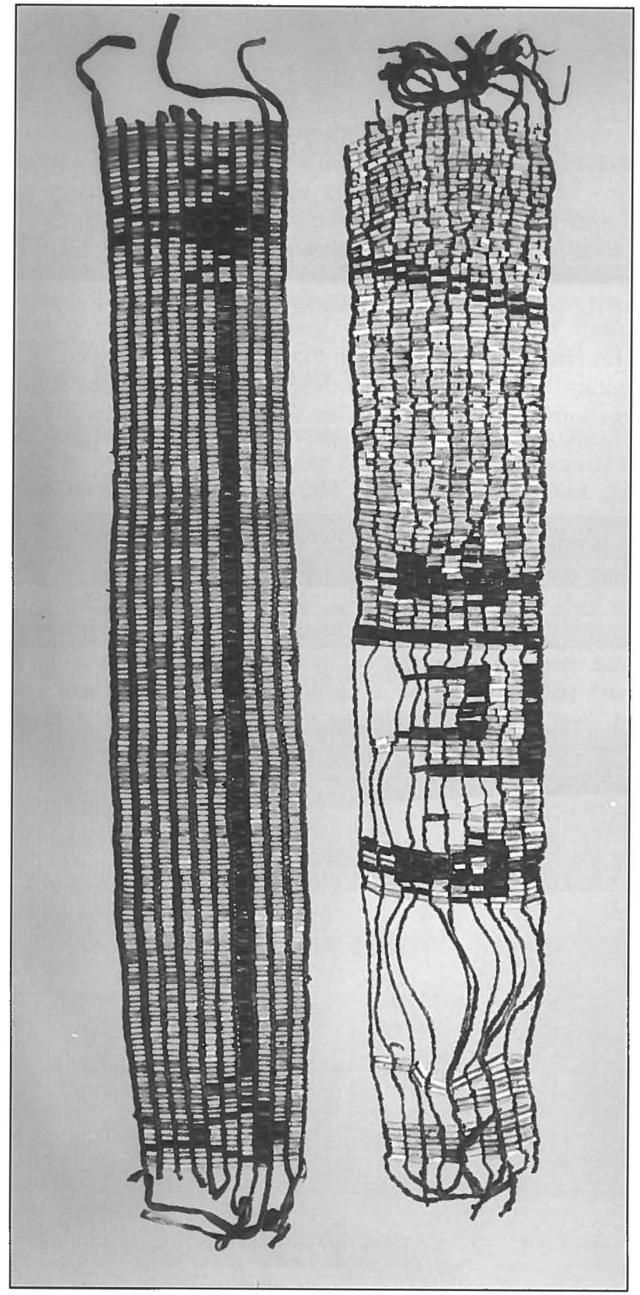

Figure 3: The so-called "First Penn Treaty Belt", which probably dates from after 1760, and the so-called "Governor Denny Belt."[22]

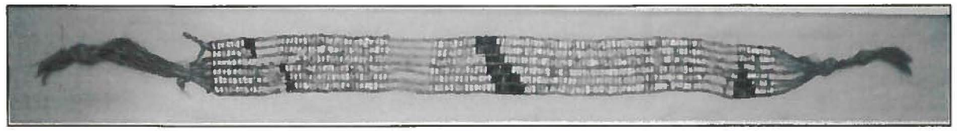

Figure 4: The Kingston, New York Diplomatic Wampum Band.[23]

Another type of wampum band, constructed in the same way as diplomatic belts but incorporating a distinct design element, was made and used only within the Catholic Church and its convert communities (Figure 5). These are uniformly identified by the presence of a Latin cross as a major, if not central, design element (Figure 6). "Ecclesiastical" bands of wampum were made for presentation only among groups operating within the Catholic Church system. Ecclesiastical bands include those that were presented by members of one religious "community" to members of another, or sent to religious officials or even the Pope.[24] They were sent as "calls" made to the faithful or as a show of faith. Ecclesiastical bands might be considered as a sub-category of "belts" within the general category of diplomatic belts.[25]

Figure 5: A Detail of an Ecclesiastical Band.[26]

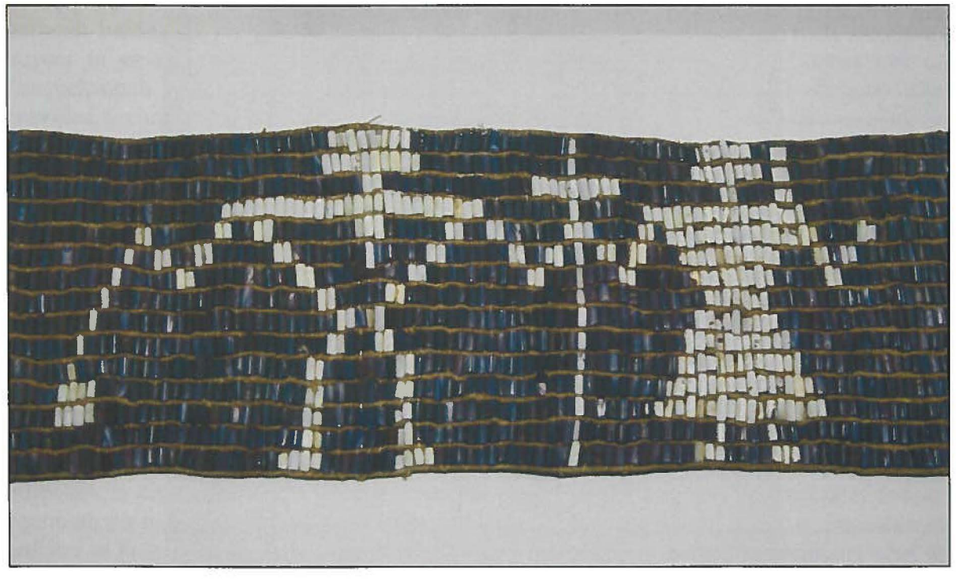

Figure 6: A Detail from the Center of the VATICAN 1831 Ecclesiastical wampum Band.[27]

Ornamental or decorative bands of wampum,[28] also described as "personal" wampum (see Figure 2), were made and used by people living in what we define as the "Periphery" of wampum use and beyond. We also assume that ornamental bands were made and used by individuals of the tribes living within the Core Area as well, but this has not been documented. Ornamental wampum items generally remained among their makers, although they may have been given as personal gifts to people outside the community. Many other questions remain regarding non-diplomatic uses for this shell bead commodity, among which are uses in religious rather than diplomatic rituals. While contemporary natives commonly claim past ritual uses for wampum in religious contexts, actual records documenting such uses remain extremely rare.[29] Among the few religious rituals that are known are several post-1799 examples associated with the White Dog Sacrifice.[30]

WAMPUM AND THE FIVE NATIONS: THE CORE AREA

The Haudenosaunee (People of the Long House, or Six Nations, as some of the Five Nations Iroquois now prefer to be called) occupied the center of the Core Area of wampum use. As documented by the records that span the 200 years of wampum use, they remained the principal native users of diplomatic wampum.[31] Of note is the fact that surprisingly few examples of wampum from any traditional category now survive, or today can be found within the traditional Five Nations region or in any part of the Core Area of wampum use.[32]

Most of the diplomatic belts that were presented to the Five Nations Iroquois, either collectively or to any combination of groups of these peoples, had been held at Onondaga.[33] James Folts notes that during the mid-eighteenth century the "Six Nations Council at Onondaga had custody of a 'whole pile' of wampum belts" that were held in the cabin temporarily occupied by the Moravian brethren.[34] The Moravian missionaries Charles Frederick and David Zeisberger had been residents at Onondaga from 1754 into 1755 in order to learn the language. Folts also points out that most of the diplomatic belts known from the documents now are lost, or had been recycled, and that there is considerable difficulty in simply tracking the numerous documents that record their use.[35] Folts's important comments on the recycling of wampum reflects the ways in which native users cannibalized strings and belts of wampum in order to produce different products for use in a variety of situations.

Each of the many villages of the Haudenosaunee may have held numbers of diplomatic belts, those pertaining to their own specific group.[36] Diplomatic wampum was distinct from any items of personal adornment that incorporated wampum beads, and from the many strings that were utilized in condolence rituals.[37] It is suspected that each communal collection of diplomatic wampum held at a specific village included no more than a dozen diplomatic belts. Within each village there also may have been fewer than 20 other wampum "pieces," including strings of wampum used as condolence gifts, wampum used as various types of ornamentation, and any possible ritual items used only in that specific village.[38] There are vast quantities of wampum noted in diplomatic records, especially in the eighteenth century,[39] but only sporadic ethnographic references to wampum and non-diplomatic uses among the Five Nations groups and the Tuscarora. These non-diplomatic reports rarely include examples of wampum artifacts, and such items were most likely to be

held locally. Specific pieces of wampum also may have been produced and used by the single culture from which they are reported.[40]

The Periphery

The native tribes immediately surrounding the Core Area, including Mahican, Sokoki, those collectively called "Munsee," Lenopi, Lenape, Sekonese and many others, used wampum primarily as ornament and currency.[41] On those few occasions when they went into the Core Area (Figure 7) to conduct business of a diplomatic nature, they conformed to the customs of the Core Area by carrying strings, and more rarely belts, of wampum for presentation. Thus the people in the Periphery understood the principles of wampum diplomacy, but only rarely used wampum to conduct negotiations or other business. This pattern is perhaps best seen among the Penobscot of Maine and their neighbors. These various Eastern Indians (today often collectively identified in some publications as Abenaki) conducted some wampum diplomacy when traveling west into the Core Area, but did not recognize that the colonial governments in Boston also understood wampum diplomacy.[42] We now know that significant use of wampum, for ornaments and other non-diplomatic functions, may have only extended as far north as Mi'kmaq territory and into present Canada. The presence of wampum among the Mi'kmaq, the farthest extend to the north along the Atlantic coast, may reflect a late-nineteenth century expansion of domestic uses.

