CHAPTER 3
COMPARATIVE EVIDENCE AND SUMMARY

Here we will look briefly at sites we hypothesize will share some common traits with the Flowerdew small-scale variant town planning and fortification data. By spatial necessity we cannot embellish on these comparative examples through any serious application of mid-range theory. However, previous site reports or publications will greatly enhance what can be said responsibly. Moreover, the basic themes at Flowerdew such as Vitruvian town plans, Renaissance architectural sensibilities, the chain of being, and vernacular versions of Renaissance fortification traditions need not be repeated in such great detail, as they have already been introduced. Consequently, it is hoped that Chapter 3 will borrow strength from Chapter 2 and vice versa.

At this point the present discourse requires a "road map" for relatively easy appraisal of site structure similarities and differences. Consequently, the reader should refer extensively to the "Key Analogues Chart" provided here which provides both Late Medieval and Renaissance influences (Kruft 1984; Reinhart et al. 1984; Rowley and Wood 1982:14). (See Figure 63) In this chart we will develop the notion of simple hierarchal and subordinate

site structure by showing the relationships between contemporary or modern names—often variant—in digestible and complimentary functional groupings.

TABLE 4

KEY ANALOGUES CHART (SOCIAL, SPATIAL AND FUNCTIONAL) FOR SMALL-SCALE VARIANT TOWN\PLANTATION PLANS

Social/Spatial Ordinal Plans:

Hierarchal Building: Manor, Key Abode, Church, Court, Government, etc.
Subordinate Buildings, Enclosures:

Human Help: Servants, Labor, Militia, Court of Guard, Quarter, etc..
Crops/Goods: Stored inanimate objects, tobacco in cask, bushels of corn, agricultural tools, arms, etc.
Animals: Enclosures, Cattle Pounds, Crofts, Penfolds, Dairy-related Outbuildings, Smoke Houses and Meat Processing Outbuildings

Architectural Site Structure Analogues:
Late Medieval (from Rowley and Wood 1982:Figure13):

1. Cot: (abode and shed outbuilding).
2. Long-house: (rectangular House with inner room, living space, cross passage, attached byre for animals).
3. Farm: (domicile, with barn close to house but in an "L-shaped" angular relationship to it, a shed outbuilding). (space prevents Hall House inclusion).

Renaissance (here we use only two symbolic models:)

1. Vitruvian Man: (symbolized by Cataneo's Church of 1567 from Kruft, 1984, where the human body models sites).
2. Vitruvian and Palladian 18th-Century Plantation Complex: Shirley (already compared to Flowerdew and Magherafelt, and also Monticello via Humanitas (non-corremative references to classical antiquity):
   - A Centered, hierarchal Mansion.
   - B. Bi-linear Subordinate buildings.
   - Ba Subordinate buildings with long facades common to Mansion.
   - Bb Subordinate buildings with long facades at right angles to mansion, forming a courtyard.

Regarding the Key Analogues Chart, something else should be said briefly. The inclusion of cots, west English longhouses, and farm models from Rowley and Wood 1982:44) and Bereford and Hurst (1971) in the chart allows us to get a sense of how our data suite may or may not show debts to Late Medieval antecedents from an evolutionary perspective. (See Figure 64.) The appeal in using the ca. 1740 Shirley complex as a comparative model as above is simple—it is a Palladian Mansion complex organized on clear Vitruvian principles also (as we saw in Chapter 2). Moreover, it has subordinate buildings, which are both parallel to the mansion and at right angles to it, showing common ground with our data suite. Shirley has one "foot" in the 17th century and one in the 18th century. The 18th-century Shirley Mansion complex was chosen to symbolize the link between Ulster bawns such as Magherafelt, which contain two rows of homesteader's houses and plantation complexes with two rows of subordinate ancillary buildings. (See Figure 65.) Shirley also speaks for Monticello, both of which are creative non-corremative references to classical antiquity in inspiration which Simpson (1959:v) calls "humanitas" as an action-driven way of life and study rather than a passive doctrine.

By modeling the present restricted data suite, we hope to be able to get a better sense of the real origin—as seen in vernacular shifts and origins of

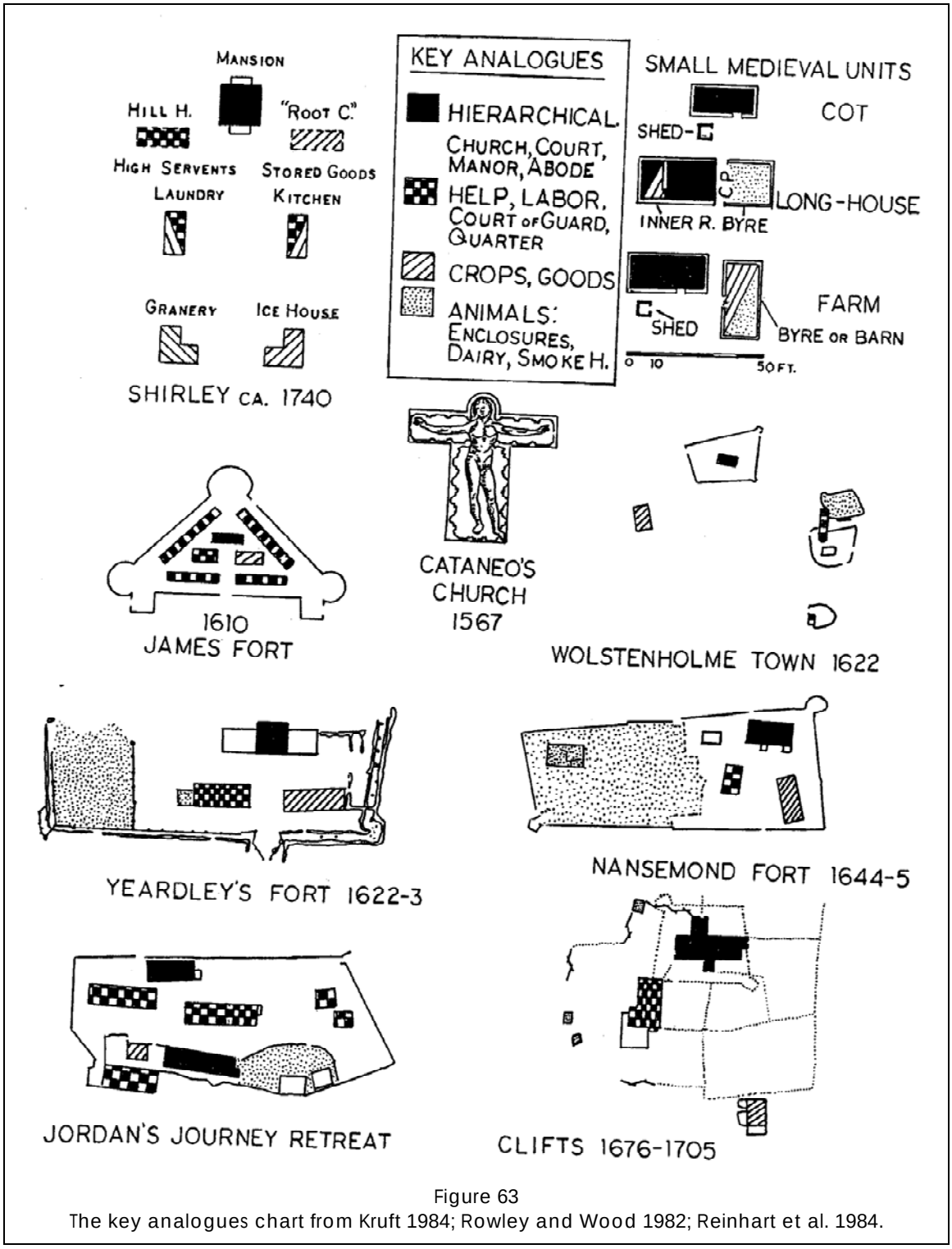


Figure 63
The key analogues chart from Kruft 1984; Rowley and Wood 1982; Reinhart et al. 1984.

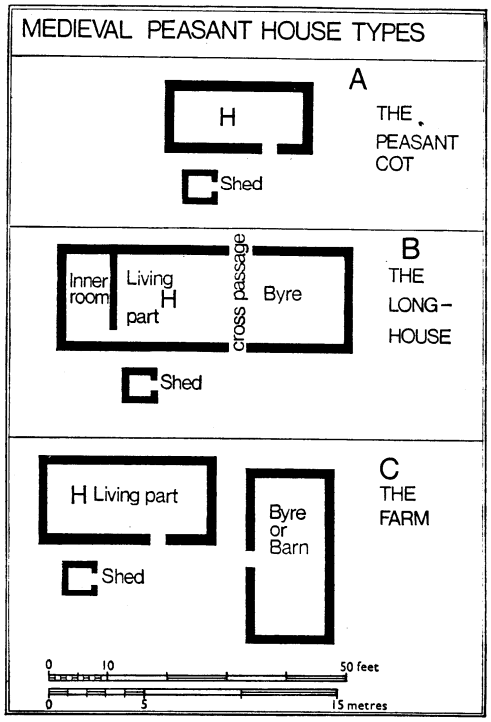


Fig. 17. Medieval peasant-house types
(A) The peasant cot, (B) the long-house, (C) the farm, see p. 104.

Figure 64
Late medieval house types for peasants or poor (Rowley and Wood 1982:Fig. 17).

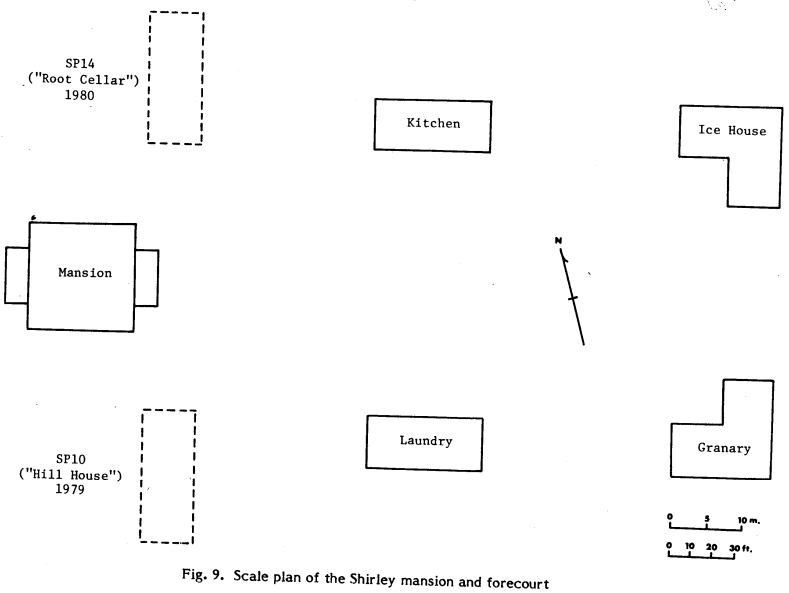


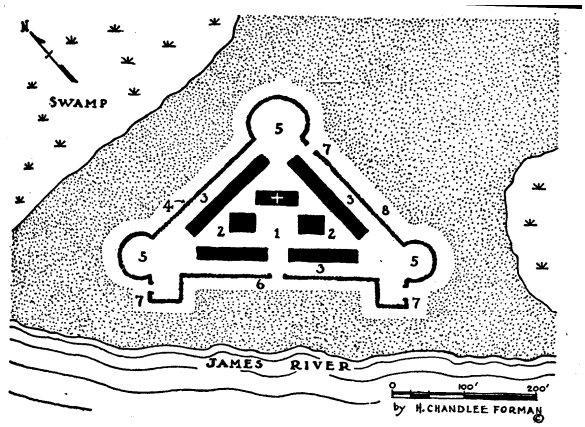
Fig. 9. Scale plan of the Shirley mansion and forecourt

Figure 65
The Shirley mansion complex ca. 1740 (Reinhart et al. 1984).

Jamestown and its early fort, built in 1607 and maintained in some manner to at least 1616, are and were the most well known of Virginia's many historic sites because of their association with the earliest permanent English settlement in continental North America and the Capital of Virginia from 1607 to 1611 and 1617 to 1699 (Hatch 1957). The published literature about this site is enormous. Having introduced the site in Chapter 1 as Virginia's most familiar town-founding model, here our focus must be limited (Reps 1972:31–39,43–56). Accordingly, we are looking at Jamestown here primarily between 1607 and 1614 when its small-scale variant town planning activities were most elemental and therefore tolerably comparable in most basic model form to Flowerdew, Wolstenholme Town, Jordans Journey, the Nansemond Fort, and Clifts.

Comparing Site Structure of James Fort with Yeardley's Fort

Although James Fort is currently being delineated through archaeological excavations (Kelso 1995, 1996, 1997), the 1610 interpretation of the fort's well-documented incarnation noted by Forman in 1938 serves as the primary basis for a comparison of site structure of James Fort to other 17th-century Chesapeake settlements in this thesis, especially with concerning comparisons with Yeardley's Fort at Flowerdew. (See Figure 67.) It is hoped that the following discussion can be employed as a predictive model to be tested by the ongoing archaeology program at the site although



JAMESTOWN IN 1607

An approximate reconstruction of the plan of the Fort based chiefly on old descriptions and the Spanish Map of 1608.

(+) The Church
(1) Market Place
(2) Storehouse and Court of Guard
(3) Streets of "Settled" Houses (shown in rows)
(4) Palisades of Posts
(5) Bulwarks of Half-moon Shape
(6) Principal Entrance, or "South Gate"
(7) Other Gates
(8) Trench or Moat around Palisade

Figure 66
Foreman's analysis of site structure at Jamestown 1607 (1610) (Forman 1938).

Civil War Confederate earthworks may have destroyed the heart of James Fort.

Forman (1938:39) based his reconstruction of James Fort primarily on the description of the settlement in 1610 prepared by William Strachey, secretary of the colony to Sir Thomas Gates and Sir Thomas West (Purchas 1926 19:44–45; 55–58). Gates was compelled to rebuild the majority of the ruined fort he saw on his arrival to Virginia. The context of this rebuilding is very important. Gates observed upon his arrival that there were "empty houses" in James Fort, and the surviving men lived in their "Blockhouse" (a separate outwork) (Purchas 1926 19:44-45). The Virginia Council noted that, "Only the blockhouse somewhat regarded [that is not allowed to go to ruin] was the safety of the remainder that lived" (Brown 1890:405). Did the

colonists like James Fort? In a nutshell one of Yeardley first jobs at Jamestown in 1610 was to place an armed guard on what remained of the fort to prevent the settlers from burning it to the ground when Gates decided to pull out—due to lack of food.