Having delineated the eastern extent of the Periphery of wampum use, attention in this paper has been turned toward the delineation of the southernmost border for the uses of wampum. The territory that is the modern state of Delaware south of Bombay Hook was home to the Sekonese (Ciconicin; see Figure 7). Sekonese territory extended from the Indian River area up along Delaware Bay to the lower margins of Bombay Hook.[43] North of Bombay Hook, and up through southeastern Pennsylvania, lay the foraging area of several bands of the Lenape.[44] The Assateague were residents of the region south of Indian River. Despite modern popular fiction, the Nanticoke range never extended into present Delaware. We have some limited evidence demonstrating that the Lenape conformed to a true "Peripheral" status in the use of wampum diplomacy.[45] Their diplomatic uses were rare and quite specifically geared to interaction with the Five Nations Iroquois.[46] The rare formal expeditions of the Lenape that took them to formal treaties with the Five Nations involved both belts and strings of wampum. However, even their dealings with the Pennsylvania government, which also occupied a part of the "periphery," were not marked by wampum diplomacy. Aside from the Lenape zone at the northern end of modern Delaware, the remainder of the present state lay beyond the fringe of wampum diplomacy.

While the possible future discovery of wampum beads at any of Delaware's Native American sites dating from after 1600 would not be unexpected, their presence should be rare at best. It is predicted that any finds would reflect ornamental uses for this commodity. The possibility that native peoples anywhere in Delaware were fashioning wampum beads as a commercial commodity is not indicated in the known historical documents.[47] While the possibility certainly exists, such records have yet to be located. The author suspects that diaries and business records (account books) from the late 1700s and early 1800s might contain relevant data. That colonial people in the Dutch and Swedish periods, or in Penn's

three lower counties, occasionally used wampum in commercial dealings is quite probable. Records of business uses, however, remain to be identified. Despite a thorough review of documents relating to native tribes in Delaware, not a single mention of wampum production or use has been found anywhere south of Lenape territory.[48] As we would expect in a situation at the fringe of the Periphery of wampum use, the evidence remains to be found in the impressive archival records.

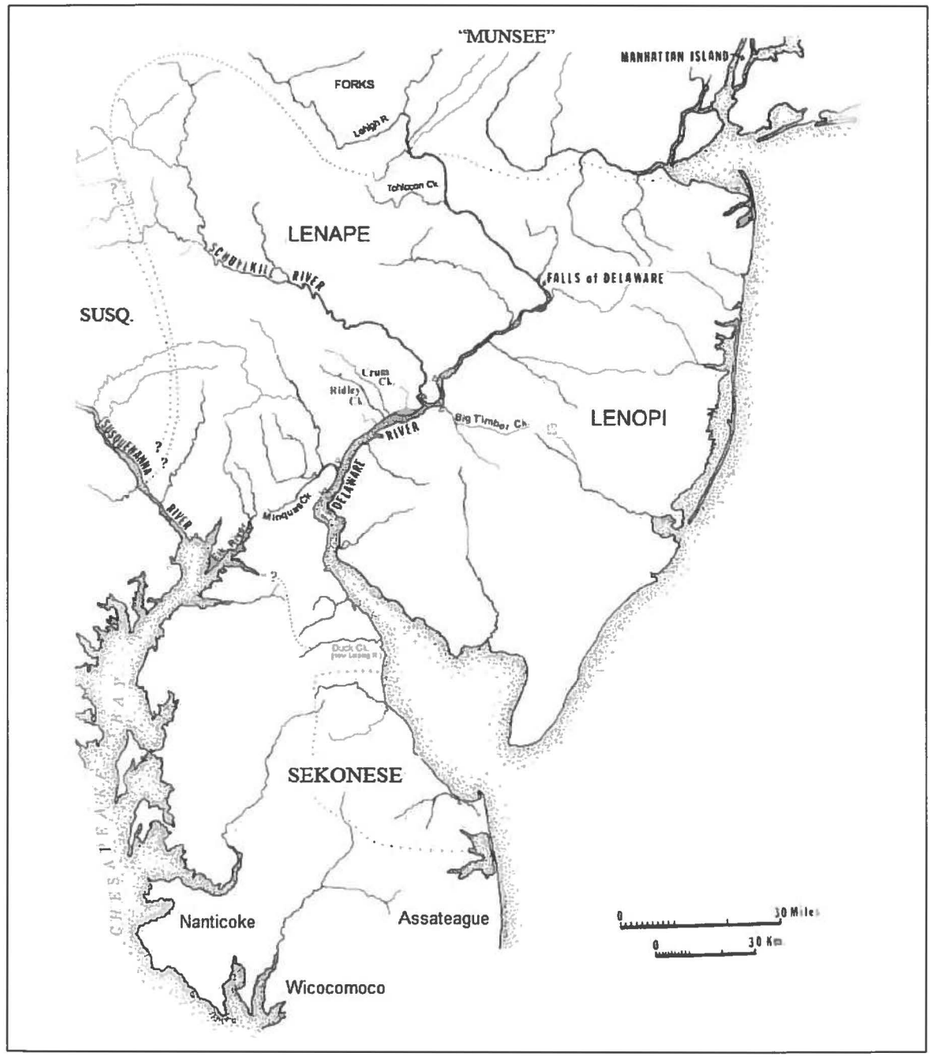

Figure 7: Map of the Delaware Valley Depicting the Lenape and Lenopi in the Periphery of Diplomatic Wampum Use, and the "Fringe" Area of the Sekonese and other Delmarva Tribes in Which Wampum Rarely Appears in any Context. (By the author)

Now we may turn our attention of the delineation of the Periphery as that zone existed to the west of the Core Area of wampum use. That region provides a more difficult challenge. The area of and beyond the Periphery during the earliest contact period became occupied by some of the peoples of the Core Area as they shifted their residences to the west. Only a careful review of the archaeological and historical evidence, particularly in European archives, may enable us to decode the complex culture history of the western Periphery. This review of the records from Delaware allow us to recognize what appears to be the southern limits for wampum use in the area now known as Bombay Hook.

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[1] Beauchamp, William M. Onondaga Customs [in New York]. *Journal of American Folk-Lore* Vol. 1, No. 3 (1888), 195.

[2] Becker, Marshall. A Wampum Belt Chronology: Origins to Modern Times. *Northeastern Anthropology* Vol. 63 (2002), 49–70; Becker, Marshall. Small Wampum Bands Used by Native Americans in the Northeast: Functions and Recycling. *Material Culture Vol.* 40, No. 1 (2008), 1–17; Ceci, Lynn. Shell Bead Evidence from Archaeological Sites in the Seneca Region of New York State. Paper presented at the Annual Conference on Iroquois Research Rensselaerville, New York (October 11–13, 1985); Ceci, Lynn. Tracing Wampum's Origins: Shell Bead Evidence from Archaeological Sites in Western and Coastal New York. Proceedings of the 1986 Shell Bead Conference: Selected Papers, edited by Charles F. Hayes III (Rochester, New York: Research Records No. 20, Research Division, Rochester Museum and Science Center, 1988), 63–80.

[3] Beauchamp, William M. Wampum and Shell Articles Used by the New York Indians. *Bulletin of the New York State Museum* Vol. 41, No. 8 (1901), 321–471.

[4] Becker, Marshall. Wampum Use in Southern New England: The Paradox of Bead Production without the Use of Political Belts. *Nantucket and Other Native Places: The Legacy of Elizabeth Alden Little*, edited by Elizabeth S. Chilton and Mary Lynne Rainey (Albany: SUNY Press with the Massachusetts Archaeological Society, 2010), 137–158; Becker, Small Wampum Bands Used by Native Americans in the Northeast: Functions and Recycling.

[5] Area consists of the three confederacies that had emerged before 1600 and which became deeply involved in various uses for wampum (By the author).

[6] Becker, Marshall. Wampum: The Development of an Early American Currency. *Bulletin of the Archaeological Society of New Jersey Vol.* 36, (1980), 1–11.

[7] Lainey, Jonathan. *La "Monnaie des Sauvages": Les colliers de wampum d'hier à aujourd'hui* (Quebec: Septentrion, 2004).

[8] Becker, Marshall. Wampum Chronology: An Update on the Origins and Varied Uses of a Native American Commodity. *Bulletin of the Archaeological Society of Connecticut*, edited by L. Lavin (In press).

[9] New York [State] Assembly ["the Whipple Report"]. Report of [the] Special Committee Appointed by the Assembly of 1888 to Investigate the Indian Problem of the State. Assembly Document 51 (Albany. Copy on file, Becker Archives, West Chester University of Pennsylvania, 1889); Shattuck, George C. *The Oneida Land Claims: A Legal History* (Syracuse: Syracuse University Press, 1991).

[10] Beauchamp. Onondaga Customs, 195.

[11] Becker, Marshall. Wampum Bags and Containers from the Native Northeast. *Material Culture* (In press).

[12] This ornamental band, probably penobscot in origin, is now preserved at the National Museum of the American Indian (NMAI 012800, by permission).

[13] Kuhn, Robert, and Martha L. Sempowski. A New Approach to Dating the League of the Iroquois. *American Antiquity* Vol. 66, No. 2 (2001), 301–314.

[14] Becker, Marshall. The Vatican 1831 Wampum Belt: Cultural Origins of An Important American Indian Artifact and its Meaning as the Last "Ecclesiastical Convert" Belt. *Bulletin of the Archaeological Society of New Jersey* Vol. 61 (2006), 79–134.

[15] Becker, Marshall. "Late Woodland" (CA. 1000–1740 CE) Foraging Patterns of the Lenape and Their Neighbors in the Delaware Valley. *Pennsylvania Archaeologist* Vol. 80, No. 1 (2010), 17–31.

[16] Becker, Marshall. Cash Cropping by Lenape Foragers: Preliminary Notes on Native Maize Sales to Swedish Colonists and Cultural Stability During the Early Colonial Period. *Bulletin of the Archaeological Society of New Jersey* Vol. 54 (1999), 45–68.

[17] Snow, Dean R. Iroquois-Huron Warfare. *North American Indigenous Warfare and Ritual Violence*, edited by Richard J. Chacon and Rubén G. Mendoza (Tucson: University of Arizona Press, 2007), 149–159.

[18] Snow, Dean R. Michrochronology and Demographic Evidence Relating to the Size of Pre-Columbian North American Indian Populations. *Science* 268 (1995), 1601–1604.

[19] See also Becker, Marshall. Rockshelter Use During the "Late Woodland" Period in the Northeast: Increased Use as an Aspect of the Pelt Trade. *North American Archaeologist* Vol. 32, No. 1 (2011), 81–93.

[20] Becker, Small Wampum Bands Used by Native American in the Northeast: Functions and Recycling.

[21] Becker, Marshall J., and Jonathan Lainey. Wampum Belts With Initials and/or Dates. *American Indian Culture and Research Journal* Vol. 28, No. 2 (2004), 25–45.

[22] The so-called "First Penn Treaty Belt" (Heye 3/1904), which probably dates From after 1760, and the so-called "Governor Denny Belt" (Heye 3/1899), from a Print courtesy of The University Museum of Archaeology and Anthropology of The University of Pennsylvania, Philadelphia (University Museum Neg. No. G8 12963, now converted to Neg. No. 54–143537). These two belts and the Heye 3/1904 belt were turned over to the "Hadenosainee Standing Committee" (see Fenton. Endnotes) from whom permission to publish these University Museum photographs was secured by the author. The locations of these belts was unknown by 2006 and remains unknown. Large belts with complex design elements such as shown here tend to be among the examples of wampum bands most likely to have survived after 1800.

[23] This six-row example with approximately 1,000 beads, preserved in the city records, is a medium–small example of a diplomatic belt. Three diagonal "slashes," created in a variety of ways, are common design elements on belts of this size.

[24] Becker, Marshall. The Vatican Wampum Belt: An 1831 Example of a "Ecclesiastical-Convert" Belt and a Typology and Chronology of Wampum Belt Use. *Bollettino—Monumenti, Musei e Gallerie Pontificie* Vol. XXI (2001), 363–411; Becker, The Vatican 1831 Wampum Belt: Cultural Origins of An Important American Indian Artifact and its Meaning as the Last "Ecclesiastical Convert" Belt.

[25] Sanfaçon, André. W*ampums chrétiens. Offrandes de colliers de porcelaine par les missions et reductions jésuites de la Nouvelle-France* (Manuscript on file, Becker Archives. West Chester University, West Chester, Pennsylvania, In press).

[26] This band was sent by the Huron to the home community of the missionaries who worked amongst them in the middle 1600s (Photograph by the author).

[27] The VATICAN 1831 Ecclesiastical wampum band was sent by the priests and their native followers from the Lake of the Two Mountains to Pope Gregory XVI (Becker. The Vatican Wampum Belt: An 1831 Example of a "Ecclesiastical-Convert" Belt and a Typology and Chronology of Wampum Belt Use). The figures of a priest and a native grasping a Latin cross are part of the religious iconography that emerged in the 1700s. Usually, but not always, the presence of a Latin cross is sufficient to identify a band as falling in the "Ecclesiastical" category (Photograph by B. Hlebowicz).

[28] McBride, Kevin A. Ancient and Crazie": Pequot Lifeways during the Historic Period. In *Algonkians of New England: Past and Present*, edited by Peter Barnes (Boston: Boston University Press, 1993), 63–75.

[29] Fenton, William N. *The Great Law and the Longhouse: A Political History of the Iroquois Confederacy.* (Norman: University of Oklahoma Press, 1998).

[30] Becker, Marshall J., and Jonathan Lainey. Wampum and the White Dog Ceremony: Preliminary Notes on a Ritual Use for this Specific Type of Shell Beads. *Newsletter of the Archaeological Society of New Jersey* Vol. 219 (January 2008), 3–6; see also Becker, Marshall. Unique Huron Ornamental Bands: Wampum Cuffs. *Material Culture Review* Vol. 66 (2007), 59–67.

[31] Becker, A Wampum Belt Chronology: Origins to Modern Times; Becker, The Vatican 1831 Wampum Belt: Cultural Origins of An Important American Indian Artifact and its Meaning as the Last "Ecclesiastical Convert" Belt; Ceci, Lynn. The Value of Wampum Among the New York Iroquois: A Case Study in Artifact Analysis. *Journal of Anthropological Research* Vol. 38, No. 1 (1982), 97–107.

[32] Becker, Unique Huron Ornamental Bands: Wampum Cuffs; Becker, Marshall. Wampum Held by The Oneida Indian Nation, Inc. of New York: Research Relating to Wampum Cuffs and Belts. *The Bulletin.* Journal of the New York State Archaeological Association Vol. 123 (2007), 1–18.

[33] See, for example, Becker, Wampum Bags and Containers from the Native Northeast.

[34] Folts, James D. Before the Dispersal: Records of New York's Official Relations with the Oneidas and Other Indian Nations. The Oneida Indian Journey: from New York to Wisconsin, edited by Laurence M. Hauptman and L. Gordon McLester III (Madison: University of Wisconsin Press, 1999), 152. From, Beauchamp, William M. Moravian Journals Relating to Central New York 1745–1766 (Syracuse: Dehler Press [Reprinted 1976 by AMS Press, New York]), 215. See also Becker, Wampum Held by The Oneida Indian Nation, Inc. of New York: Research Relating to Wampum Cuffs and Belts; and Becker, Wampum Bags and Containers from the Native Northeast.

[35] Folts, 153; See also Becker, Small Wampum Bands Used by Native Americans in the Northeast: Functions and Recycling.

[36] Becker, Wampum Bags and Containers from the Native Northeast.

[37] Becker, Small Wampum Bands Used by Native Americans in the Northeast: Functions and Recycling.

[38] An interesting question relating to any village that held the "tribal" wampum has yet to be addressed. As has been pointed out by many scholars, Seneca and other horticultural peoples in the Core Area commonly occupied two distinct villages at any one time. A possible moiety relationship may have existed between these pairs. If this was the case, the author infers that the village of the external affairs moiety was the location where diplomatic wampum would have been held. See Becker, Wampum Held by The Oneida Indian Nation, Inc. of New York: Research Relating to Wampum Cuffs and Belts; Becker, Wampum Bags and Containers from the Native Northeast; Snow, Michrochronology and Demographic Evidence Relating to the Size of Pre-Columbian North American Indian Populations; and, Becker, Marshall. Moieties in ancient Mesoamerica: Inferences on Teotihuacan social structure. Parts I and II. *American Indian Quarterly* 2 (1975), 217–236, 315–330.

[39] Hauptman, Laurence M. The Oneida Nation: A Composite Portrait, 1784–1816. *The Oneida Indian Journey: from New York to Wisconsin*, edited by Laurence M. Hauptman and L. Gordon McLester III (Madison: University of Wisconsin Press, 1999), 19–37.

[40] Also within the Core Area were the Huron and Susquehannock confederacies. While these political entities are not discussed here, one of the confederated tribes of the Susquehannock, perhaps that known as the White Minquas, appears to have derived from the many villages in southwestern Pennsylvania whose people are archaeologically known as "Monongahela". These Late Woodland people are well documented until about 1630, when their villages and house types vanish from the record. Becker suggests that the Monongahela affiliated with the Susquehannock in the 1630s, and after the Susquehannock Confederacy was dispersed by the Five Nations in 1674–1675, the former Monongahela continued to retain a distinct cultural identity and emerged as the "Shawnee."

Of note is that white shell beads are known from Monongahela sites, including "a necklace of over 4,000 beads" in Burial 4 at the Phillips Site but not a single example of wampum is known to have reached that region before 1630. Thus the region of Pennsylvania occupied by the peoples we call Monongahela remained on the Periphery of wampum use before 1630. See Means, Bernard. Resurrecting a Forgotten Monongahela Tradition Village: The Phillips (36FA22) Site. *Journal of Middle Atlantic Archaeology* Vol. 24 (2008), 1–12; Gage, Abigail. Six Inches Under: Mortuary Behavior at the Phillips Site, A Monongahela Village. *Journal of Middle Atlantic Archaeology* Vol. 24 (2008), 24.

[41] Becker, Marshall. Lenopi, Or, What's in a Name? Interpreting the Evidence for Cultural Boundaries in the Lower Delaware Valley. *Bulletin of the Archaeological Society of New Jersey* Vol. 63 (2008), 11–32.

[42] Becker, Marshall. Penobscot Wampum Belt Use during the 1722–1727 Conflict in Maine. In *Papers of the Thirty–Sixth Algonquian Conference*, edited by H. C. Wolfart (Winnipeg: University of Manitoba, 2005), 23–51; See also, Becker, Wampum Use in Southern New England: The Paradox of Bead Production without the Use of Political Belts.

[43] Becker, Marshall. The Archaeology of Ethnicity: Can Historical Archaeology Extract the Ciconicin from the Melting Pot of Delaware? *SAA Archaeological Record* (The Archaeology of Ethnicity II) Vol. 4, No. 5 (2004), 26–28.

[44] Becker, Marshall. Anadromous Fish and the Lenape. *Pennsylvania Archaeologist* Vol. 76, No. 2 (2006), 28–40.

[45] See Kent, Donald. *Pennsylvania and Delaware Treaties, 1629–1737. Early American Indian Documents: Treaties and Laws, 1607–1789*. Alden T. Vaughan, general editor (Washington, D.C.: University Publications of America, 1979).

[46] Becker, Marshall. Sassoonan: A Lenape Elder and the Role of Wampum in that Society. (Manuscript on File, West Chester University of Pennsylvania, nd).

[47] Becker, Wampum: The Development of an Early American Currency.

[48] Becker, Marshall. The Sekonese: The Northernmost Chiefdom on the Atlantic Coast and the Only Native Tribe entirely within the borders of modern Delaware. (Manuscript on File, West Chester University of Pennsylvania, nd).

COLONIAL TIMBER FRAMING IN SOUTHWESTERN NEW JERSEY: THE CULTURAL IMPLICATIONS OF STRUCTURAL LOGIC

Janet L. Sheridan

The elite, pattern-ended brick houses of Fenwick's Colony are well-known and studied, but not so the timber dwellings. The majority of houses here in the eighteenth century, as evidenced by the three surviving 1798 Direct Tax Lists, were wood, in frame or log. Most early frame houses have disappeared from the landscape, leaving only the most durable and best-cared-for houses to stand as evidence. Scholarly focus on Salem County's rich collection of colonial brick houses has overshadowed the presence and importance of wood houses. Using the approach of building archaeology on surviving wood houses, this paper presents an interrogation of the southwestern New Jersey cultural landscape (today's Salem and Cumberland Counties), to reveal its timber framing traditions, particularly within the concept of structural logic, and the cultural implications of those findings.