Thus, by 1610, James Fort was not only in ruins but it was also abandoned twice (once by the colonists and once by Gates). The settlement was so weakly populated it could not hold the fort's large perimeter, which became a source of firewood in a relatively safe open capania. This probably affected Yeardley's down scaling of the Flowerdew Fort size in the 1622–23 period. Abandonment of James Fort reflected perhaps the most poorly acknowledged yet well recorded Native American victory in American history. In addition to possibly burning a portion of the fort before 1609, by 1610 Pasbahegh and the Powhatan warriors had "taken" the fort, not by direct assault but by starving out the settlers and sniping at anyone who stirred out (Arber 1910 I:103; Kingsbury 1933:18). The failure to acknowledge this accomplishment can only be attributed to the ethnocentric absurdities of the national origin myth associated with James Fort. Only one recent scholar, namely Frederick Fausz (1990), even comes close to appreciating this Native American victory; this is because he was preoccupied with convincing Anglo-centric regional scholars that the legendary "starving time" coincided with, and was in large part the result of, the First Anglo-Powhatan War which was only attenuated by a severe drought (1609–14). The native peoples waged

this war by disrupting European subsistence activities and employing intensive guerilla tactics rather than by mounting a European-style frontal assault such as they had tried unsuccessfully in 1607 before James Fort was completed (Arber 1910 1:ii-v, II:406–407; Hatch n.d.).

Gates' largely rebuilt fort of 1610 was the third incarnation of James Fort so far as we can determine (Arber 1910 I:ii-v, 103; 406–407; Purchas 1926 19:65–68). Forman used several key documentary references to determine the basic structure of the Jamestown settlement. He inferred that the church was oriented east to west, parallel to the south wall of the fort, where the main gate was located, because the church was described as having "two Bels [bells] at the West end" (Wright 1964:79–81). Strachey's description also implies that the church served as a meeting place in which seating was arranged by social rank. Thus, in our model the church is the only logical choice for an ordinal/hierarchical structure in the settlement. It was also possible to determine that the "Court of Guard" (a military quarter or garrison house for the Governor's officers and his personal body guard) and a storehouse were situated below the church, simply because these two structures were not part of the three rows of houses as described by Strachey, the new secretary of the Colony. Additionally, it is unlikely that the storehouse would not have been convenient to the main "River Gate" and the "Market place." The latter is specifically described as being located in the "Middest" place (Purchas 1926 19:56). The very shape of open ground in the

center of the triangular fort therefore determined Forman's model of site structure.

Two additional concentric, triangular architectural arrangements surrounding this are presented by the triangular rows of cabins (occupied by settlers and soldiers) and the triangular curtains of the fort. It is difficult to say how much the tripartite structure of James Fort is the result of simple praxeological constraints imposed by its triangular defensive perimeter and how much is the result of a conscious attempt to implement town planning ideals. There are plenty of military forts and triangular forts that have a purely utilitarian interior community, with many having all their houses and stores butted against or near the walls for protection. Forman's (1938) reconstruction was closely scrutinized by the National Park Service through Hatch's (n.d.) hard work, which, with only minor modifications, was used as the basis for the "Sketch Plan" (Drawing No. NHP-Oal 10, VO2) and prepared for public interpretation. This model of James Fort is familiar to most of us through two paintings by Sidney King (Reps 1972:Figure 26, 30). (See Figure 67.)

So, given the common ground between Hatch and Foreman, we can say for now the core structure of each settlement Yeardley's Fort and James Fort consisted of three main buildings, even though James Fort differed importantly from Yeardley's Fort in that it also contained three rows of

houses or cabins. The three core structures in each settlement can be directly compared, however, since in each settlement they are positioned in an ordinal arrangement within a triangular plan based on the "Romano/Renaissance Model" with "English military camp small-scale variants" (see Table 1).

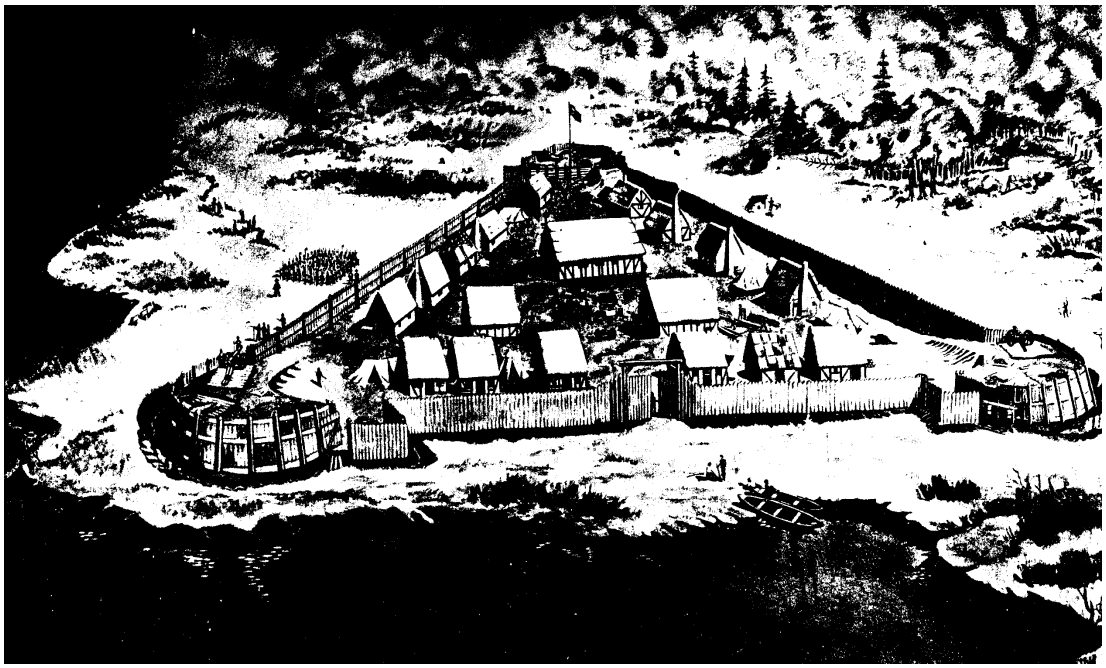


Figure 67
Sidney King's painting of James Fort 1607 (Reps 1972:Fig. 26).

It should be noted again here that Yeardley served as captain of Gates' body guard in 1610, and it is very likely that Yeardley absorbed the "James Fort model" while in residence at Jamestown or on frequent visits. He probably was exposed also to tripartite plans in the small forts of Holland in which the general's (or commanding officer's) residence assumed the hierarchical position represented by the church at Jamestown. Therefore, of the two forts, the work at Flowerdew with its hierarchical headquarters building (Structure 3) is actually the parent model for James Fort as far as the soldiers saw it. Were there hierarchical churches in the garrison forts in the "Low Countries?" Of course not! More likely there were ministers attached to the headquarters buildings. So we can strengthen Forman's model with the archaeological evidence from Flowerdew. The fact is, Yeardley's Fort (44PG65), with its rectangular\trapezoidal perimeter, also employs a core tripartite plan with ideo-technic trappings that at James Fort was intended to express a clear statement of classical humanitas (creative and therefore non-corremative references to classical antiquity) through the execution of a Vitruvian triangle. It also loosely follows the Roman principia model of Garvan (1951). This was presumably to underscore a new Roman-based English civility in the otherwise savage New World, which of course has ideo-technic trappings (Fausz 1977).

One means of identifying the praxeological adjustments made by Yeardley in executing a Vitruvian settlement plan at Flowerdew is to

compare analogous features of James Fort and Yeardley's Fort, namely the presence of three core buildings and the functional and spatial relationships among these structures. Through this exercise we hope both to underscore our previous identifications through the function of the buildings within the smaller fort, built by Yeardley, and recognize patterning in the hierarchical arrangement of the buildings relevant for understanding broader trends in cultural behavior at Flowerdew and James Fort. See Figure 68.

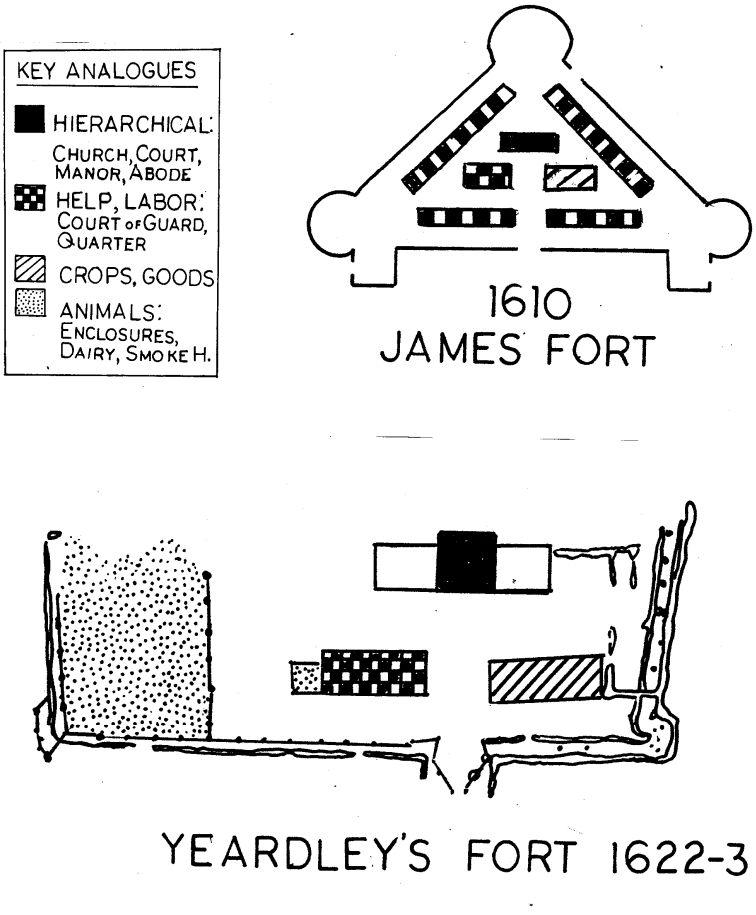


Figure 68
James Fort in 1610; Yeardley's fort 1622–23.

The tripartite plans of James Fort and Yeardley's Fort at Flowerdew comprise a dominant hierarchical building and subordinate buildings to the west and east. At James Fort the dominant hierarchical building is the church, while at Flowerdew it is the Structure 3 Tenement, which served as the commander's house and chapel. Only after Sir Thomas Gates arrived in 1610 did a church replace a temporary chapel at Jamestown, and it is hypothesized that the minister, Grivell Pooley, was similarly compelled to use a room in Structure 3 as a chapel before a separate church building could be erected in Charles City Corporation, if this was ever done (Purchas 1926 19:55). A late Tudor military tract noted that it is,

> "Neccarie yt is that every company have one honest and christen minister to communicate in times convenient, also to use daylie prayer with the same, oft prechinge, teachinge an dinstructinge them the lawe and feare of God, with which soldiers, as holy scripture mencioneth in many places, God ys pleased. Yf soldiers be sicke or hurte, or otherwise in extremitie, they will them to fighte agaynste the fleshe,...." (as cited in Hale 1983:275).

Structure 3, however, also would have contained the seat of the plantation commander, Captain Sharp, since praxeological constraints at Flowerdew would have required housing both church and state functions within the same building, with private sleeping quarters provided upstairs based loosely on the Roman principia model (Garvan 1951). The authority of both the plantation commanders who could hold local courts and the minister at Flowerdew would have been enhanced by combining the functions of state and church within a single building.

The authority of church and state was also wedded architecturally at James Fort, since the church at Jamestown housed the first Virginia Assembly in 1619. Seating for administrative functions apparently followed the order used during church services, with those of superior rank seated closest to the chancel and pulpit (Kingsbury 1933:154). Strachey (Wright 1964:80–81) observed ranked seating in the Jamestown church as early as 1611, and seating arrangements based on social status and secular office were still being used in Anglican churches well into the 18th century. Upton (1986:97–98) views this behavior as a reflection of the culture's ethos in microcosm and this certainly does not hurt our modeled use of the chain of being (which ranked social order) as part of this explanation. So far then, in terms of overall function these two hierarchal buildings are nearly identical, with clear secular down scaling at Flowerdew compared to James Fort.

The west subordinate building at James Fort is the Court of Guard (main quarters for the Governor's military body guard), while at Flowerdew it is the west Structure 1 Garrison house and Quarter for the "men at castle." Can we provide any texture to this site structure association? Foreman (1938) did not indicate why he believed that the Court de Guarde at James Fort was located to the west of the storehouse, but he may have been thinking that this placement symbolized the military's position at the "right hand" of god, or the Church. In the mental template of the time, placement to the right of the church would have conferred more honor than would have

been bestowed on the storehouse, which housed no human occupants—the left side being "ill favored" perhaps only when the right side was taken seriously as a symbolic gesture. The architectural language of the church building instead confers respect on the Court of Guarde, with the west bell tower favoring entry from or passage to the soldiers' barracks; it also reflects traditional English arrangements (Upton 1986).

Earlier models for the symbolic expression of this relationship between the Church and military support this interpretation of the structure of James Fort. During feudal times, knightly orders defended the church, functioning as what was referred to as the "sword arm" (i.e., right arm) or "armes blanche" of Christ and the state (Gies 1984:8, 79–80; Hale 1964b:xcci). This relationship is also symbolized in Renaissance paintings which employ tripartite arrangements. For instance, in the altarpiece executed by Giorgione for the Castelfranco in Venice, the Church is symbolized by the image of the Madonna and Christ Child positioned at the Vitruvian head of the elements in the painting. God's servants are depicted in subordinate positions to the Madonna: A friar or priest is positioned to the left, and a knight in armor and holding the banner of the state is positioned to the right as the sword arm of the state and of course as a symbol of temporal power in general (Goffen 1989:Figure 129, 175; Pedretti 1985:156, 160).

At Flowerdew, the placement of Structure 1, which housed Sergeant Fortesque, to the west of Structure 3 could have symbolized the articulation of the ideo-technic power base of the settlement. The plan of the settlement conferred honor on Sergeant Fortesque who, in many ways, was the actual force which "retained" the Church and State at Flowerdew. Assuming the burdens of both the "farmer soldier" and the Chesapeake "Tobacco Bawn," he both trained the militia and served as overseer of the plantation (Hodges 1995; Shea 1985).

The plan of St. Mary's City, founded in 1634 as the seat of the Maryland colony, may have expressed symbolic relationships similar to those seen in the plans of James Fort and Yeardley's Fort. In brief, St. Mary's City consisted of a flanked quadralinear palisade which was to contain "a convenient house" for the governor and a "church or chapel adjacent" (Reps 1972:56), an arrangement in which religious and secular power were accorded equal authority by their placement on a single plane, again following the cheaper Roman principia model or praetorium model (See Figure 69). For practical reasons, construction of the settlement may have been initiated by building a guardhouse and store. Thus, we might predict that during the earliest settlement period, the buildings at St. Mary's City might have been arranged in a simple Vitruvian triangle with the Governor's house and an adjacent integral chapel in the dominant position and a guardhouse (really a garrison house in modern parlance) and store in the

subordinate positions. So it seem more than likely that we have a direct match in our analog model between the garrison house at Flowerdew and the Court of Guard building at James Fort, both in terms of its physical placement west and in terms of its cultural ambiance and symbolism.

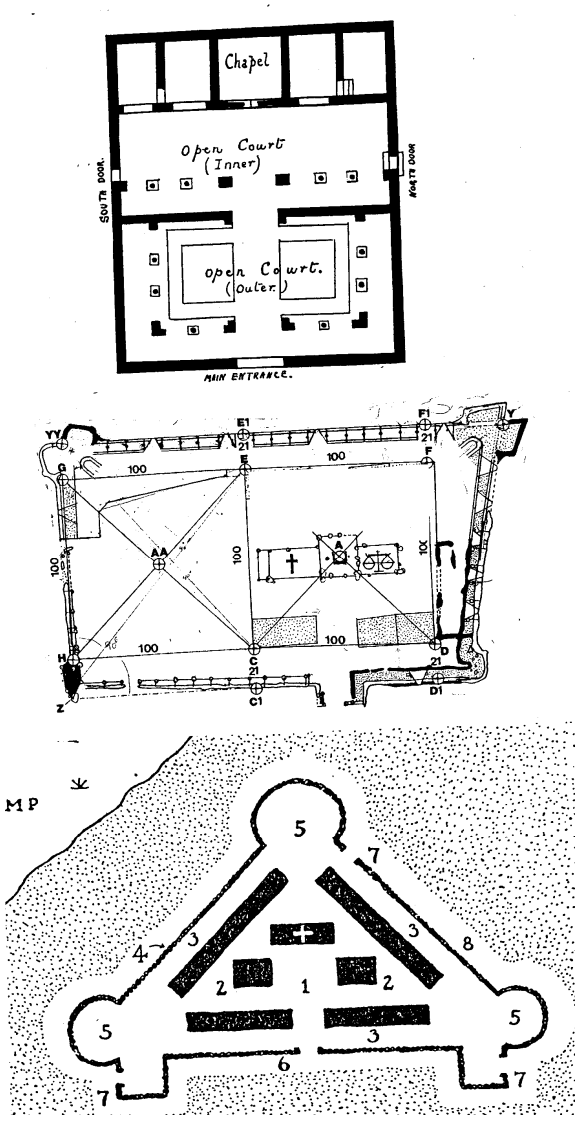


Figure 69
Three Vitruvian tripartive plans. (Top) Borcovicus Praetorium, the headquarters building of Roman fort (Johnson 1983); (Middle) Yeardley's Fort; (Bottom) James Fort (Forman 1938).

The east subordinate building at both James Fort and Flowerdew is a storehouse. The positions of the storehouses at James Fort and at Flowerdew, as independently modeled by Barka (1975:4) and Carson (et al. 1981) are identical. It should be noted again that during the 17th century the terms magazine, warehouse, and storehouse were virtually synonymous (Noel Hume 1975:186; OED 1978 6:22). In early Virginia, for example, the term magazine was used in

referring to the "Magazine Ship," the Susan, a floating Virginia Company store run by Abraham Piersey having little if any involvement with military stores (Jester and Hiden 1956:263). In Strachey's Martial Law of 1611, the military regime employed the word store, not magazine, when referring to the provisions of the "Provant Master" (master of provisions) (Flaherty 1969:15). Today, the French word for store is still magazine, although in modern English usage the meaning of magazine is typically reserved for military use referring to stored munitions.

In the 17th century, storehouses, warehouses, and magazines would have been used to hold food provisions, trade goods, and work tools, with weapons and munitions found as well in the military magazines and possibly retained in officer barracks at times for security because mutiny was a frequent problem. The structures would have been well built to prevent infestation by rodents and pilfering. It is likely that the "blockhouses" or "three forts" identified by Kelso (1996:20–21; Figure20) at Jamestown are in fact the "three large Store-houses joined together in length" that were built along the river front by 1611–12 when the fort's store house catchment system outgrew its capability and convenience (Arber 1910 II:511). The buildings may be tightly clustered so that each would be convenient to the river dock, although clustering of buildings was also probably encouraged during the First Anglo-Powhatan War. These Jamestown structures are superficially similar to the practical waterfront warehouses recorded at St.

Augustine ca. 1593 which are more fire resistant by not being joined (Chantelain 1926:Figure 4).

Our comparison of James Fort and Flowerdew can also be expanded to include the whole of each settlement. At Jamestown, a main street ran from the main gate to the church, presumably in between the court of guard building and the storehouse. The bastard caponier at Flowerdew is analogous to the main gate at James Fort, and the passage leading between Structures 1 and 2 to the chapel and plantation commander's tenement defines the main street (along the A-B line). Rather than being placed in row houses within James Fort following the Roman\Renaissance model, the servants and tenants at Flowerdew, as we noted in Chapter 2, were housed in quarters stretched out in a line across the Flowerdew and Weyanoke peninsulas. Flowerdew varies strongly from the plan of Jamestown and follows Dale's "Bermuda Model" of linear para-military farming because of its particular function as a tobacco- and corn-producing plantation and the context in which it needed to defend its crops. Flowerdew is a vernacular shift away from James Fort due to its maximal frontier adjustment to Virginia. Jamestown grew into New Town following the Romano\Medieval model between 1614 and 1621+ and following a much stronger urbanization model than Flowerdew, as it has a much better deep channel next to it and benefited from being a political capital and seat of government (Reps 1972).

James Fort as a Fortification 1607 to 1614

In this section of our review of Jamestown we are trying to see if we can find direct parallel between Jamestown and Flowerdew in design features in the fortifications. We hypothesize that James Fort follows a piecemeal development model like Yeardley's fort at Flowerdew. We think some aspects of fort architectural components will benefit from other comparisons because of the close personal background of Yeardley (junior officer) and Sir Thomas Gates (senior officer). Moreover, in 1616, James Fort was commanded by Samuel Sharpe, the plantation commander of Flowerdew under both Yeardley and Piersey.

Fortified triangular military camps are one of the three shapes (together with rectangles and semi-circles) recommended by Roman soldier Vegetitus based on the requirements of the ground (Milner 1993:23). Initially George Kendall erects "boughs of treescast together in the forme of a half moon" as part of clearing a campagna for the fort (Arber 1910 1:91). So it is possible that the fort design itself is a form of military humanitas (non-corremative references to classical antiquity) for, between the triangular fort and Kenadall's half-moon barricade, we have two out of three form references of a Roman camp shapes. At James Fort, however, there is some suggestion that the landscape required some compromises which resulted in the triangular form option (Purchas 1926 19:65).

The ideal Renaissance fortification is a circular snowflake-like polygon with streets radiating from a central hub (Argan 1969; Reps 1972). With this image in mind, the triangular fort can be understood as a simplified form of the ideal fort: that is, the circular polygon reduced to a single "triangular slice of the Vitruvian pie." Consequently, within the triangular fort, Vitruvian/Renaissance town-planning motifs are expressed in shorthand along a single main street (Argan 1969:35–36). Fithian (1991:11) has suggested that triangular forts such as Pope's Fort in St. Mary's City and James Fort had praxeological appeal in frontier settings. Labor was saved since the triangular fort required one less wall than a rectangular one, while the triangular configuration automatically provides a good flank angle to the bastions or bulwarks since each curtain cuts toward another at a sharp angle away from the salients (the outward projection of the bulwarks).

Triangular forts appear to have fallen out of favor by the third quarter of the 17th century because of the inherent weakness created at the narrow construction of the main perimeter corners at that neck and where it meets the gorge (rear) of the bulwarks (or demi-bastions or full bastions). These narrow constrictions were easily shot away by attacking artillery (Hogg 1981:111–112). The triangular fort also declined in popularity relative to quadrilinear or pentagonal forms because of the low ratio of usable interior space to the length of the curtain. Because of the economy of labor and materials inherent in triangular fortifications, however, they continued in

limited use into the modern era and were employed, for example, by the United States military in Vietnam during the 1960s and 1970s (Babitts, personal communication 1992

With all of the current popularity of the Dutch connection at Jamestown, it was ironically Maister Wingfield, "a soldier who had seen service in Ireland" (who was in charge of the council), who first designed and implemented the famous triangular fort possibly based on a winter camp familiar to him in Ulster (Arber 1910 1:91). There are two contemporaneous depictions of the triangular fort at Jamestown, each associated with different renditions of the ca. 1608–09 Zuniga map (see Figure 70). One depiction,

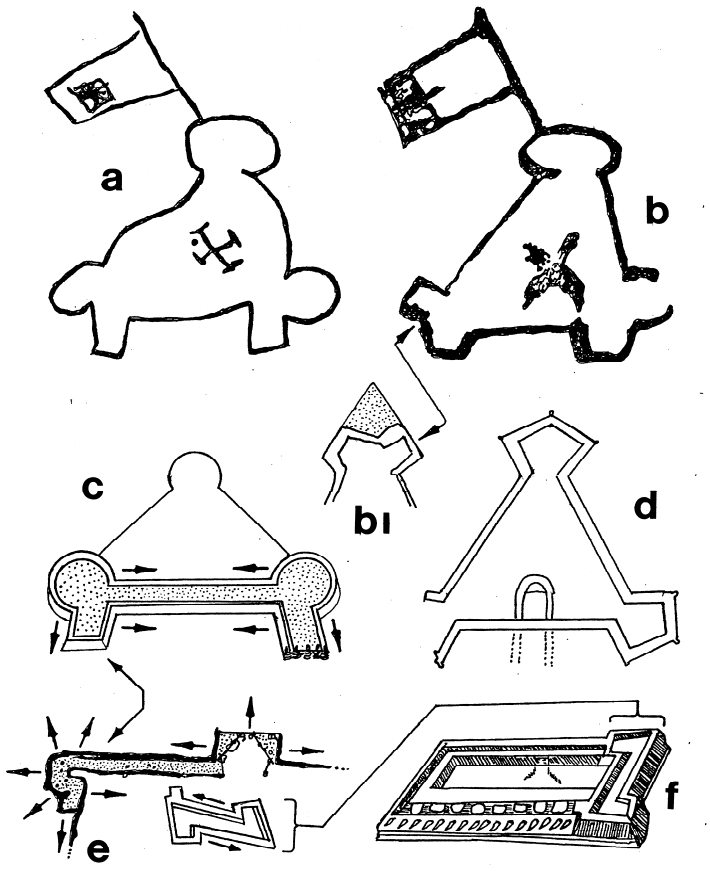


Figure 70

(a) Zuniga 1 after Brown 1890 1:184–185, ca. 1608;

(b) (b) Zuniga 2 after Kelso 1995:Fig. 16, ca. 1608,

(b1) (inset) shows how James Fort intends to move to full bastion,

(c) Black Water 1, a fully flanked rampart shows ease of conversion to a triangular fort; compare with Zuniga 1 bottom.

(d) St Augustine, Florida 1593 (after Reps 1972:Fig. 28). Here, the blunt bastion faces are able to resist cannon better.

(e) Yeardley's Fort ca. 1623. Note the Z-configuration and how an internal flank or traverse (bottom left) allows fort to cover artillery battery below, compare with Zuniga 1 bottom left, Blackwater 1 bottom left.

which we will refer to as the "Zuniga 1 Fort," was published by Brown (1890 I:184–185, inset); the other, referred to here as the "Zuniga 2 Fort," was brought to the attention of Chesapeake scholars more recently by Colonial National Historical Park historian James Haskett (Kelso 1995:Figure 16). Both depictions are crude sketches but, as often is the case, are nonetheless informative in some reasonable way given the absolute rarity of any overall design information besides confusing verbal references.

The Zuniga 1 Fort depiction shows a recognizable series of military grammatical statements which hold our interest here. It has a full, fairly blunted bulwark at the north corner which immediately recalls the blunted half bulwark at Flowerdew. Returning to Zuniga 1, at the southeast and southwest corners are two smaller rondels (rounded bulwarks) or half-bulwarks which might be called "half rounds" (semi-circular bastions) or, misleadingly, half-moons (not to be confused with triangular demi-lunes) (Hale 1983:xcvii)). The rondels do not clearly flank the south or river wall of the fort unless they are higher than the two squared south-facing works which we think were caponiers, sally ports (protected entrance and exit areas), or demi-bastions which do face the river.

Attached to the rondels at the Zuniga 1 Fort are traces of more modern demi-bastions (bastions with two flanks but only one face). These were possibly functionally combined with sally ports and they recall the shape of

Harwood's watchtower in basic structural form because they were probably using ribands (nailed horizontal runners) to secure the straight walls of their squarish mass (Noel Hume 1991). These demi-bastions do seem to augment the flanking of the south wall on the river side of the fort by forming a crossfire between them (Forman 1938:39). The 1601 siege plan for Kinsale appears to show similar military grammar by pairing two rondels at the same corner of the quadrilinear fortification (Hodges 1993:Figure 3:A3). This depiction also shows a Maltese or imperial cross within the fort and a flag field which is not touching the flag edge.