Cultural geographers agree that when people migrate, they bring their house types with them. Geographers Fred Kniffen and Henry Glassie in looking at common houses found that every major form of wood house construction found in the American westward expansion had recognizable European antecedents in timber frame, half-timbering, vertical planking, or horizontal log building.[1] Ancient timber framing traditions were transplanted to the New World, carried in the minds of the European colonists like a "blueprint," in the words of James Deetz, for recreating the culture of their homeland.[2] Each house, therefore, is an artifact of that transmission; each house embodies a blueprint of shared cultural knowledge. The particular details of structural logic—that is, how the frame was arranged to support loads, and the crafting and function of members and joints—have provided clues to each frame's cultural and individual origin as well as environmental and economic modifying forces.[3]

By the 1980s, American architectural scholars had identified forms of timber framing associated with English, Dutch and German settlements. In Massachusetts, Abbott Lowell Cummings found precedent for the heavy, seventeenth-century, principle-post box frames in southeastern England, the major immigrant source area. The English box frame structural logic is based on a corner-posted box featuring heavy beams spanning rooms that supported relatively shallow joists to carry the floorboards. Cummings found that, while innovation began at once in a drift toward Americanization and standardization, Massachusetts carpenters retained a distinct orthodox "native regionalism" throughout the seventeenth century.[4]

Workers in the Chesapeake Bay region described the "Virginia house," an adaptive, simplified, one-room deep, English box frame.[5] Using an archaeological approach, researchers have found underground evidence of an ancient English building tradition in

which heavy posts were embedded in the earth. Hand-split clapboard wall and roof coverings, down-braces, and a roof structure consisting of lightweight rafters footing on a projecting "false plate" were other distinguishing features. Despite the earlier date of colonization in the South than in New England, the paucity of seventeenth century survivors was rooted in persistent conditions of poverty, delaying until the eighteenth century the appearance of durable architecture.[6]

In the Hudson Valley, the structural logic of Dutch-American houses found in New York and northern New Jersey was typified by the "anchor-bent system," H-shaped vertical frames arranged in a regular series.[7] The floor joists were carried by posts on both sides of the house. This fundamentally differs from the English logic of carrying floor joists on horizontal beams. Jeroen van den Hurk noted that the H-frame was "not the sole cultural property of the Dutch" but was used in France, Germany and Denmark as well. As with the Anglo-American houses, framing practices gradually simplified in joinery and decoration as a consequence of a mixed population, shortages of building materials, and the limited number of skilled craftsmen in the colony. [8]

Most recently, and geographically closer, a survey of Cape May County houses by Joan Berkey ties first period (1690–1730) survivors to settlers who came principally from Long Island before 1700. Their large summer beams with shallow joists, lamb's tongue chamfer stops, and flared, decorated posts suggested a New English blueprint, but simplified with common rafters and timber false plates.[9]

Compared to these other eastern seaboard regions, a much more ethnically diverse group carried building ideas into southwestern New Jersey. John Fenwick and his English Quakers landed at "New Salem" in 1675 and established the first permanent English-speaking colony in the Delaware Valley (Figure 1). But they were not the first Europeans. The seventeenth century New Netherland and New Sweden colonies fended off English encroachment from England, New England, and the Chesapeake from the 1640s until the takeover by England in 1664. Eighty-seven Swedish, Finnish and Dutch land holders were settled in the western part of Salem County prior to John Fenwick's arrival in 1675, having crossed the river from the capital of the Dutch colony, New Amstel, today's New York City.[10] The Dutch contingent was not uniform, however, being a motley assortment from the Low Countries—Flemish, Belgian, Danish, French and German, as well as Dutch.[11] English Quakers migrated into the region in force after 1675 and dominated landholding and political affairs into the early-eighteenth century, but others vied for a stake. Between the 1680s and 1720 flowed Dutch and French Huguenots from New York and Irish and Welsh Baptists, via Massachusetts. Most significant was an influx of Puritan New Englanders mainly from Connecticut but also from Long Island, Rhode Island, and East Jersey, to the Cohansey River region of the colony.[12]

Fieldwork by Bernard Herman turned up three circa 1700 frames in Fenwick's Colony concentrated in the Cohansey region of Cumberland County.[13] They show a striking similarity to the first period box frames of New England in having articulated or exposed interior framing with large summer beams carrying small joists, jowled or flared posts, decorated post capitals, lamb's tongue chamfer stops, trenched rafters, and the absence of false plates. Here, the "native regionalism" observed by Cummings in New England seems

to have been transplanted by the out migration of the 1690s. The heavy, post-medieval craft is believed to have died out in the Cohansey by 1715.

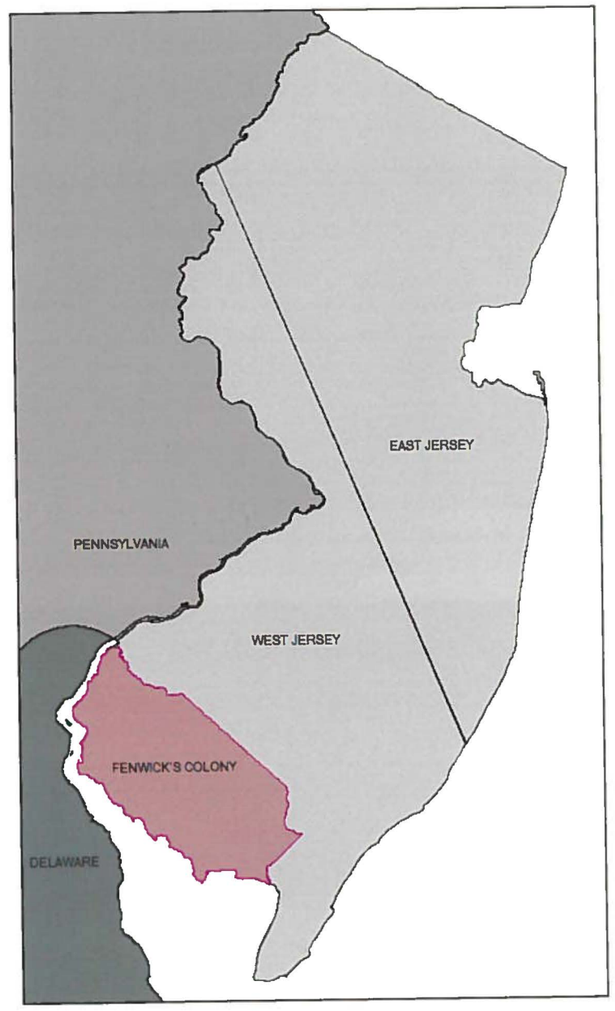

Figure 1: Fenwick's Colony in Relation to East and West Jersey 1676–1702.

Fieldwork by the author on timber frames presents traditionally built houses (with cut timber joints) before circa 1850, and stretch from the Delaware River to the Maurice River (Figure 2). "First period" timber frame houses would show the earliest, least-modified ideas and would date from initial settlement to 1740, which coincides with the construction of most of the patterned-brick houses and the time of the shift from post-medieval to Georgian choices in architecture observed in nearby northern Delaware.[14]

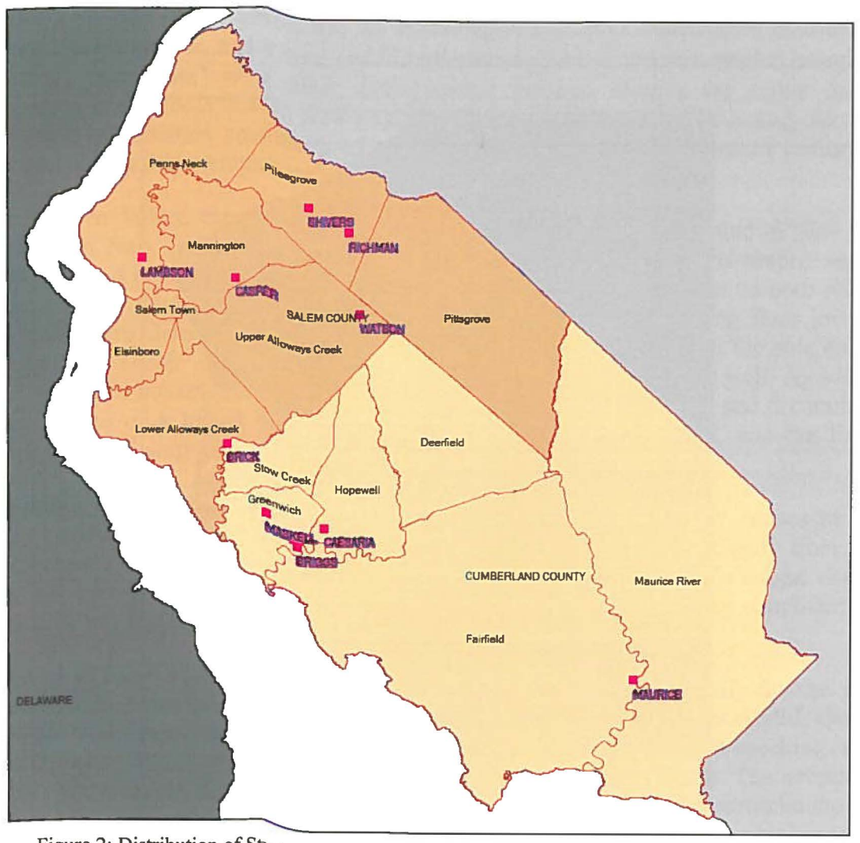

Figure 2: Distribution of Study Houses in this Paper Showing Eighteenth Century Townships in Salem and Cumberland Counties.

Two more first period New English examples in the village of Greenwich add to the marked concentration of this type in the Cohansey. The Joseph Dennis House, 16 by 17 foot (4.8 by 5.2 m) in plan (Figures 3 and 4), and the 18 by 18 ½ foot (5.5 by 5.6 m) plan Nancy Griffith House (Figures 5 and 6), are both roughly square, one and one-half story, hall-plan houses with the large summer beam/small joist chamfered floor frame, trenched rafters, and lack of false plate. However, the Dennis House' flared, chamfered corner post stands in contrast to the Griffith House straight, beaded post. They share a very wide and relatively shallow summer beam—18 and 20 inches (45.7 and 50.8 cm) by only some 8 inches (20.3 cm) high— which may point to the same carpenter. They contrast with the squarer summer beams in the previous examples, and may point to individual experimentation and evolution of the tradition in this architectural enclave.