In basic form, the Zuniga 1 Fort approaches an initial design movement toward a very early, simple Renaissance form which recalls the basic plan of the 1325 Castello di Sarzanello, in Pisa, before Renaissance embellishments comprising a huge ravelin were added (Toy 1984:163–165) (see Figure 71). However, Zuniga 1 is probably directly referencing the ideal Tudor plan of 16th -century English Sandgate Castle, in England (O'Neil 1964:Plate 13) (see Figure 72). As suggested by Brannon (1997), the Zuniga 1 Fort is even more strikingly similar to Culmore in contemporary Ulster. In the Zuniga 1 Fort, the weakness inherent in triangular forts (narrow necks just before the bulwarks) was addressed by thickening the south bastion pairs by attaching demi-bastions to the rondels, thereby thickening the neck. Discounting demi-bastions or sally ports, it is the earthworks and timber stockades which make it a more modern Renaissance fort than the otherwise

nearly identical Late Medieval masonry work in Pisa. As we noted in Chapter 2, the rondels or circular bulwarks ("bole works") at James Fort owe their form to early earth and timber fortifications that were thrown up around medieval masonry town walls to keep early siege cannon at bay (Hale 1964b:xcvii; Hinds and Fitzgerald 1996:1, 61).

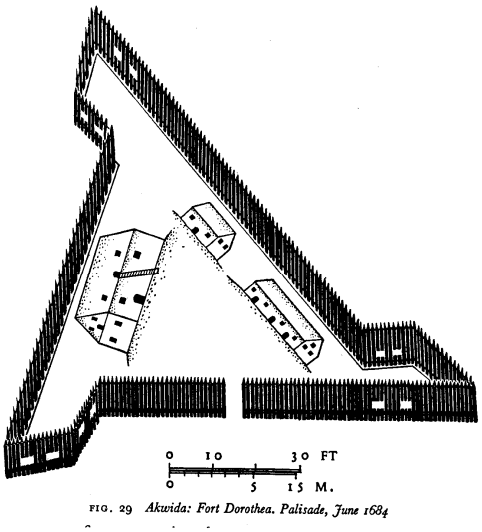


Figure 71
Triangular forts. (Top) Fort Dorothea 1654, West Africa flankered redoubt (Lawrence 1964), (Bottom) Castello di Sazanello Triangular castle ca. 1325 outwork ravelin 15th to 16th century (Toy 1984).

A depiction from 1597 of the original incarnation of Blackwater Fort shows a flanked line with two rondels defending the landward rear and two opposing squarish demi-bastions defending Yellow Ford (Rowse 1971:Figure 3A). (See

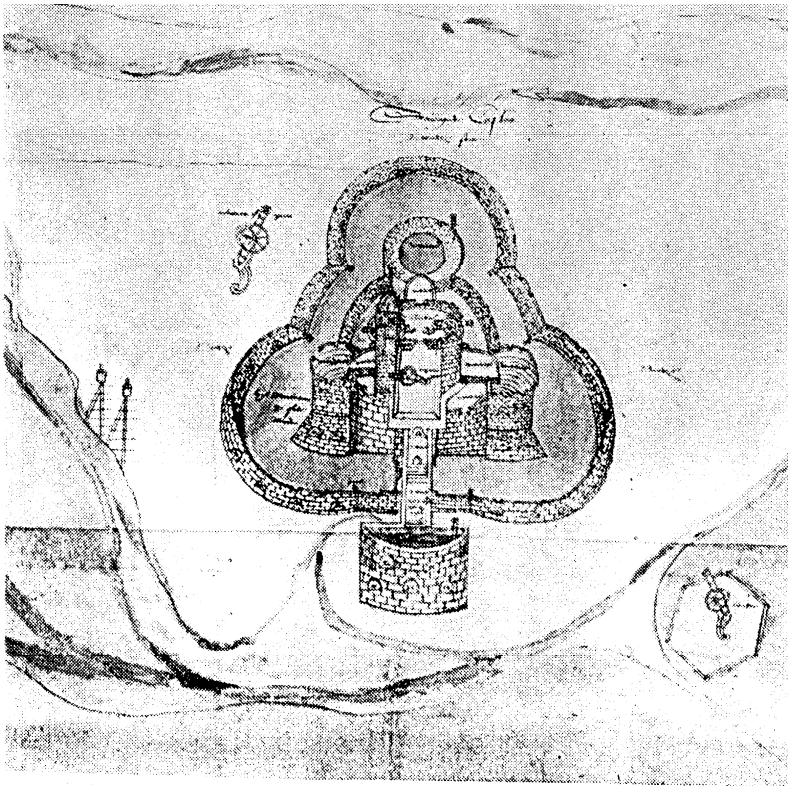


Figure 72
The Sandgate Fort (16th century) (O'Neil 1964).

Figure 73.) The essentially linear configuration of the work is an inheritance from flanked siege lines thrown up by Spanish, English, and Dutch troops in the Low Countries. It requires little mental effort to see that, with the addition of two rear converging walls, the 1597 Blackwater Fort plan could be transformed into a triangular fort, and indeed this appears to be what happened. Reps (1972:11) and Miller (1986) have each suggested that the later triangular 1601 incarnation of the Blackwater Fort in Armagh,

Northern Ireland, might represent a prototype for James Fort. (See Figure 74.) A comparison of two depictions of the Blackwater Fort at different

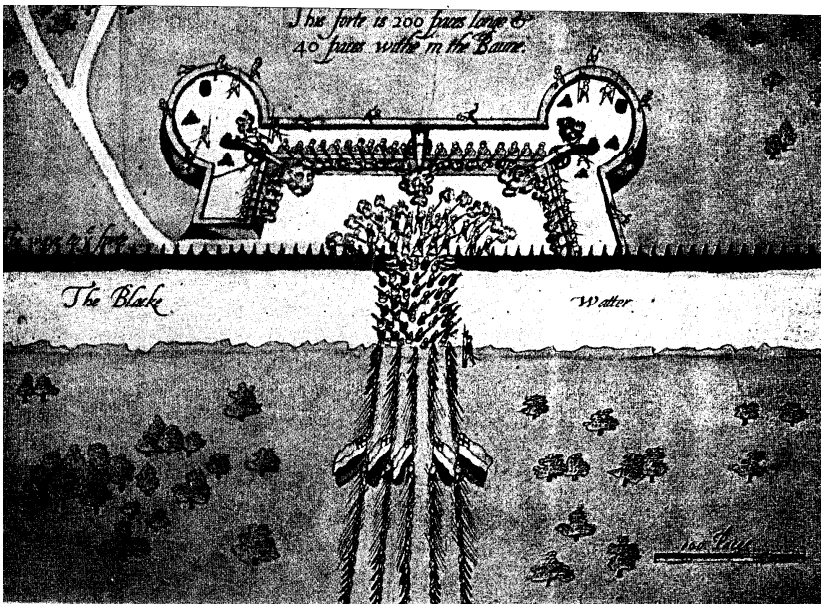


Figure 73
The English flanked rampart at Blackwater (Blackwater 1) which defends a ford against the Irish (Rowse 1971:Fig. 3a).

Figure 74
The Blackwater Fort ca. 1601 (Reps 1972).

stages of its development shows various rationalizations of demi-bastions into posterns or sally ports. By 1601, the Blackwater Fort had been extensively reshaped into a full triangular form with bent curtains which precluded Renaissance-style cross fire between bastions (Reps 1972:Figure 10). It now had one inland, fully arrow-shaped bastion and two less vernacular demi-bastions which flanked the ford poorly but which provided flank fire over all inland portions of the curtain. What apparently was a demi-bastion in 1597 facing Yellow Ford had probably been rationalized into a sally port on the lower right side similar to the rationalized rondel or bulwark facing southeast in the Zuniga 2 depiction of James Fort (Kelso 1995:Figure 16).

Similar to the Zuniga 1 Fort, the Zuniga 2 Fort has a blunted, full bulwark at the north corner similar to the Zuniga 1 Fort. It also has paired angular demi-bastions flanking all lower walls. In contrast to the Zuniga 1 Fort, no imperial cross is depicted within the fort and the field of the flag touches its edge. The demi-bastion at the southeast corner of the Zuniga 2 Fort is slightly more rounded than the other, perhaps because it has been modified from a previous "half round" as depicted on the Zuniga 1 Fort. The demi-bastion is pierced, and the resulting crude form perhaps functioned like a redan pan coupe (normally a V-shaped work with a flat head along a curtain wall) (Hinds and Fitzgerald 1996:31, 72, 73). As such, the pierced demi-bastion is similar to the fortified entrance at Yeardley's fort at one phase of its evolution within the bastard caponier. The pierced work may

represent a secondary fortified entrance into the settlement. Alternatively, the Zuniga 2 Fort drawing may be depicting a collapsed wall, as is indicated in a depiction of St. Augustine in its 1593 incarnation (Reps 1972:Figure 28).

The basic form of the eccentric demi-bastions in the Zuniga 2 Fort is similar to the shape of those in the eccentric Flowerdew half bulwark—both looking like bay windows seen from above. Differing from high-style demi-bastions shown in contemporary military textbooks, the demi-bastions on the river side of James Fort have only one face and two contracting walls. This form is similar to Late Medieval mural wall flat bastions or "bastards" and recalls a slightly more D-shaped work shown in the right corner of a depiction of an English masonry bastide built by 1557 at Calais in English-occupied France whose shape is probably Italian in origin (Reps 1972:Figure 8).

In sum, the Zuniga 1 and Zuniga 2 drawings may be portraying changes to the perimeter of James Fort between 1607 and 1609 as a result of deliberate modification or resulting from repairs. The Zuniga 2 depiction may represent the incomplete transformation of a triangular flankered redoubt, which originally had only one demi-bastion flanking each of three curtain walls in a familiar cartwheel style, toward the ideal of three full bulwarks. (See Figure 75.) A good example of a stockaded triangular fort built as a triangular flankered redoubt is Fort Dorothea of 1684, in Akwida,

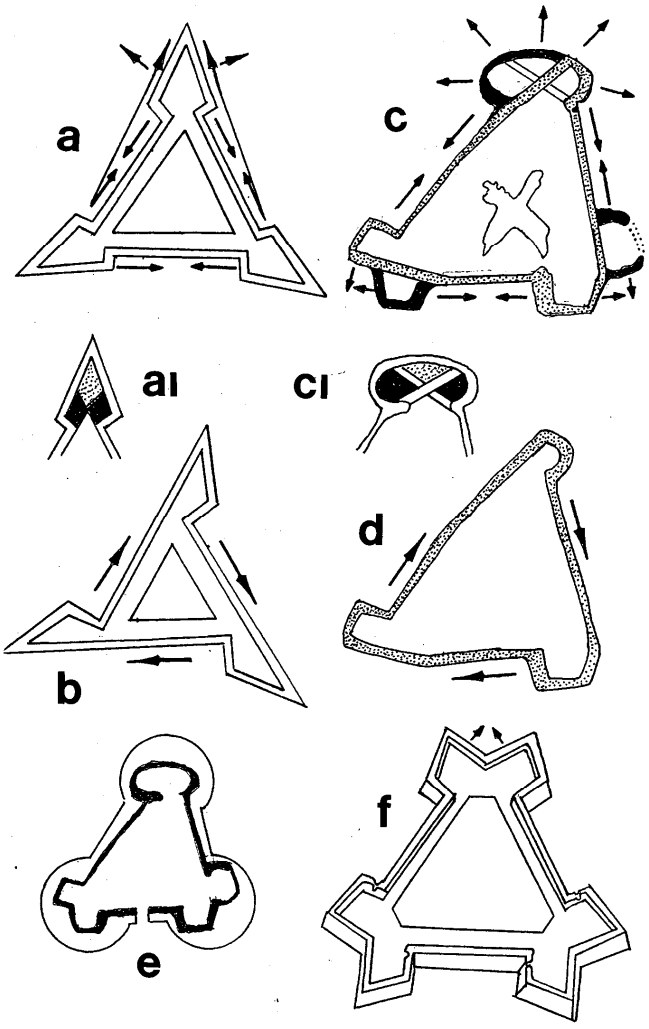


Figure 75

(a) Triangular fort in the high style with full Italianate bastions (after Da Gama 1649),

(a1) (Inset) Plan showing how full bastion may be formed of two paired demi-bastions

(b) A flankered redoubt with only one high-style demi-bastion flanking each single wall,

(c) Zuniga 2 shown as a vernacular flankered redoubt in the process of switching to paired demi-bastions ca. 1608,

(c1) (Inset) A full vernacular bulwark formed by two vernacular “half rounds” or half bulwarks,

(d) Zuniga 2 shown as a vernacular flankered redoubt ca. 1607 where each half bulwark or demi bastion flanks only one wall,

(e) A triangular fort with bifurcated bastion faces formed from paired demi bastions (plan showing how full bastion may be formed of two paired demi bastions (after Da Gama 1649),

(f) Zuniga 2 shown with concentric barrier and palisades to the exterior near the edge of scarp.

West Africa (Lawrence 1963:283–285). Returning to Zuniga 2, only one bulwark. the furthest inland, has been completed; and, using the Bermuda Island Devonshire Redoubt for comparison, it may be a watchtower on the "land side" were it would not interfere with "water-side" defenses (Arber 1910 2:624–625). In Zuniga 2 the flanking units along the south wall (the second two once perhaps once single demi-bastions) have been retained to double the flanking capability of the units as they move from single demi-bastions to paired demi-bastions, allowing for a cross fire along each curtain wall. The otherwise odd-looking paired demi-bastions in fact were frequently used in works, such as the late Tudor Fort Belvoir at Broughty Craig (Hale 1983:Figure 65).

Clearly when building a field work, it was important to establish some type of flank defense before adding embellishments such as full angled bastions or bulwarks (Duffy 1979:Figure 51; Hale 1983:Figure 65; Ive 1587:38). So James Fort was probably built piecemeal just like Yeardley's work and the Blackwater Fort. Either the upper rounded bulwark in the Zuniga 2 Fort did not need repair, or it alone had absorbed two paired demi-bastions by infilling its center to create a single, rounded bulwark retaining the piles of each previous work. This process would explain the deliberately blunted bulwark forms whose curved flank corners may be intended to be integral and decidedly crude orillons (rounded bastion flanks). Bifurcated bastion heads made of two opposing demi-bastions could easily be converted

into a full bastion as we noted in our hypothetical evolution of Yeardley's Fort.