Despite the concentration of New England-type frames in this sub-region, the author has not yet found this type in present-day Salem County. There are English box frames, but of a simplified variety and all date after 1740.

Figure 3: Joseph Dennis House in Greenwich.

Figure 4: Floor Framing in the Dennis House. Note Wide and Shallow Summer Beam and Chamfered Beam and Joists of this New English, Post-Medieval Type of Box Frame.

Figure 5: Nancy Griffith House, Greenwich.

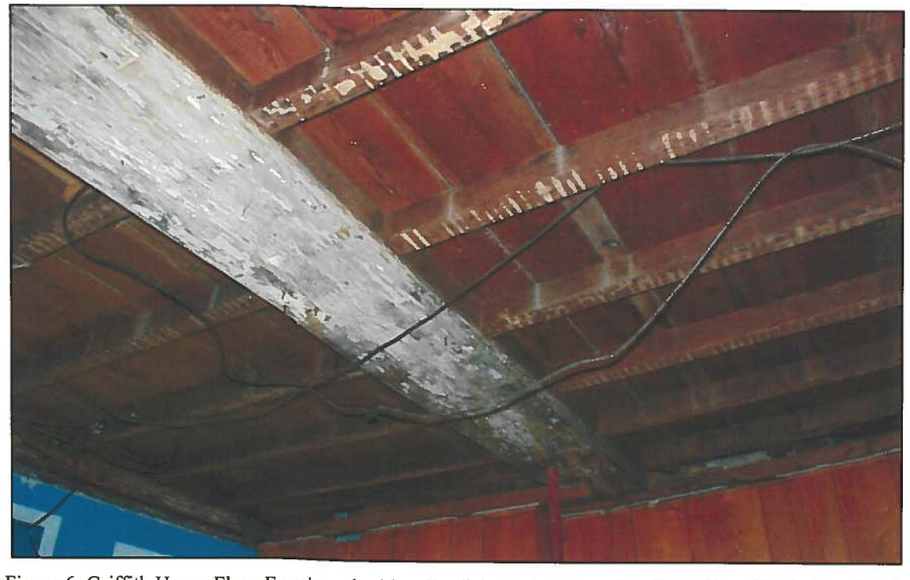

Figure 6: Griffith House Floor Framing, also New English, Post-Medieval in Type. Note Similarity of Wide and Flat Proportion to the One in the Dennis House.

Samuel and Martha Shivers built a two-story house a stone's throw from the Quaker meeting house in Woodstown in the Quaker-settled township of Pilesgrove in 1742 according to a dated iron fireback (Figure 7). Samuel Shivers' father John Shivers migrated from Virginia, converting to Quakerism along the way.[15] A two-room deep hall and parlor measuring 18 by 26 feet (5.5 by 7.9 m) with back-to-back corner fireplaces, its unusual sawn frame and all wood finishes might be explained by Shivers' unusual wealth and access to technology, for he owned a saw mill and thousands of acres of woodland.[16] Its down braces, very uncommon in Salem County, suggest a Chesapeake blueprint (Figures 8 and 9). Though a summer beam spans between the hall and parlor, the entire floor system is concealed by the hand-planed board ceiling in the large hall. Under the flush ceiling, the summer beam and joists match in depth. This marks a shift in the beam-joist relationship of post-medieval work. Deepening the joist to match the beam required changes in the joinery which actually structurally weakened the system. Thus, modern taste privileged the wisdom of ancient carpentry. However, the 8 by 8 inch (20.3 by 20.3 cm) posts, too big to be hidden behind plaster walls, are encased in quirk-beaded cover boards versus the old method of incising the timber itself. One ogee-carved post-capital, the only one seen, is a nod to the disappearing post-medieval articulated interior, but pales in workmanship and style to the New England and Cape May examples (Figure 10). The common rafter roof rested on a false plate that is a 3 by 7 inch (17.8 cm) timber instead of a board, pointing to an idea seen in local first period brick houses. The Shivers house therefore marks an emergence from the first period, a transitional, modernizing forerunner, experimenting with structure yet retaining vestiges of the post-medieval (Figure 11).

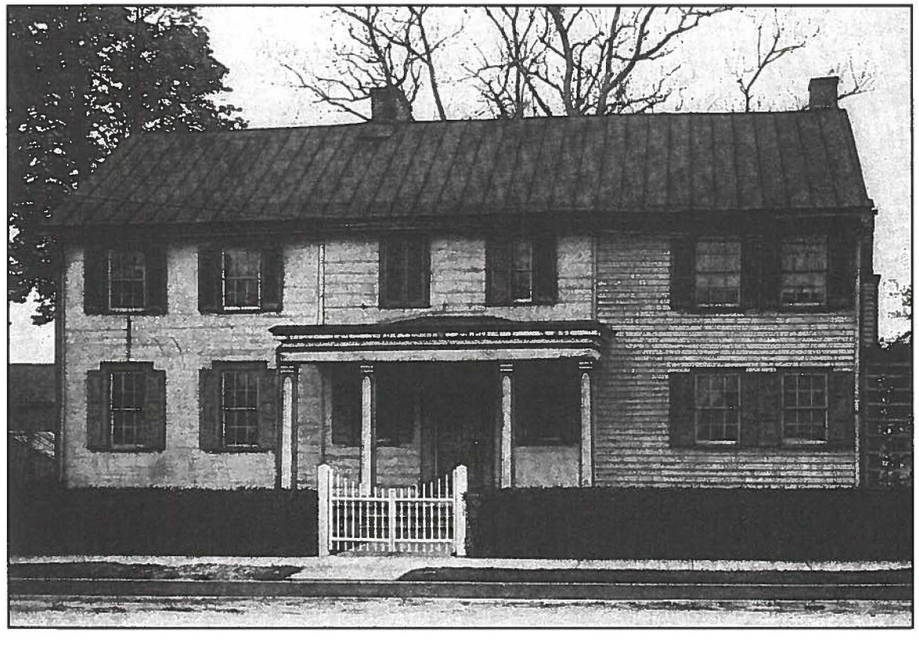

Figure 7: Samuel and Martha Shivers House, Woodstown, 1742 (Middle Section).

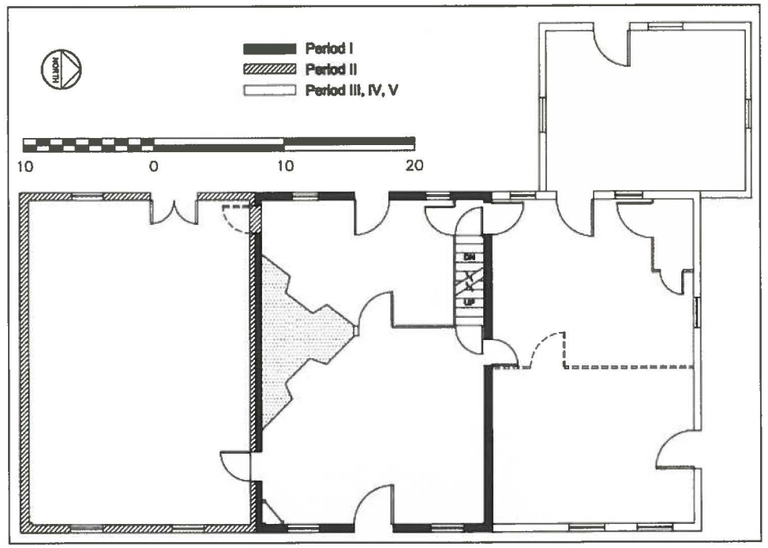

Figure 8: Shivers House First Floor Plan. The Middle Section Built 1742 Was a Double-Pile, Hall and Parlor Form with Corner Fireplaces.

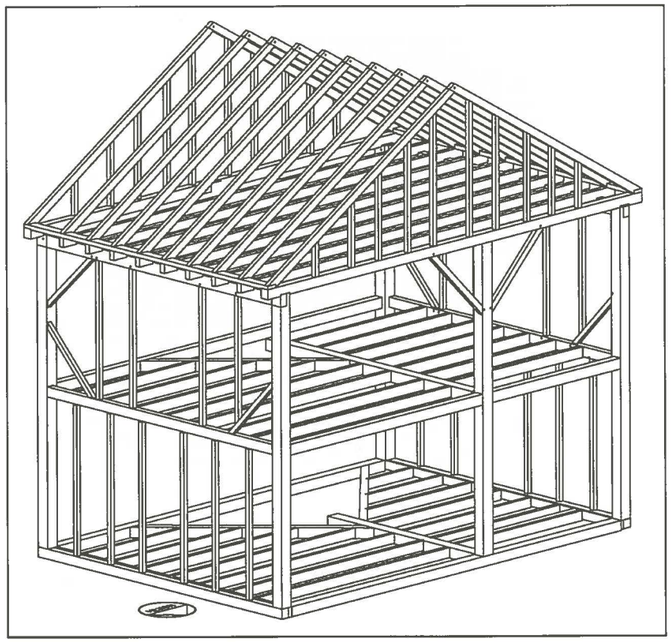

Figure 9: Shivers House 1742 Frame, a Type of Simplified Anglo-American Box Frame. Note Joists and Beams of Same Height, Up and Down Braces, Straight Posts and Timber False Plate.

Figure 10: Shivers House Carved Cyma Reversa Post Capital at Story Post (Middle of Gable End), Under Summer Beam Supporting Second Floor. Post is Cased in Half-Inch Beaded Boards.

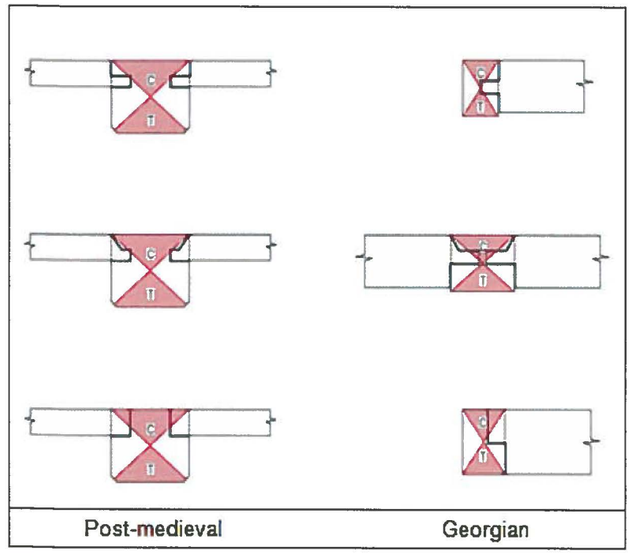

Figure 11: Comparison of Post-Medieval and Georgian Floor Framing, Showing Beams in Cross-Section with Three Common Joist-Beam Joints: Bare-Faced Soffit-Tenon (Top), Tusk-Tenon (Middle) and Butt Cog (Bottom). The Georgian Shift to Covered Framing Necessitated Deepening the Joist, with Various Consequences for the Preservation of Compression Wood (C) Versus the Strength of the Joist. The Tusk-Tenon Works Best in Both Cases, and Was Used in the Shivers House.

John Watson, a yeoman of New English and Irish ancestry, and his wife Rachel, built a two-story, one-room-deep, three-bay, hall-form house measuring 16 by 20 feet (4.8 by 6.1 m) in Upper Alloways Creek Township.[17] His purchase of a subdivision of a larger farm in 1830 is likely to have triggered the construction of this hewn, simplified English box frame (Figures 12 and 13). It has no summer beams, just full-span floor joists and is roofed with common rafters on a board false plate (Figure 14). The first floor ceiling was plastered in modern or Georgian fashion on riven lath, yet the second floor ceiling joists were exposed, hand-planed, and decorated with taper-stopped chamfers (Figure 15).

Hand-planed garret floorboard undersides completed this finely finished, articulated post-medieval style ceiling. With straight corner posts encased in quirk-beaded boards protruding from the plaster walls, it would fit well within the Cape May County second period of 1730–1790 except that one ogee-molded profile at the fireplace says "1830." The slender 7 by 5 inch (17.8 by 12.7 cm) corner posts and the 3- and 4-inch (7.6- and 10.1-cm) wide studs and braces made for a light frame. The lightness, false plate, and one-room deep form recall the "Virginia" house of the Chesapeake. In decoration it was a transitional blend of modern and post-medieval, presenting a plastered room to the public while reserving the old-fashioned articulated ceiling for the private rooms. Built in second period character during the National rebuilding or third period, this rural house hangs on to the past. The Watson house embodies a blueprint on which English structural logic, American simplification, rural conservatism of form, and a hesitant transition to Georgian finishes are drawn.

Figure 12: John and Rachel Watson House, Aldine, Alloway Township.

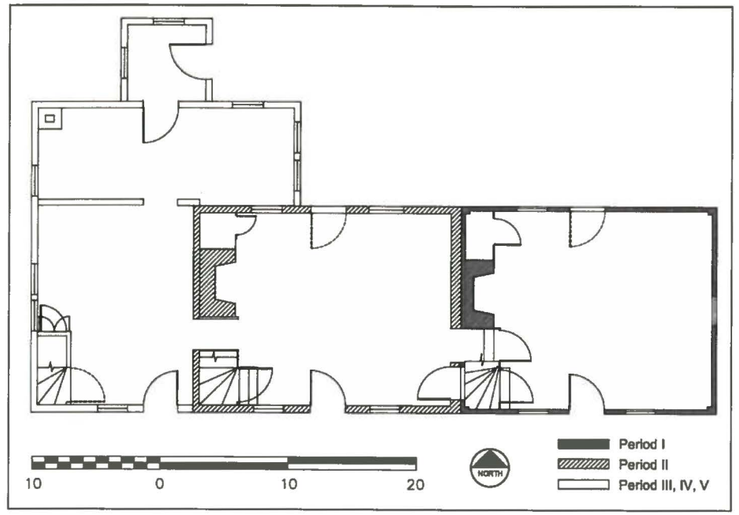

Figure 13: Watson House Floor Plan. The Hall-Form Period I House Dates from 1830 or Earlier. Period II was Probably a One-Story Period I Kitchen Raised to Two Stories. Until 1906 it Had No Ceiling on Either Floor.

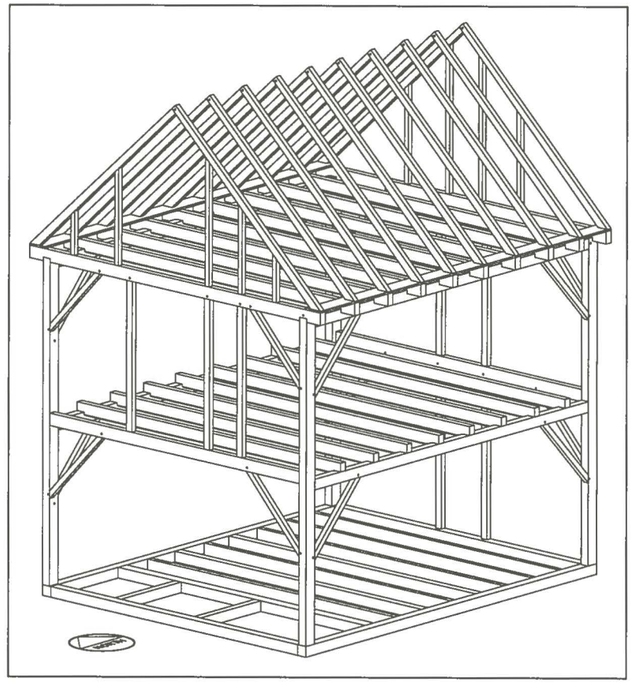

Figure 14: Watson House Period I Frame. A Simplified Anglo-American Box Frame, It is Characterized By Straight Articulated Posts, Up-Braces, False Plate, and Full-Width Floor Joists.

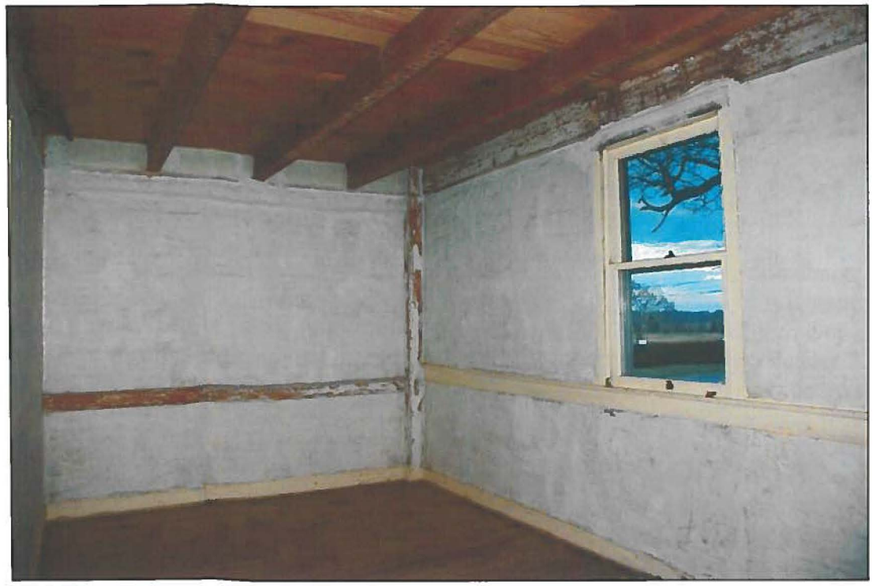

Figure 15: Watson House Second Floor Room Showing Articulated, Beaded-Cased Posts and Dressed, Chamfered Joists. Lath and Plaster was a Later Alteration Since Removed.

Salem County English box frames after 1740 followed the model of simplification noted in the American South, with straight posts, light members, false plates, simplified joints and untrenched common rafters. They are clearly different from the pre-1730 Cumberland County New English houses with their jowled posts, heavy exposed summer beam, lack of false plates, and trenched rafters. The apparent absence of Salem County pre-1740 English box frames is an unresolved problem. But the next type seems plentiful, and until 2006, was altogether unrecognized.

Matthias and Ann Lambson built a finely appointed two-thirds Georgian house sometime around 1790 in Penns Neck Township (Figure 16). Matthias was a descendent of English Baptists who arrived there in 1690. Their kitchen was a Colonial-period house attached to the rear. A story-and-a-half, hall-plan house on a diminutive 13 by 15 foot (4.0 by 4.6 m) footprint, it was framed in New Netherlandic structural logic with a series of six hewn H-bents and a hewn and pit-sawn top plate, roofed without a false plate (Figures 17 and 18). Remarkably, not only is the framing Netherlandic, but the surviving window has Dutch character. It is relatively narrow for its height and its top matches the top of the door, with which it shares a post and interior casing. Though the sash itself is not, the proportion of the window and its relationship with the door is consistent with a Netherlandic window called a *kloosterkozijn.*[18] That a New Netherlandic house should appear in Penns Neck, where so many of the pre-Fenwick, non-English enclave settled, suggests that Penns Neck carpenters inherited a building folkway rooted in the initial settlement by Dutch and Swedes. However, New Netherlandic houses extend to the southern limits of Fenwick's Colony.