The fort at Flowerdew is also superficially similar to the 1597 Blackwater Fort in the spirit of the flanked elbow of the southeast demi-bastion as it links with the terreplein zone. When considered together with the bastard caponier, the flanked elbow of the southeast demi-bastion comprises a fully flanked Z-Plan work expressed as a flanked line with an elbow on its north terminal allowing flank fire in all directions. At Flowerdew, the flank angle facing north (via a traverse) toward the terreplein would have allowed the Charles City militia to protect the artillery battery from an elevated position. Ramm (et al. 1964:Figure 18, top left) show how a "Z-Plan" internal flank, which probably was once freestanding, was built into one wall of a Spanish redoubt. Other Spanish versions of this seemingly odd military grammar, which created H-shaped fortifications with paired terminal bastions or demi-bastions, include Planta de San Juan de Ulua, built in New Spain in 1590, and Castillo de Amangos, built in Chile during the 17th century (Guarda 1990:68–69; Quijano 1984:Figure 8, 10, 30). So there is an international flavor to these eccentric English works which we also saw at the early incarnation of Blackwater.

While on the subject of English triangular forts, the reader might also be interested in two English triangular forts depicted by Dutch artists at the battle of Zutphen (see Figure 76).

Kelso's (1996:Frontispiece) recent excavations at Jamestown have uncovered evidence of ditch-set stockades of some triangular pales but mostly rounded forms many ax faceted as was the case at Flowerdew (Hodges 1993:Figure4B). The archaeological evidence conforms well to Peterson's (1964:16) and Sidney Kings' (Reps 1972:Figure26) models that the stockade would be composed of circular ditch-set pales reinforced periodically on the interior by heavy posts (counterforts) resting against an interior riband. The pales evidenced by the archaeological remains recall Hobbes' 1677 description of a site, "with a quick-set hedge enclosed around, And pales of heart of oak the hedge without Set close together and stuck deep i' th' ground" (OED 1978 7:390). In their construction of the ditch-set stockade, the early settlers were perhaps following Vitruvius's instructions to cut the lower parts of "clear" wood (the lower, knot-free part of the tree, below the branches). In order to make the ribands, such wood could easily be split into four pieces of heart wood. Further manipulation of the split lengths, such as trimming the rot-prone sapwood, might have resulted in these pieces being referred to as "planks" when employed as barrier palisades (Morgan 1926:60).

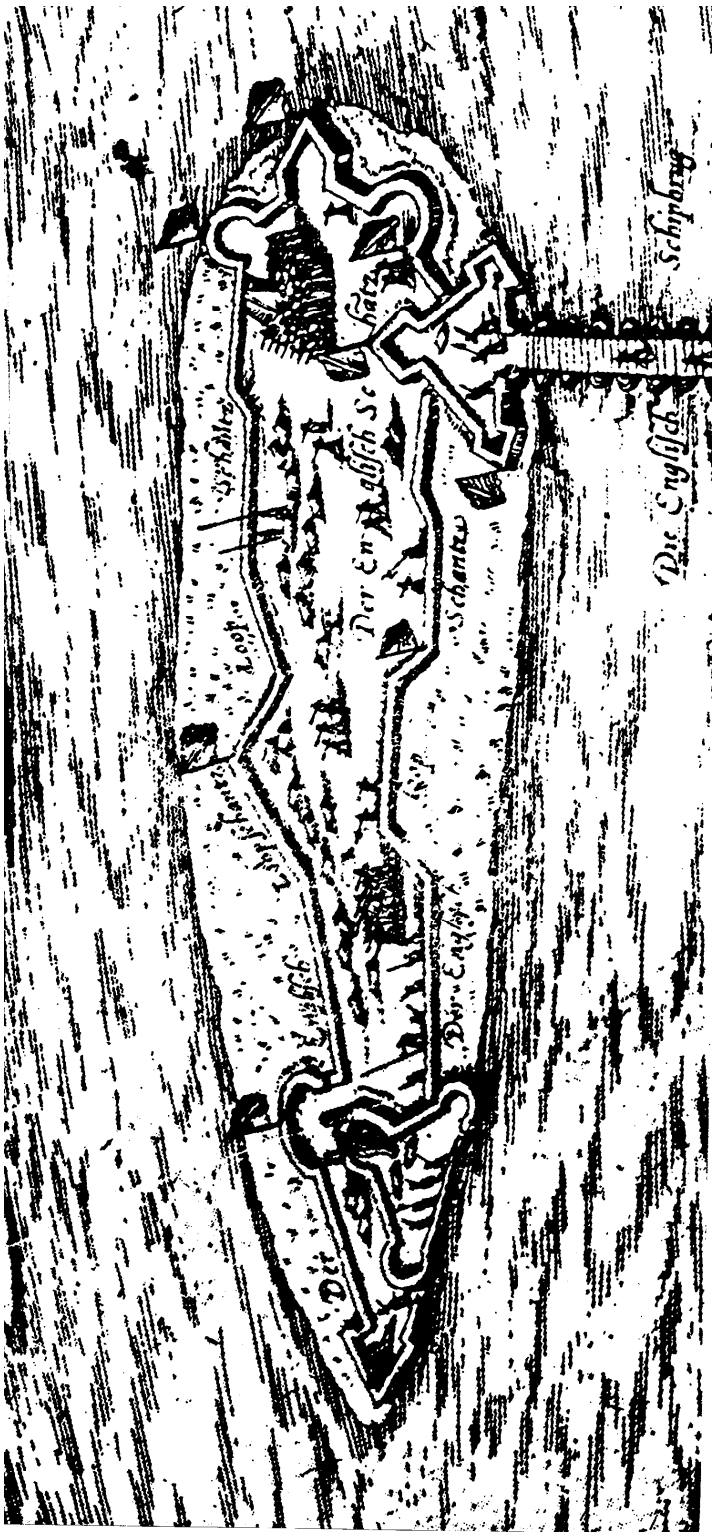


Figure 76
The battle at Zutphen in the Low Countries 1586. Note two English triangular forts on the Island (New York Public Library Prints Division).

During medieval times in Europe, stockades were most often constructed of wide half-round or rectangular slabs of heartwood (Kenyon 1990:33). Given the mature forest environment of the Chesapeake, the use of round or triangular pales likely represented the most efficient way for early English settlers to process local cypress and hardwoods into a wall of contiguous elements (Hodges 1993:201). In addition to Jamestown, the use of triangular pales has been documented archaeologically at Chisciack Watch, Harbor View, Clifts, and Flowerdew's Yeardley/Sharp Redoubt (Hodges 1993:197, 201, Figure 4B; Kelso et al. 1990; Neiman 1978; 1980). Archaeological evidence indicates that the wall of Yeardley's Fort at Flowerdew was composed at least in part of round wood, which would had enabled even speedier construction and offered some protection from fire as the sap wood rotted and absorbed moisture.

Profiling the Town/Fort Walls

The author has illustrated in profile what the original James Fort curtain wall looked like between 1607 and 1610. The drawing is of a section of the fort in between the bulwarks where no substantial earthworks were probably present. (See Figure 77.) Note how, as in the case of the Flowerdew model, the loopholes are elevated specifically so that attackers could not use them to fire into the fort except at high and therefore essentially useless angles. This interpretation is a departure from preliminary A.P.V.A. reconstructions where the "art of war" eludes us since the loopholes would be

equally useful to attacker and defender based on the testimony of Spanish spy De Molina (Kelso 1996:Front Cover). In the present thesis picture, the author has shown earth-filled barrels secured by heavy stakes and planks for this elevation. Other options for this interpretation could be rammed clay secured by wattles or staked boards, cargo boxes filled with earth, wooden benches, etc.

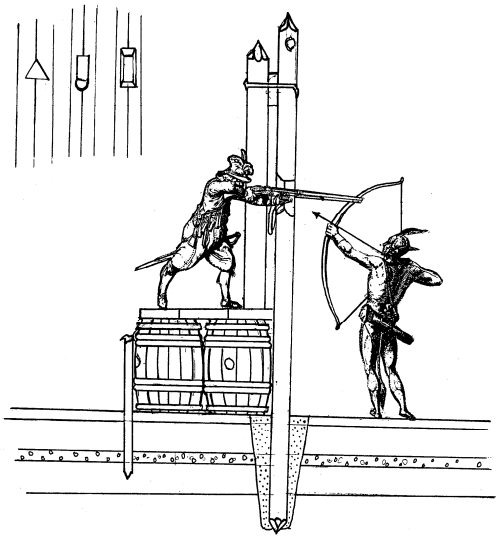


Figure 77
A profile of the ca. 1607–09 James Fort curtain showing how elevated gun ports became useless to attackers. (Above) loopholes formed by notching palisades, (Above left) a European triangular notched loophole, (Center) an English loophole seen from the outside, (Right) an English loophole seen from the inside.

What did the profile of "Low Countries" veteran Sir Thomas Gate's Fort look like between 1610 and 1613? Thanks to the observations of incarcerated Spanish spy De Molina, who apparently knew something about forts or he would have been sent to Virginia, we can reconstruct a responsible later profile as a basic model (Tyler (1946:218–224). De Molina was kept prisoner at James Fort in 1613, from there he noted:

> "With eight hundred men or one thousand soldiers he [his majesty the King of Spain] could reduce this place with great ease, or even with five hundred, because there is no expectation of aid from England for resistance and the forts they have are of boards so weak that a kick would break them down, and once arrived at the ramparts those without would have the advantage

> over those within because its beams and loopholes are common to both parts—a fortification without skill and made by unskilled men. [Tyler 1946:221].
>
> "…and the forts they have [contain a barrier palisade outside of the ramparts, with] boards so weak that a kick would break them down [since they are rotted to ground level or where made of green wood in 1610], and [having passed the barrier palisade and therefore] once arrived at the [new barrier of the typical 72 degree sloping] ramparts [inside the palisade] those [attackers] would have the advantage over those within [defenders] because its beams [supporting the loop holes] and loopholes [piercings for gunports] are common to to both parts [since they are near the top of the slope of the parapet—the exterior wall of the rampart and therefore usable by both attackers and defenders as gun ports faced on this new elevated plane—both out and in]. However they have placed their hope on one [Charles Cittie] of two [substantial] settlements [Charles Cittie and Henrico], one [Henrico] which they have founded twenty leagues up the river bend on a rugged peninsula with a narrow entrance by land and they are persuaded that they can defend themselves [here] against the whole world. I have not seen it but I know it is similar to the others [namely Fort Algernourne, Fort Charles, and James Fort] [Tyler 1946:221] [author's inserts].
>
> "At the mouth of this river from the south, [the river is] nine fathoms in depth. At the entrance is a fort [Fort Algernourne], or so to speak more exactly, a weak [this is a play on fort=strong] structure of boards ten hands high with twenty-five soldiers and four iron pieces [cannon]. Half a league off is another smaller [fort, Fort Charles] of boards ten hands high with fifteen soldiers without artillery. There is another smaller [fort, Fort Henry] then either [of the above] half a league inland from here for a defense against Indians [probably meaning it lacked earthworks except at the bastions or flankers and just had stockades]. This has fifteen more soldiers." [Tyler 1946:223-224] [author's inserts].

So De Molina has described the profile of not just James Fort but Fort Algernoune (at Point Comfort), Fort Henry (mouth of Hampton River), and Fort Charles (inland and along the Hampton River at Kencoughyan (Elizabeth City or modern Hampton). De Molina never saw Charles Cittie Fort (City Point Hopewell, which Yeardley helped build and where he got his cannon in 1622) or Henrico, but apparently his unhappy English cell mates have told him they were built the same shabby way.

It is at the ramparts that De Molina tells there were loopholes "common to both sides," especially after erosion. How were these ramparts made? In one 1623 contemporary quote recalling and generalizing about all the earlier forts (perhaps penned by Yeardley) it was noted that, "In most places and pticularie about Henrico & Charles Citie the Sodds are very good to fortifie wtshall especialle if they be cutt in the sedgie ground wch is so full of Rootes that it bind the earth close and keepes it from falling to pieces (Kingsbury 1935 4:259–262). While working on a National Park service archaeology contract, the author was able to determine that sods at Jamestown also hold together well. Here we are probably seeing again the influence of Vegetitus' Roman-fortified camp made up of sodds or "turves," once again which the Dutch made their trademark (see Chapter 2).

Completing our full knowledge of the fort we have Strachey's 1610 description of the fort's timber components which were built of, "Planks and strong Posts [for the external barrier palisade], four foot deep in the ground, of yong Oakes, Walnuts, &c." (Purchas 1926:19:57). This 4-foot depth helps us understand how much erosion had occurred at Flowerdew prior to modern plowing, although there the posts were ditch-set. Returning to Jamestown, the beams De Molina noted on top of the rampart associated with the loopholes were probably nailed to the remaining stockade posts left over from the 1607 to 1610 fort to make protective "head boards" or blocked lintels. The loop holes were made by either successive cutting of the tops of every so many

stockade posts (one or two cuts) or were automatic due to the tapering of each stockade post from bottom (wide) to top (narrow), leaving a wedge-shaped gap between posts. In sum, this is a conservative military fort-building style fresh from the battlefields of the "low Countries."

The exterior palisade that De Molina recommended kicking through should be briefly described. Palisade barriers outside of fort ramparts—a sort of early barbed wire looking like robust picket fences—may be found in many fortifications built in the 80 Years' War (Duffy 1979:97, 98, 99; Hodges 1993:Figure 4D). They continued to be popular in the 30 Years' War (1618–48) (Wagner 1979:193e, 225d,e; 226c). They can be placed abutting the rampart, near the rampart, in the ditch or scarp", or, more typically, beyond the counterscarp (outer side of fort ditch) where they usually prefaced a glacis (a mound of dirt outside of the counter scarpe and the palisade). (See Figure 78.) If it is not on Park Service property, we have probably lost the original fort ditch—as, according to Duffy (1979), Dutch ditches tended to be broad and shallow and have not been found on the A.P.V.A. side. A palisade barrier is far outside of the St. Augustine of 1593, where it appears to define a broad campagna or "covered way" defining the anti-personal killing zone of the fort (Reps 1972:Figure 28). (See also Figure 76e.)