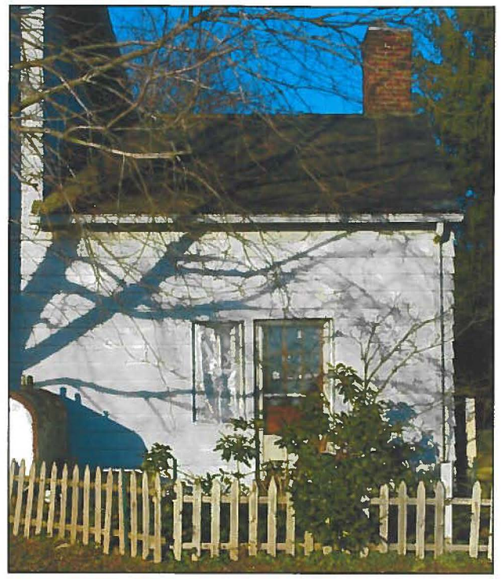

Figure 16: Matthias and Ann Lambson House, Pennsville (formerly Lower Penns Neck) Township, Before 1776. Relationship of Window and Door is Suggestive of a Dutch K*loosterkozijn.*

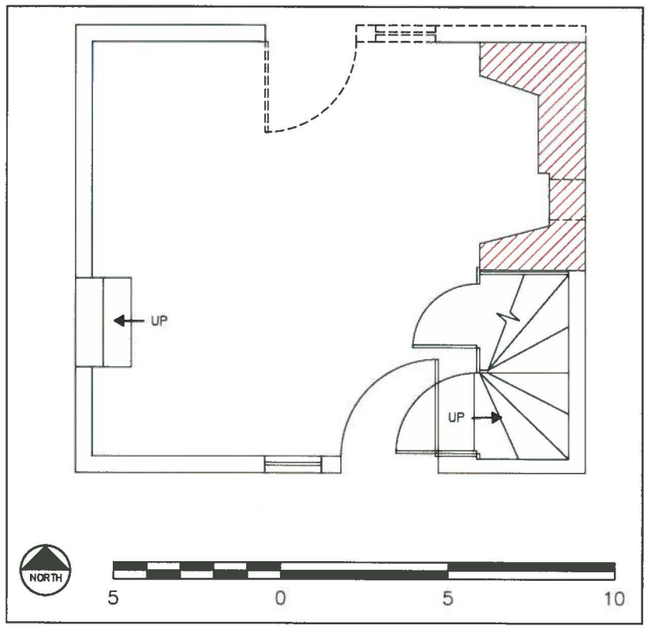

Figure 17: Lambson House Floor Plan, A Small Hall with Garret Put into Service as the Kitchen to the Big House Built 1790.

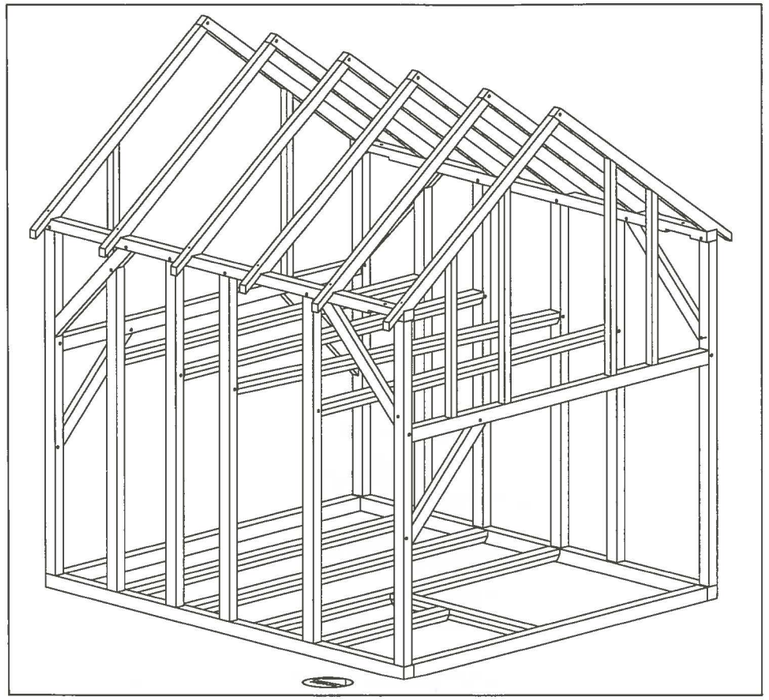

Figure 18: Lambson House Frame, Noteworthy for its H-Bent, New Netherlandic Structural Logic.

Isaiah Casper, a free "colored" man who labored on farms, owned and occupied a sawn H-framed house from before 1840 to after 1875 in an early black community known as "Guineatown." (Figure 19) A small, story-and-a-half, one-room house built before 1830, it collapsed from long neglect in 2007. From the wreckage, a broken post told of its New Netherlandic structural logic through the diagnostic mortise cut for a joist and the half-story height of the upper length. Its interior walls were articulated, nogged and whitewashed. Its undecorated ceiling joists were smooth, painted red, and never plastered over.

Abraham Richman, a miller, son of an eighteenth-century German immigrant, built a one-and-a-half story, double pile house next to the mill race at a place called Richmanville in Pilesgrove Township, between 1840 and 1859.[19] The fully mill-sawn, 16 by 22 foot (4.8 by 6.7 m) Netherlandic frame is made of 4 by 4 inch (10.1 by 10.1 cm) posts, lathed and plastered exterior walls, and 3 by 6 inch (7.6 by 15.2 cm) articulated joists (Figure 20). Brown-painted, and later whitewashed, the rough-sawn exposed joists spanned the depth of the house, which was partitioned in two by hand-planed, beaded-board walls at both levels (Figure 21). Consistent with H-frame logic, it had no false plate (Figure 22). This house is roughly built using scraps and non-matching lumber, and it is a late example of exposed ceilings and board walls, built in a period when many older houses were being re-built with plastered stud walls and ceilings. Being a miller, this was probably not Richman's own house but one he erected for his mill laborers as cheaply as possible.

Figure 19: Isaiah Casper House, Guineatown, Mannington Township, A One-And-One-Half Story, Hall-Plan H-Bent-Framed House Occupied by an African American. Built Circa 1830.

Figure 20: Abraham Richman House, Avis Mill, Pilesgrove Township, a One-And-One-Half Story, Double-Pile, Hall and Parlor-Plan, H-Bent-Framed House Occupied by Mill Laborers. Built Circa 1850.

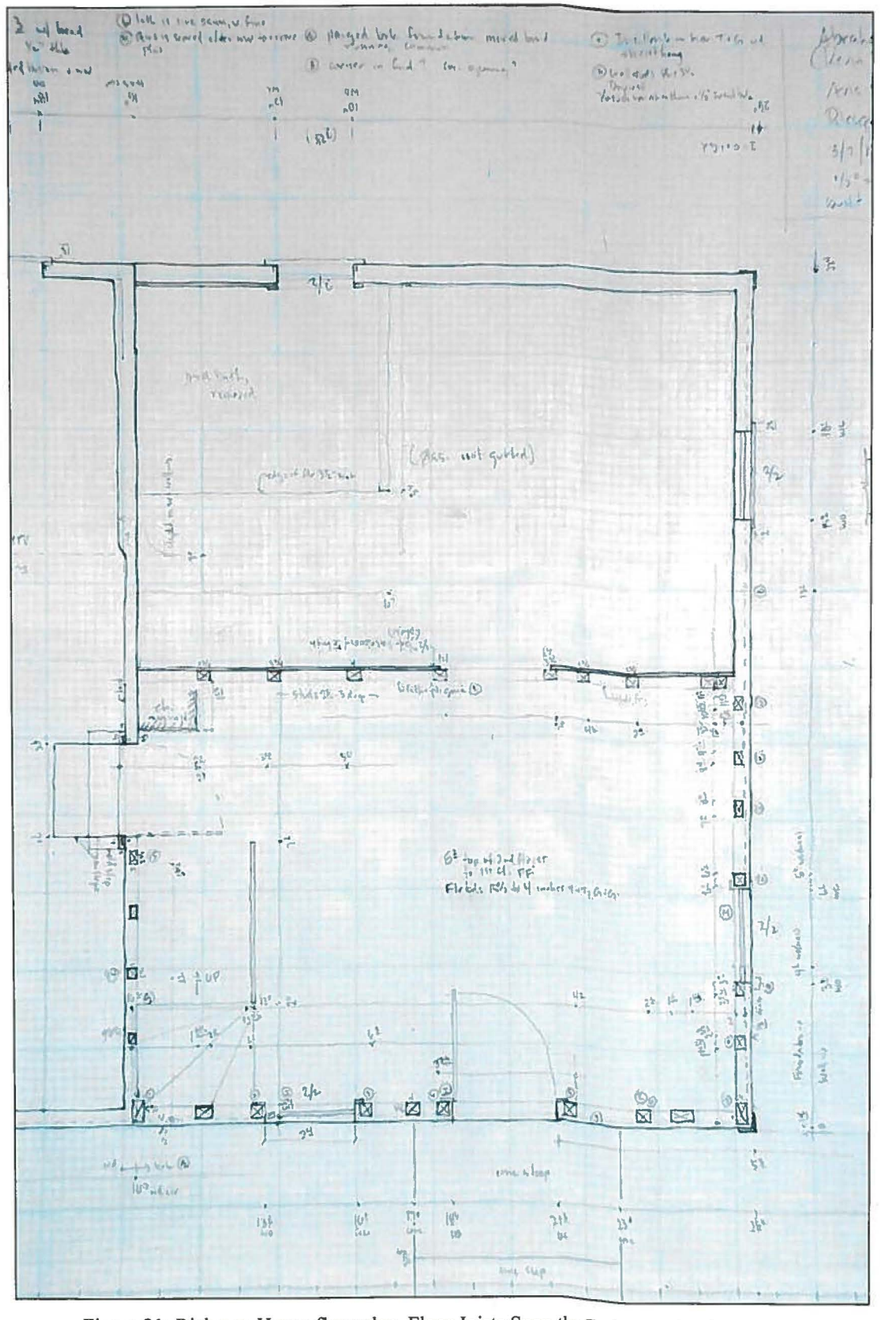

Figure 21: Richman House floor plan. Floor Joists Span the Entire Depth of the House and Rely on the Middle Partition for Support.

Figure 22: Richman House H-Bent Construction

Along the Cohansey River in Greenwich, Charles Briggs built a one-and-a-half story, one-room deep, hall-plan house, 16 by 19 feet (4.8 by 5.8 m) in plan, in 1789.[20] It stepped into Georgian sensibility with a stair passage separated from the hall with a beaded board wall, yet its both sawn and hewn H-bent joists were fully articulated, planed smoothed but undecorated, and painted red (Figures 23 and 24). The interior walls were brick nogged between the exposed posts and whitewashed. Standing a short distance from the strongly New English Dennis and Griffith Houses, the Briggs House provides a contrast with the idea of this locality so identified with New English Puritans and their heavy English box frames. Another, on the Maurice River, of Dutch place-name and reputedly an area of early Swedish settlement, stands another H-bent cottage thought to be built in 1830 (Figures 25 and 26).