By using the combined information noted above, the author has created a conjectural view of Gates' version of James Fort about summer

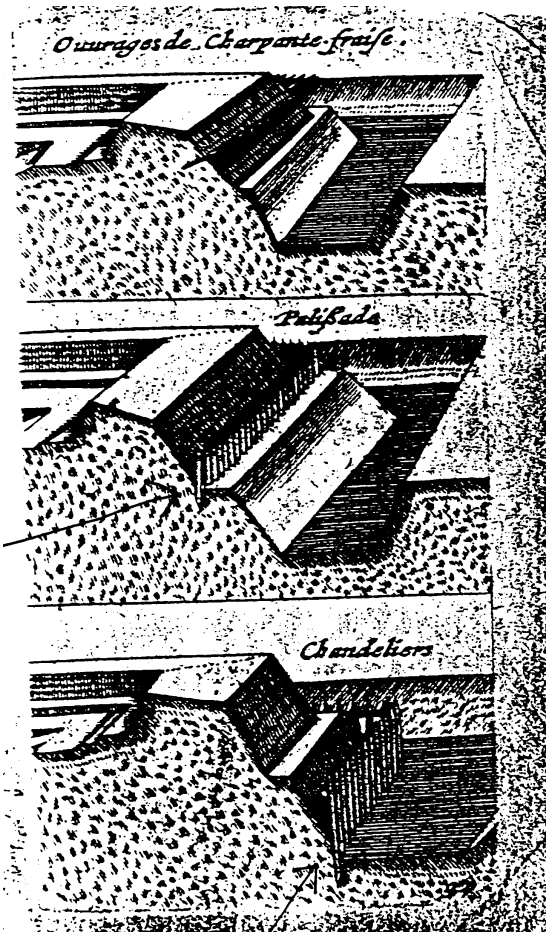


Figure 78
Contemporary profiles of ramparts and ditches 1649. (Top) Rampart with fraise, (Middle) external palisade built into rampart slope of parapet, (Bottom) Chandeliers open riven planks emerging from ditch from hole-set frame? From Da Gama 1649.

1610. (See Figure 79.) Its present weakness is how far away the barrier stockade was. In this picture the curved dotted line (below the soldiers' straight musket fire line) shows what such a rampart might look like with neglect by 1613; this was to be recorded by De Molina at only 10 hands high or 45 inches tall. This is because the Virginia climate quickly composted the sodds, and thunderstorms and frost heaving wore them down, burying the base of the riven planks and hastening their rot and detachment from ribands, thereby allowing them to be easily kicked through. Duffy (1979:91–93) has noted that Dutch works, while cheap in building materials (timber revetments and sod earthworks, or twig fastenings and sodds alone), tended to be impermanent (unless reveted with masonry) since they are ultimately based on temporary

Roman camp defenses. In Virginia, forts were built by soldiers whose only experience in fort building was equally impermanent "field works."

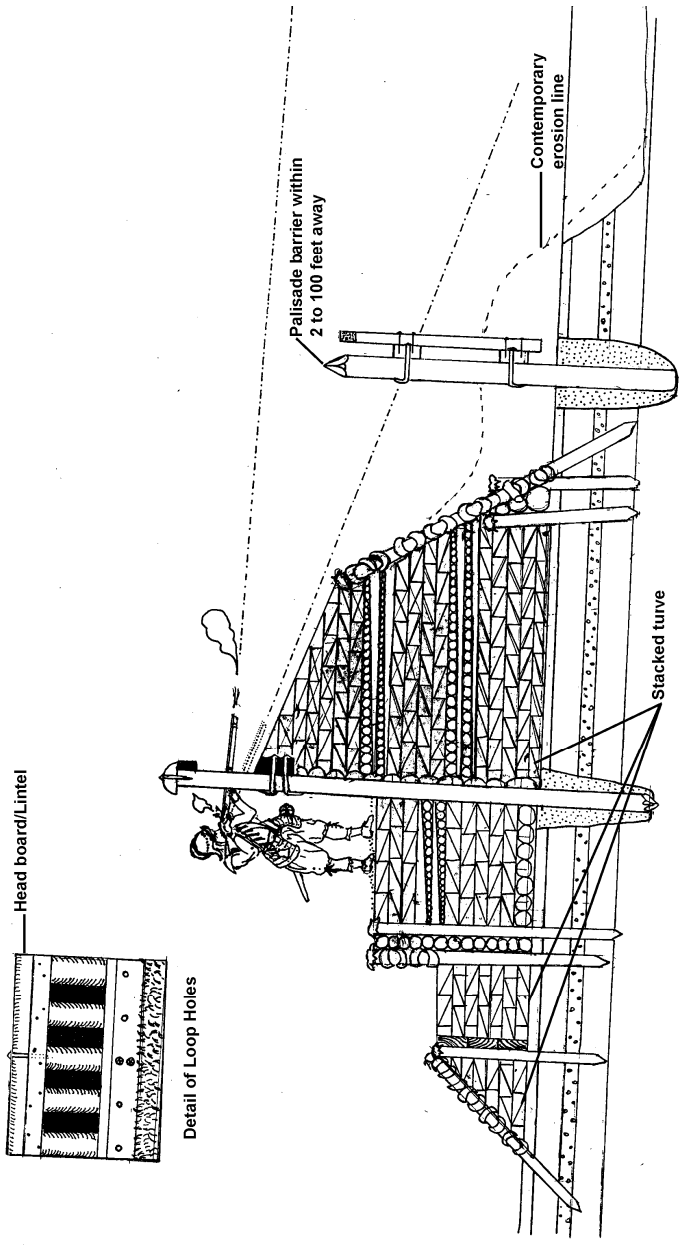


Figure 79
Profile of James Fort ca. late 1610 showing modification by Anglo-Dutch troops and Sir Thomas Gates. The original stockade is still used as a parapet, but "sodds" of "sedge grass" make up the full rampart and rampart walk; outside of ramparts at 1 to 200 feet away is a barrier palisade made of riven planks anchored by hole-set posts. Curving dotted line below soldier's fire zone shows erosion by 1613. (Above) the "beams and loopholes common to both sides" described by De Molina, consisting of narrow stockade tops with a lintel or "head board" on top and a riband below (as seen from outside the fort).

Returning to the drawing, note the alternating layers of tapering faggots to strengthen the work with "criss-cross" catenas which we have taken directly from Paul Ive's (1968) contemporary recommendations. Therefore, given this profile, Yeardley seems to be making adjustments for the Virginia climate when he places a pair of timber revetments to secure his ramparts (with a double paled parapet) at Yeardley's 1622–23 fort incarnation at Flowerdew. This appears to be desperate attempts at building at least a semi-permanent fort.

Despite these differences between Gate's and Yeardley's forts, Luccketti and Kelso's fort perimeter at Jamestown share much in common with Yeardley's fort, especially near the bulwark area. At this location their parade curtain, possibly once John Smith's exterior palisade, is about 1 to 1.5 feet wide, as is the parade curtain at Flowerdew (both possibly cut with the same trenching tool). At Flowerdew the exterior double-paled parapet ditch is typically 3.5 to 4.5 feet wide, as is the "dry moat" which therefore is probably really a robbed parapet ditch (Kelso et. al 1998:34). How do we know this? The most southerly (or river-fronting) sections of the dry moat are not concentric to the palisade but continue on into the James River via a second independent loop which has no palisade partner. Accordingly, this means we are looking at the north side of a typically eccentric English trefoil bulwark (a bulwark) that has three projections—two oriented to protect each

flank (defending the fort perimeter) and one in the center projecting toward a salient facing out into the field.

In order to illustrate this hypothesis, a contemporary illustration of the trefoil bastion (deemed a "blockhouse") at the Tudor fort at Guines has been blown up to the same scale as the James Fort "dry-moat" (O'Neil 1964:Plate 18a). (See Figure 80.) Then this "dry moat" has been superimposed over the Guines blockhouse, where it literally drops out right into the old drawing and exactly at the angle of one flanking component of the trefoilate bulwark and portions of its salient center component. (See Figure 81.) Hence, a powerful argument that the dry moat is really a robbed, almost certainly, once double-paled parapet construction ditch just like the one built by Sir Thomas Gates' second in command, George Yeardley. This identification is reinforced by the

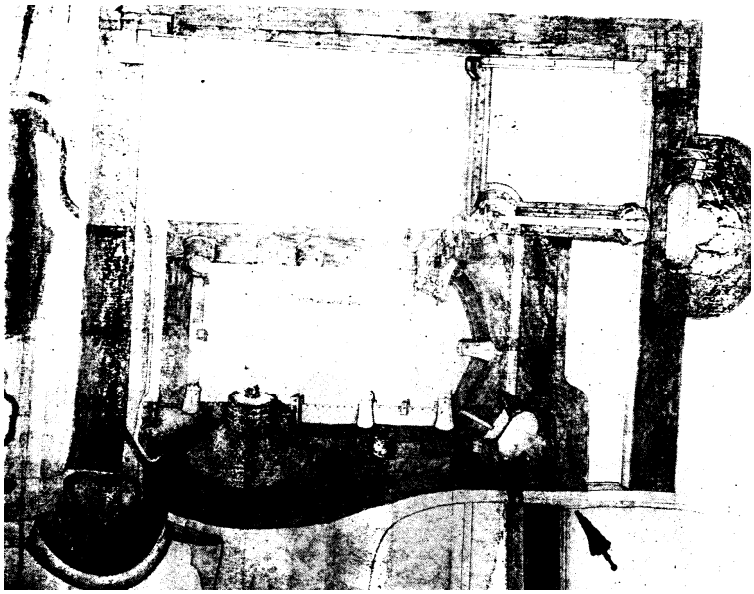


Figure 80
The Tudor Guines Fort with three massive trefoil bastions; arrow points to one studied to model James Fort's southeast trefoil bulwark (O'Neil 1964:Plate 18).

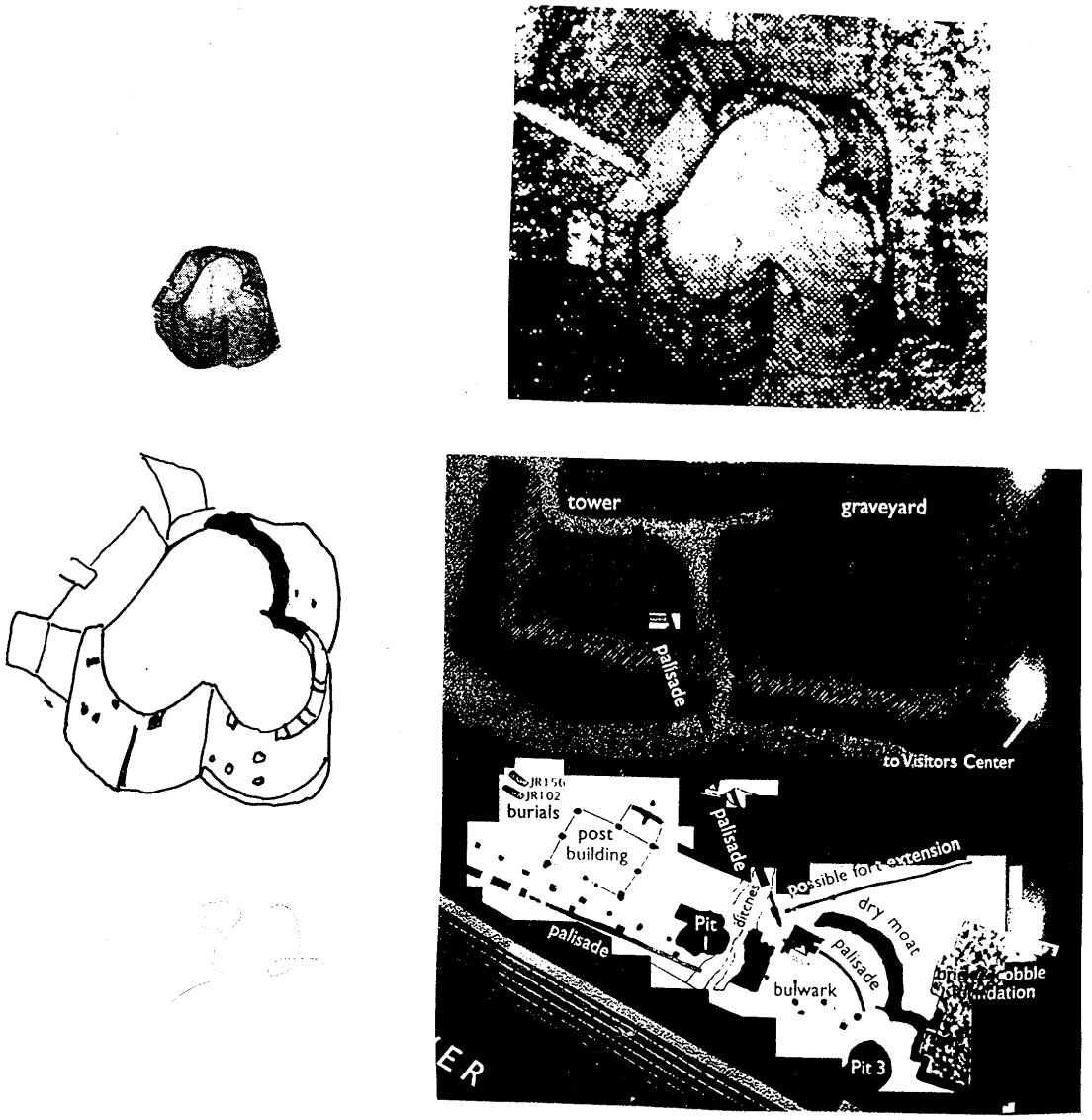


Figure 81
Identification of the trefoil bulwarks at James Fort ca. 1610+. Here, the Guines blockhouse has been blown up with the "dry moat" dropping out at the intersection of two lobes. The dry moat is a robbed parapet ditch.

traces of digging facets (here we are talking about discreet internal lines of digging that break a semi-circle into a polygon) which cut into the ground during parapet trench construction and which would have weathered away if the ditch were left open, thereby rounding the edges. Two timber piles (large postholes) seem to help complete a reinforcement of the semi-circle of the (once center) salient as the two semi-circles (flank and center) come together. While their pattern is less clear, they are reminiscent of the deltoid reverse piles in Yeardley's half bulwark.

While the most obvious configuration of the double-wide parapet ditch is to contain two vertical posts, it is also possible that the extra width in the double-pale construction ditch is telling us that this double pale consisted of two components—one outer vertical to form a barrier palisade or "storm posts" (in Dutch military slang) and one at about 72 degrees pointing toward and defining the rampart revetment (Wagner 1979:225e). The English fort at Calais, 1557 also has at least one trefoil bastion, as does the English fort of St. Mawes (1540–43) with a watch tower in the center, while the English town of Hull (1610) is protected by at least two trefoil blockhouses on its east side (Platt 1996:192; Reps 1972:Figure 5, 8). According to Platt (ibid) these trefoil works (think of a clover leaf with three petals) are English experiments with perfection of geometric forms in fort construction beginning in Tudor times (Wagner 1979:225:e).

Summary of James Fort 1607-1614

James Fort and the Jamestown settlement are much more sophisticated than Flowerdew for obvious reasons. Nonetheless, James Fort's core site structure is modeled from what Flowerdew was—that is, a simple military fortification in the Low Countries or Ulster (Wingfield connection). This model was adjusted by switching the fort commander's hierarchal building to a church and assembly area more fitting to the stronger ideo-technic missionary role of Jamestown. Both patterns, religious and temporal, can be found in the Roman principia noted by Garvan (1951). Symbolically therefore, there is a perfect match between the core site structure of Yeardley's core tripartite plan and the core tripartite plan of James Fort with regard to the key ordinal structure and subordinate garrison house and store house (see Key Analogues Chart). Although James Fort had by far more people in it—the Bermuda Hundred Model which had Yeardley move most of his tenants and servants out into corn and tobacco fields—it had not been developed. Consequently the death rate was devastating at James Fort.

In terms of fortification, James Fort also shows influences from classical military camps and through the Yeardley/Gates connection to Flowerdew. James Fort amplifies the Roman connection being built in sods in a triangular form as Vegetitus suggested. Additional linkage appears, especially in the Zuniga 2 Fort, where there seem to be parallels with blunt "half bulwarks" and "half-round" forms as well as caponier-like units facing

the river. Other parallels include the use of narrow parade curtains inside of double-wide parapet ditches, at least where Yeardley had earthworks (east and north side) and where James Fort had them (so far, near trefoil bulwarks only). Gates was a real veteran battlefield commander in contrast to the political captain general, Sir Thomas West, who also arrived in 1610 and technically commanded James Fort and town. Clearly Gates is the man behind the fort so well described by Strachey and De Molina. Yeardley's apparent abandonment of exterior barrier palisades and beefing up the ramparts with double stockade revetments is thought to be an adjustment to the Virginia climate in an attempt to use cypress to make a semi-permanent fort. At least Yeardley's ravelin seems to make a Jacobean departure from the essentially late-Tudor and conservative military style of Gates' 1610 fort with his essentially late Tudor works which would have been familiar to Henry VIII. In terms of stopping foreign boats or resisting land attacks, although simpler, Yeardley's fort had advantages over James Fort whose location was condemned by Robert Tindall, master gunner to Prince Henry. Despite this condemnation James Fort was apparently embellished with full ramparts and trefoil bulwarks by Gates who used fort construction to "entertaine" his soldiers stationed there. So we have made, for the first time, a serious departure from Sidney's King's James Fort thanks to the archaeology of the A.P.V.A. and a strong and readily interpretable documentary record.

WOLSTENHOLME TOWN: SITE C MARTIN'S HUNDRED

Wolstenholme Town, or the nucleated "Site C" complex at Martin's Hundred with its hierarchal bawn sited above a bilinear building arrangement, is without doubt the best example of a peacetime Ulster-like company town we have found so far in Virginia (Noel Hume 1982, 1983, 1991). The great strength of Noel Hume's own interpretations is based on his successful use of the simplest types of Ulster towns as a model for his robust interpretations. Probably because the town street is slightly offset from the bawn and consisted of a company compound and domestic site on one side and a barn on the other, Hume chose to use the slightly offset Macosquin town as his specific Ulster parallel. Beyond Macosquin, there are enough simple bi-linear towns to make use feel fairly secure that he is <u>probably</u> right on target for his basic identifications of Wolstenholme Town (see Figure 82) (Hume 1982:238-240).

Although Hume did not explain well-known scholarly precedents for his use of the Wolstenholme Town\Ulster settlement model, his study of Martin's Hundred was nonetheless a very important

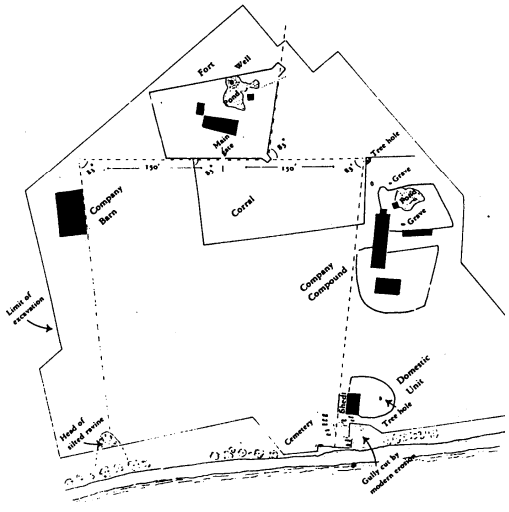


Figure 82
The town plan of Wolstenholme Town (Hume 1982: Fig 11–2).

contribution to Virginia archaeology and historic archaeology in general (cf. Garvan 1951:35–36; Reps 1972:12–20). This was done during a period when any published guess was a good one since others could see what Noel Hume found. In the context of the 1970s and 1980s Hume felt it was enough to say, "overall this archaeological site is just like an Ulster town, and the fort is just like James Fort which was enclosed with a plank, post, and rail palisade." Thus, so far, historic archaeology in Virginia has ultimately done little more than illustrate intellectual notions of parallel town-planning endeavors in Virginia and Ulster first suggested by Garvan (1951).

Because of Noel Hume's hard work and ambitious writing regimen, we will not linger here on a further introduction to Wolstenholme Town except to tune it for the purposes of our own avenue of inquiry. Using Wolstenholme Town as an specific example here, where do we go from a basic identification level? Below, the author hopes to reveal the fact that the vocal nature of the site plan has its own integrity which is not imitating Ulster, but rather using popular notions of spatial organization used by Ulster English, Spanish, and French settlers to define their military, commercial, and social frontier.

Wolstenholme Town's Historic Context

In keeping with our overall research approach, for us the deeper cultural meaning of Wolstenholme Town is best appreciated in its historic context (Beaudry 1988). Therefore, a brief introduction to these aspects

cannot be treated lightly. Settled as early as October 1618, Martin's Hundred was founded during the terminal period of the governorship of Samuel Argall (1617–19). This is a period of greatest change in Virginia toward any resemblance to Ulster influence, as the tobacco boom turned Virginia into a capitalist endeavor largely animated by mercantile concerns on privately held lands. The old military regime of largely Anglo-Dutch veterans were moving into governmental capacities or purely commercial capacities, and the martial law period was almost entirely over. In this time of peace with the Native Americans they focused entirely on defenses against a foreign threat only.

In detail, the strongest regional Ulster influence in Virginia is on the lower peninsula. The Marshall of Virginia (senior exclusively military figure below the governor) was an Ulster veteran named William Newce, a significant shift from the indigenous Anglo-Dutch veteran power cartel (Kingsbury 1906 I:446–447). Newce, who was based in Newport News, probably cooperated with his neighbor Mr. Goodkine, who was apparently heavily involved in the importation of cattle from Ulster (Kingsbury 1933:587). On Nov. 12, 1619, John Boys (Boise) of Martin's Hundred (along with John Jefferson of Flowerdew) had become one of only two "tobacco tasters," an important station related to tobacco price fixing, in the colony (Kingsbury 1933 3:I. Between 1619 and 1622, 3,570 men and women came to Virginia and cattle increased to "neere fifteen hundred" (ibid. 545, 546).

Built south of Jamestown, the very bold new Martin Hundred settlement was somewhat jealously controlled by the big London investors such as Richard Martin and John Wolstenholm. At 80,000 acres, these gentlemen laid claim to one of two huge tracts of land in Virginia and was only rivaled by Smith's Hundred (Hatch 1957). Apparently, less than desirable political deference was paid to the indigenous senior Virginia Company officials on both sites of the Atlantic by Martin's Hundred investors. Some regional abrasion occurred because of this perceived sense of relative independence as a private commercial enterprise (Hatch 1957:105). The sacking of Martin's Hundred by the Powhatan Chiefdom is certainly a reflection of the settlement's weakness, but importantly it also has a lot to do with a deflected attack against Jamestown since the Pamunkys were heading back to their canoes on the York River afterward and need female and child hostages.

Who built Wolstenholme Town (Site C) and when was it constructed? Both the town and fort could have been built or begun by either of the two 1619 Virginia assemblymen for Martin's Hundred, "Mr. John Boys [also spelled Boise], or John Jackson (Kingsbury 1933 3:153–154). The fort could have been laid out by Lieutenant Keane, the senior militia officer at Martin's Hundred prior to the Massacre of 1622. He was killed in 1622 (Hume 1982:65). However, for the sake of brevity the author, following Hume, will also use William Harwood, the 1620+ "Governor" of Martin's Hundred as an

arbitrary term of convenience for the key town and fort planner. This is since documentation hints that "Wolstenholme Town" proper, a more pretentious settlement slightly later than initial greater "Martin's Hundred" activity, is chiefly associated with his personal appearance. Although he may have suffered from being unseasoned, Harwood was frequently absent from the Virginia Council to which he was appointed, apparently in order to focus entirely on Martin's Hundred in general and without doubt Wolstenholme Town in particular (Ibid. 60, 62, 66, 67, 217).

Hume (1991: 208, 237-246, 284) identified Wolstenholme Town as a pre-massacre site based on extensive evidence of wholesale building burning indicated by ash deposits created on March 22, 1622, during the massacre, and via violent physical trauma observed in one burial at the company compound (ibid. 208, 243–4, 245, 284). Although it is possible many of these buildings may have been burned to recover architectural hardware or represent extensive fireplace ash sheet middens present at the site which got incorporated into posthole fill, Hume's arguments still makes sense for additional reasons based on comparative archaeological evidence. For instance, the extensive site structure of Wolstenholme Town (many large buildings spread out) stands in sharp contrast to the intensive nature of post-massacre sites (many large buildings enclosed) at Yeardley's Fort and Jordans Journey. While modern osteologists trained at the University of Tennessee privately comment that they consider Larry Angle's work on

Massacre trauma at Martin's Hundred "eccentric," we will still assume for now that Wolstenholme Town was sacked in 1622, "Massacre victums" or not. In balance and until new information becomes available, this overall information argues that Wolstenholme was indeed a very vulnerable and early peace-time settlement which has a very tight dating range.

The Classically Inspired Wolstenholme Town Master Plan

In order to focus right in on possible classical influence on the Wolstenholme Town master plan, let us begin by reviewing Noel Hume's pioneer work on the site's spatial organization via a close focus on the site master plan. We will treat the fort separately further below. Hume's rationale for a specific site master plan is based on inter-site spatial patterning.

The key elements of Noel Hume's town plan include:

1. A hierarchally centered bawn or fort, enclosing Harwood's manor.
2. Bi-linear arrangements of subordinate structures based on a common 83-degree angle, 150 feet apart from an imaginary centerline.
3. An empirical tie-in with the fort based on the southern curtain's 83-degree angle against this inferred grid.
4. Use of natural elements or improvements such as contemporary trees (for reference points) and ravines (for water access) as part of the plan. This includes more houses lost to the James River.

There is no question that Hume had the right idea that there should be some reason to the plan and that one exists. However, on the strength that the three 83-degree angles do not meet on centered point and that the tree—used as a reference point for the east building line—is only hypothetically a 17th-century tree, we will have to tune Hume's plan in order to propel further analysis. By using simple methods introduced to the Jamestown conference in a paper in 1993 employing Yeardley's Fort at Flowerdew and Jordans Journey (which was directly compared to 1621 Magherafelt (another bi-linear Ulster town but with direct access entry) and Shirley plantation, the author has redrawn the site master plan.

The redrawing was done using an arbitrary point in the manor and the corners of buildings to isolate the geometric relationships between hierarchal and subordinate structures. Our motive in the redrawing was simple, all classical and Renaissance architects suggest that geometry is at the basis of good architecture (Morgan 1969; Serlio 1982). This new geometric relationship is experimentally mapped out as would be the case in the classically inspired master plans of 18th-century mansion complexes at Shirley Plantation or the Governor's Palace in Williamsburg. Whether or not this is Harwood's actual master plan, such an approach allows us to now directly compare 17th- and 18th-century mental template and therefore isolate variability. This is so we can attempt to map out how classical inspiration penetrated into the 17th-century mental template. The results of this study,

which are based on a 1-inch-equals-25-feet copy of Noel Hume's original master plan drawing, are shown in Figure 83.

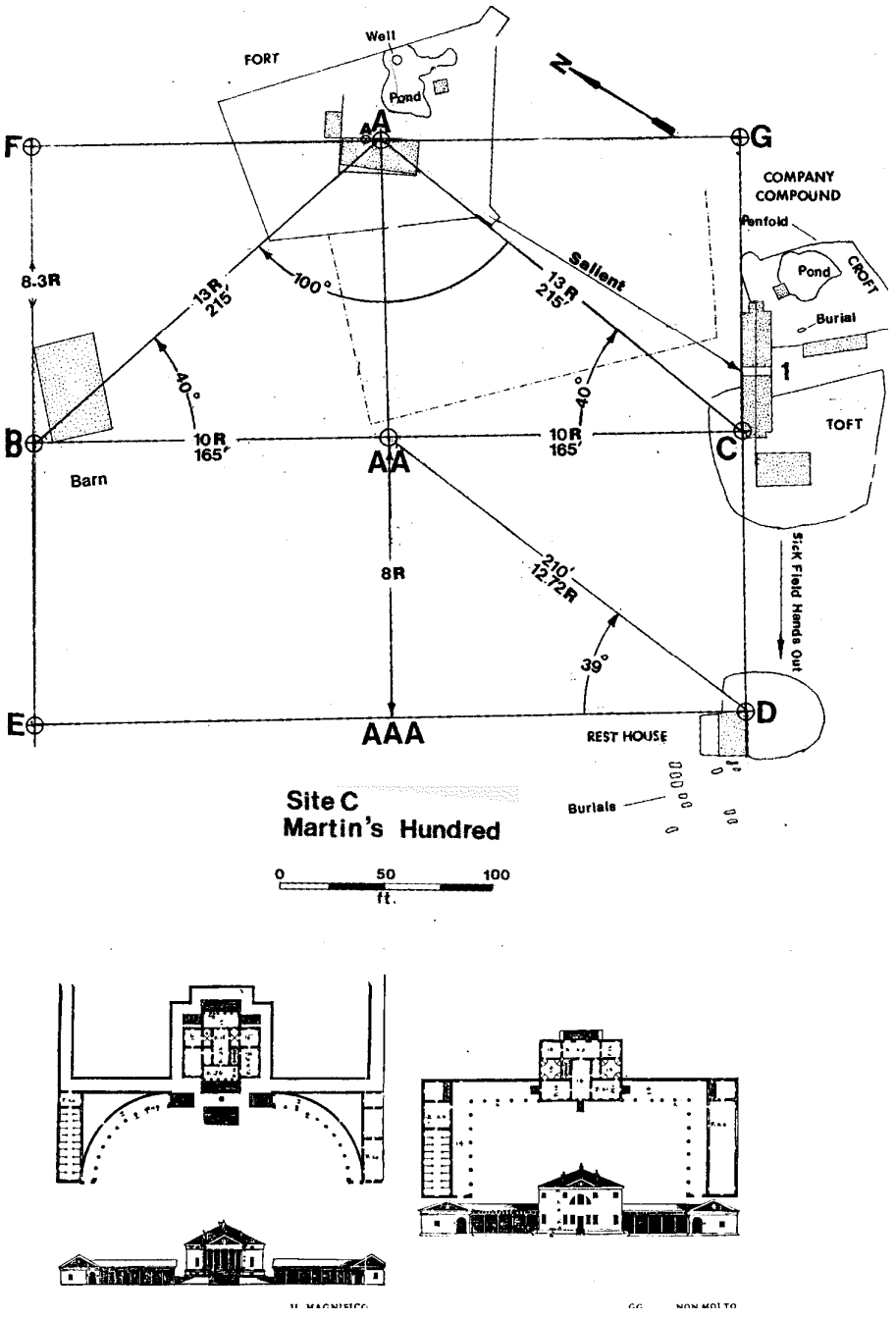


Figure 83
(Top) Wolstenholme Town layout, (Bottom) (L) Villa Badoer,
(R) Villa Zen by Palladio (Thompson 1993:Fig. 88).