The complexity of tying the array of variables—age, ethnicity of owners and carpenters, economic status, locations of settlement, frame types and logic, and incremental simplifications across time—into a meaningful understanding of timber framing origins and evolution in southwestern New Jersey is vast. It begs for the architectural, archaeological, and archival investigation of hundreds of houses to resolve, but this study begins to point out some trends.

First, three distinct timber-framing traditions—New English, simplified Anglo-American, and New Netherlandic—stand in southwestern New Jersey. They bear resemblance to those found elsewhere in the American colonies, and seem to originate with ethnic carriers.

Figure 23: Charles Briggs House, Greenwich, a Hall-Plan, H-Bent Framed House. Built 1789. Left-Hand Section Added Circa 1850.

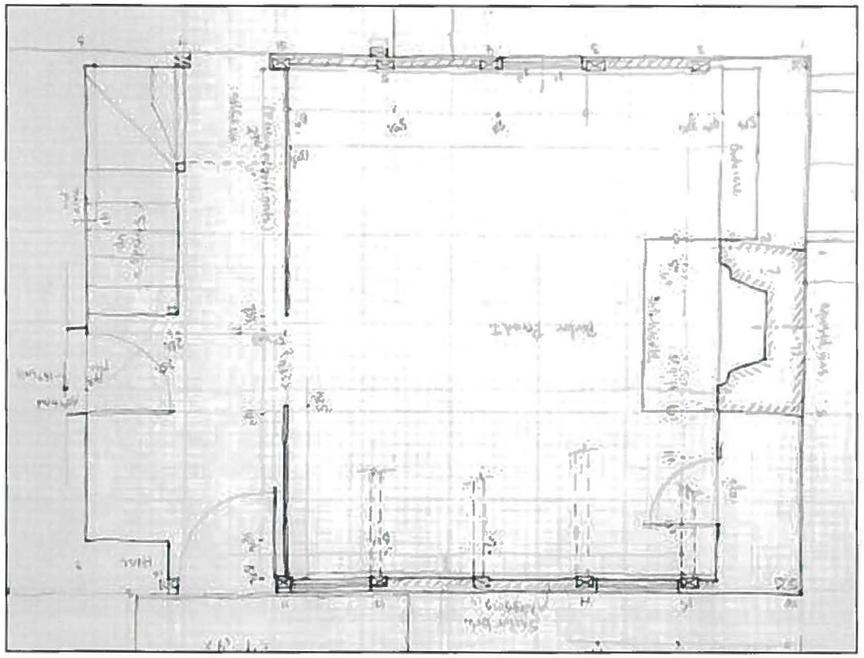

Figure 24: Briggs House Floor Plan.

Figure 25: H-Bent Framed, Hall-Plan House in Mauricetown, Built Circa 1830.

Figure 26: Interior of the Mauricetown House Showing Closely Spaced H-Bents.

Second, the apparent absence of first period frame houses in Salem County is a problem. Were the English Quakers' first period houses earthfast or otherwise impermanent? Below-ground archaeology is needed to answer this question.

Third, the varieties of timber framing challenge the notion of a singular regional identity. Gabrielle Lanier's book, *The Delaware Valley in the Early Republic*, considered the evidence of buildings and landscapes in Delaware, New Jersey and Pennsylvania to refute the idea that it was a coherent region with a unified culture. She asserted that the early Delaware Valley was not one region, but a "region of regions" through the period of the early republic, and that the visual authority of the Quaker-built, pattern-brick houses in Salem County left the wood houses and their lineages off the "ancestral map."[21] This study offers corroboration—similarly, but on a smaller scale—in that Fenwick's Colony, a sub-region of the Delaware Valley, despite its reputation as a Quaker landscape, is *also* a region of regions, as evidenced by timber framing craft.

Fourth, the New Netherlandic H-bent building practice persisted well into the early-nineteenth century throughout the region. These H-framed houses may be the sole material remains of a Dutch or creolized minority culture. The possibility exists that these frames are as much Swedish as Dutch because Scandinavians, as well, built timber frames with a similar logic, call the *grindbygginga,* or "grid building," which like an H-bent, consisted of a horizontal beam joined to two posts erected in series.[22] Thus, though the Swedes and Finns of the Delaware Valley have been credited with bringing log building to America, the Swedes probably carried an alternative building technology to the region.[23] The mixing of the groups could have reinforced a shared tradition of H-bent structural logic.

Jasper Danckaerts, traveling in 1679, observed, "The Quakers have endeavored to break up the Dutch and others not of their religion, who have lived of old on the east side of the river, but [they] resist them…"[24] Countering ideas of cultural dominance, Dell Upton recognized that "distinctive minority groups persist despite overwhelming explicit and implicit pressures to be assimilated" as he challenged the elitist notion of the social diffusion of ideas from more powerful groups to the less powerful.[25] The resistance mounted by "the Dutch and others" in the face of Quaker English hegemony is a case in point, and they went on to leave a legacy of material culture impressed with their ideas of structural logic.

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[1] Fred Kniffen and Henry Glassie, In *Perspectives in Vernacular Architecture III,* edited by Thomas Carter and Bernard L. Herman (Columbia: University of Missouri Press, 1989) 160–165, 178; Michael Steinitz, "Rethinking Geographical Approaches to the Common House: The Evidence from Eighteenth-Century Massachusetts.". Ibid, 17.

[2] James Deetz, *In Small Things Forgotten* (Garden City, New York: Anchor Press/Doubleday, 1977), 36.

[3] Dell Upton, "Traditional Timber Framing." in *Material Culture of the Wooden Age*, edited by Brooke Hindle, (Tarrytown, New York: Sleepy Hollow Press, 1981) 35–93; Richard Harris coined the term "structural logic." See Clifford Zink, "Dutch-Framed Houses in New York and New Jersey". *Winterthur Portfolio,* Vol. 22, No. 4 (Winter, 1987), 268.

[4] Abbott Lowell Cummings, *The Framed Houses of Massachusetts Bay, 1625–1725* (Cambridge, Massachusetts: Belknap Press, 1979), 202.

[5] Paul E. Buchanan,"The Eighteenth Century Frame Houses of Tidewater Virginia," in *Building Early America, edited by* Charles E. Petersen (Mendham, New Jersey: Astragal Press, 1976), 54–73.

[6] Cary Carson, Norman F. Barka, et al., "Impermanent Architecture in the Southern American," *Winterthur Portfolio* Vol. 16, No. 2/3 (Summer–Autumn, 1981), 135–196.

[7] Clifford Zink, "Dutch Framed Houses in New York and New Jersey," *Winterthur Portfolio*, Vol. 22, No. 4 (Winter, 1987), 265–294.

[8] Jeroen van den Hurk, "Imagining New Netherland: Origins and Survival of Netherlandic Architecture in Old New York" (Dissertation, University of Delaware, 2006), 323–325.

[9] Joan Berkey, *Early Architecture of Cape May County, New Jersey: The Heavy Timber Frame Legacy* (Cape May Court House: Cape May Historical and Genealogical Society, 2008), 1, 103–112.

[10] Cushing and Sheppard, in Accessible Archives, Inc., http://proxy.nss.udel.edu :2063/amcnty/NJ/gloucester/Salem53.htm, accessed January 2007.

[11] Jeroen van den Hurk, personal communication with the author, June 18, 2007.

[12] Cushing and Sheppard, in Accessible Archives, Inc., http://proxy.nss.udel.edu: 2063/amcnty/NJ/gloucester/Cumberland98.htm, accessed April 2007.

[13] Janet L. Sheridan, "'Their houses are some Built of timber' : The Colonial Timber Frame Houses of Fenwick's Colony, New Jersey." (M. A. Thesis, University of Delaware, 2007), 112–115, 123.

[14] Gabrielle M. Lanier, *The Delaware Valley in the Early Republic: Architecture, Landscape and Regional Identity* (Baltimore and London: The Johns Hopkins University Press, 2005), 14. The "closed plan" began to appear around 1740 as an alternative to the older "open plan." form. The open plan is characterized by the main rooms of the first floor accessed directly from the exterior. The closed plan introduced a separate, unheated room for entry that included a stairway.

[15] Shivers Family Legends Website: A Family History of Religious Migration, http://www.xtremechat.org/genealogy/chevers_john4.html, accessed October 2006.

[16] Nelson, William. *Archives of the State of New Jersey, First Series, Vol. XXIII, Calendar of Wills, Vol. V. 1771–1780* (Patterson, New Jersey: The Press Printing and Publishing, 1901), 463. Will and Inventory of Samuel Shivers.

[17] This house appears as the Simpkins House in my thesis. It is here renamed for the 1830 purchaser, John Watson.

[18] Jeroen van den Hurk, personal communication, July 2, 2007. A *kloosterkozijn* has a fixed upper sash with divided lights, and a casement lower sash with a solid wood shutter.

[19] Deeds in the possession of the owner, Kevin and Sheri Hanzel; Thomas Cushing and Charles E. Sheppard, *History of the Counties of Gloucester, Salem and Cumberland.* pp. 447–464.

[20] Penny Watson, personal communication, December 30, 2009. Source of date is dendrochronology by William Callahan.

[21] Lanier, Ibid,179.

[22] Hans Jurgen Hansen, editor, *Architecture in Wood: A History of Wood Building and Its Techniques in Europe and North America* (New York: Viking Press, 1971), 23–24.

[23] Terry G. Jordan, "A Reappraisal of Fenno-Scandian Antecedents for Midland American Log Construction," *Geographical Review*, vol. 73, No. 1 (January 1983), 58–94.

[24] Jasper Danckaerts, *Journal of Jasper Danckaerts, 1679–1680.* edited by Bartlett Burleigh James and J. Franklin Jameson (New York: Scribner, 1913), 143–156.

[25] Dell Upton, "Toward a Performance Theory of Vernacular Architecture: Early Tidewater Virginia as a Case Study," *Folklore Forum*, Vol. 12 Nos. 2–3 (1979), 175; Upton, "Ethnicity, Authenticity, and Invented Traditions." *Historical Archaeology: Journal of the Society for Historical Archaeology* Vol. 30, No. 2 (1996), 1–7.

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