Wolstenholme Town Core Plan and Methodology:

The key elements of this new plan and their hypothetical planning implications are listed below:

1. Point A: Harwood chose an arbitrary point "A" (big A) which is 17.5 feet along the north facade of his as-yet unbuilt manor house within the bawn. This became a vertex for his core tripartite core plan. Point A is not at the center of the approximately 39- by 15-foot dwelling, but rather just to the east of one of two posts that probably defined a cross passage within the poorly defined manor (Carson et. al. 1981:193). Point A is however, at the center of a large equilateral triangle (A-B-C). He apparently formed A as a literal point of origin with a wooden stake and created points B and C by apparently sighting lines which were marked out as the legs of this equilateral triangle. (Note: The small A is the center point of the "fort master plan" and is included here for comparison.)

1A. Point AA: Represents an arbitrary bisector point for the triangle A-B-C. It creates two converging right triangles with points A-AA-B and A-AA-C equaling 90 degrees. Points A-B-AA and A-C-AA equals 40 degrees, B-A-AA and C-A-AA equals 50 degrees (cf. Serlio 1982 1:Fol. 3, Fol.3:30).

2. Point B: Harwood threw out a cord knotted in rods (16.5 feet) 13 rods (215 feet) long at 50 degrees to create B. It is 12 degrees magnetic west of point AA. Though tilted off this point, this became the basis of the barn location.

3. Point C: Harwood repeated this exercise in reverse setting down point C at 50 degrees and 13 rods or 215 feet from A at 12 degrees south of magnetic south which became the southwest corner of the company compound longhouse.

Addition to Core Plan

4. Point D: In order to sight in the "domestic site," a line 8 rods (7.954 rods) long (131.25 feet) was added below point C. I am not sure how he did this. The angle of points AA-D-AAA is 39 degrees, which is only one degree off the angles A-C-B or A-B-C. So perhaps this was sighted in from the bisector point AA or AAA, or more likely just added below C while squaring this with the plan in some fashion. The hypotenuse of the triangle AA-AAA-D is 210 feet long or 12.72

rods long, so the simple measurement of 8 rods (C-D) has the most appeal here.

5. Point E: This is an arbitrary point opposite point D where we suspect the next building would logically be added.

Additional Arbitrary Points

6. Point F: This point is 8.3 rods (137.5 feet) above point B and squares the triangle A-B-AA.

7. Point G: This point is in line with the C-D line and continuing 8.3 rods (137.5 feet) above it. It squares the triangle A-AA-C.

It is possible that points F and G were valid points used to create the bilinear plan by simply creating line G-A-F and turning at right angles. However, given the odd numerical figures—that are not clean rod-oriented figures—these points F and G were probably not valid points in Harwood's plan. Nonetheless, they do perform the service of squaring Harwood's manor with the master plan. Archaeologically, the building, due to centuries of plowing, consists of a trapezoid with the greatest damage to the northwest corner. So the entire master plan—so far as we can determine—argues that the missing manor wall posts are especially deficient in the northwest corner.

Discussion of the New Master Plan

This new master plan now takes on an emic character which allows us to penetrate right into Harwood's mind and make etic appraisals. Harwood is demonstrating an enormous amount of personal discipline in this plan, for he is treating the town plan as a fairly serious architectural statement based on plane geometry as recommended by Renaissance architect Serlio (1982)

and Roman architect Vitruvius (Morgan 1960). He seems to be using this plan for two basic purposes. One, he wants an orderly town that can grow in a coherent manner, but unlike Yeardley he sees the town as a finite unit; hence, he does not use an equilateral right triangle as the basis of his town plan as Yeardley did. Rather, he is interested in creating a broad avenue between his buildings as indicated by the 100-degree angle between his subordinate buildings.

Second, by the skills Harwood has demonstrated and the knowledge of the tools he has employed, he is trying to underscore his rightful place at the pinnacle of the small scale social hierarchy at Martin's Hundred. Harwood, as an educated man (perhaps related to minor nobility), would probably be expected to perform such simple geometrical plans unaided and this served to underscore his social authority at the site (Noel Hume 1982:64). Based on the master plan, seemingly Harwood had access to a protractor or compass with sighting targets and a cord knotted in rods, or he knew some basic geometric equations that would inadvertently produce the clean angles and figures which we now confront, perhaps by mapping them first on paper in a scale drawing. In such relatively elite skilled planning we can begin to account for class divisions which are omitted in Glassie's (1975) and Deetz's (1977) evolutionary models of mental template changes between the 17th and 18th century (Shackel 1993:3, 11–12).

The overall implications of this master plan are of great interest to us for a number of reasons. First, like most master plans it is now based on the actual architectural remains and their geometric relationships, which were once set down with wooden stakes as was the case at Flowerdew. Second, the master plan appears to be measured in rods, also similar to Flowerdew. The line A-C and A-B are both 13 rods long (215 feet) resulting in the line B-AA-C, which is 20 rods long. The triangle A-B-C which is integral to the above figures therefore appears to be the core of the master plan. It consists of an equilateral triangle 100 degrees wide (with legs A-B to A-C) with a hypotenuse (B-C) creating two converging 40-degree angles (A-B-AA, A-C-AA). The only clean figure which links the domestic site to the master plan, is also in rods—namely 8 rods, is linked by a 39-degree angle. This is only 1 degree off the 40-degree angle noted above and probably suggests the bisector line reference points AA and AAA, or most likely just AA, were valid points to Harwood's plan.

Despite the above information, feet rather than rods, and feet in addition to rods, cannot be ignored as key measuring aspects of Harwood's plan. For instance, while the 20-rod-wide (330 feet) width is a clean figure in rods, it is also clean in feet. Moreover, the length of the plan (including point D-E) is clean in feet at 270 feet and uneven in rods at 16.3 feet rods. It is therefore likely that the relationship of rods to feet are simply two parts of the same whole to 17th-century planners, just as feet and yards are known to

us. Harwoood's use of two 10-rod distances (B-AA, AA-C) at 16.5 per rod creates a clever parody on this relationship, almost as if he wanted us to know he was working in rods. This is because 165 feet is easily calculated as 10 rods just as easily as Yeardley memorized the fact that 100 feet is with very minor error 6 rods (6.06 rods).

Defensive needs seem to be an important part of the core master plan, within the equilateral triangle expressed in A-B-C. Deeply imbedded in Harwood's equilateral triangle seems to be a desire on his part to flank both the company compound's front door and the barn yard which are clearly two passive elements of his defensive plan. The salient angle (the angle of the center of the face or front of the flanker) of the southwest flanker points directly toward the center of the company compound. This is also true of the barn and its relationship with the northwest flanker—if we restore the fort to its original design (which we will do below). If we don't, the 40-degree angle from A to B is nearly right on the fort's corner. Harwood's plan is not mechanical but internally reflexive, that is, he corrected it as he went. The small A within the fort (the center point of the fort plan) is, in fact, shifted to the northwest in order to correct his salient angle on the town master plan (big A). This aspect of the town plan will be addressed in more detail in the fort section below; here, we are just trying to stick with the big picture with the fort being only a single major component of a larger scheme.

Cultural Significance of the Plan

Armed with the above empirical and geometric planning information, we can now readily isolate glaring mental template variability between 17th- and 18th-century uses of classical inspiration by using simple comparisons with Shirley (see Figure 84). We can also observe essential similarities which bring the two centuries together in a more evolutionary manner.

Clearly, the treatment of the barn and specifically its orientation stands out as the least geometrically hermetic aspect of the 17th-century master plan. As in the case of the Yeardley Fort's example where Yeardley also demonstrated ample mathematical abilities in his plan, it was the warehouse structure associated with objects (munitions, produce, tools, commodities, etc.) and not buildings associated with people that has been compromised in physical orientation. While Yeardley rationally tilted the west warehouse bays off his master plan in order to allow the quarter and warehouse to flank one another with defensive fire, Harwood apparently tilted the barn toward the manor for passive defensive reasons: surveillance, convenience, and perhaps very complex social/world view reasons.

On the surface, we can infer that the barn doors and a "barn yard," the specific work area associated with this barn, was almost certainly deliberately faced toward the nearest corner of Harwood's Fort. Harwood therefore considered it irrational for barn tilting not to be the case since he

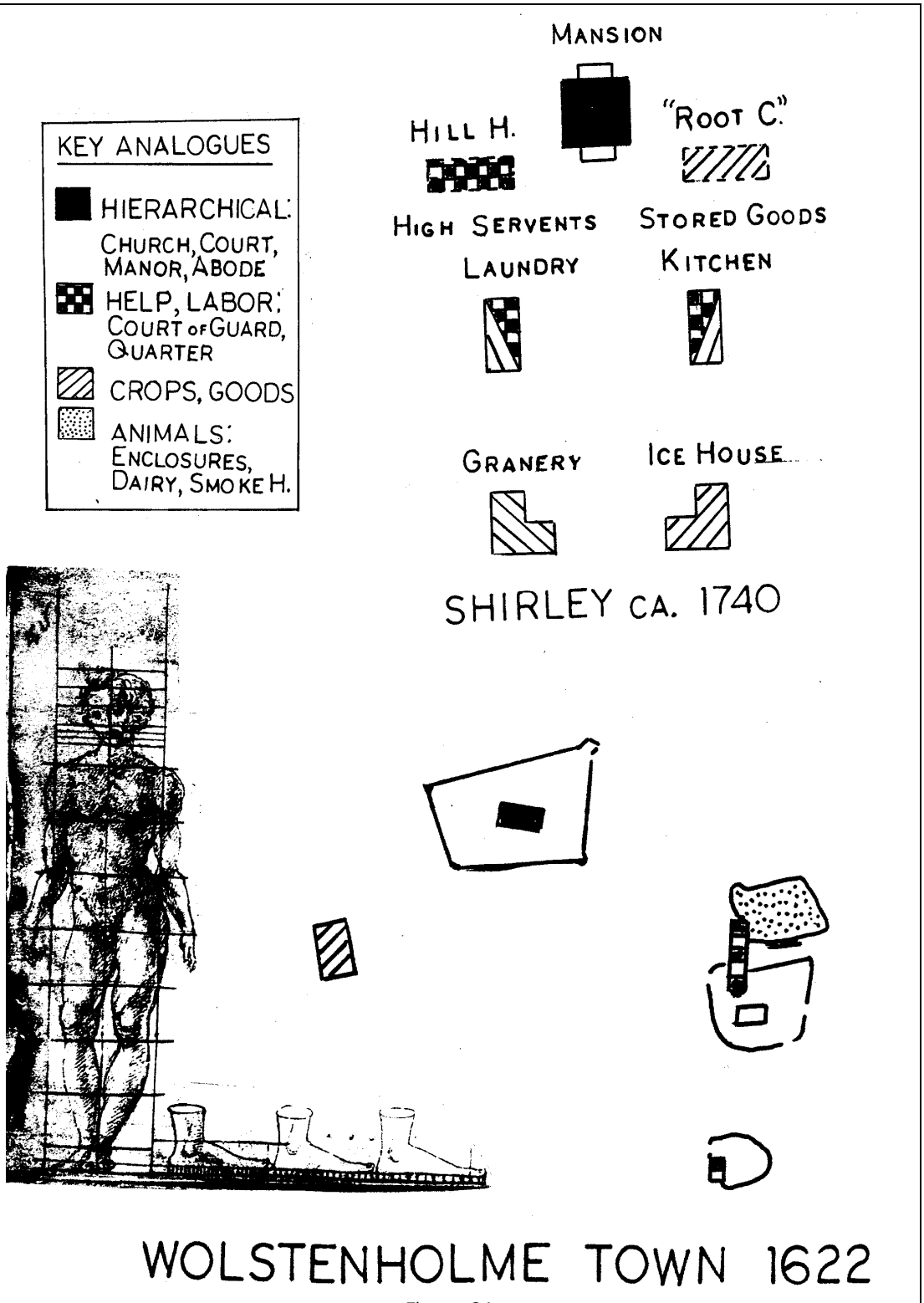


Figure 84
A comparison of Shirley and Walstenholme Town showing Vitruvian influences (Reinhart et al. 1984; Pedretti 1985:Fig. 291).

wanted to "flanker" both the building and its work area. In the meantime at Shirley, and other 18th-century sites aligned in the colder high style, internal geometric order was more important to them than rational spatial use. At Shirley all subordinate buildings could be observed from a central point, but only if the work yards faced out toward the courtyard, which may not be the case. Instead, it is possible that at Shirley all work was done indoors by irrationally (from a 17th-century standpoint) spending money to house work areas within buildings rather than compromise the orderly aspect of the classical plan. Harwood's plan is irrational by any standard, however; for by turning the barn toward the manor, he ensured that he would have a difficult time observing a building sited, for instance, at point E within his own master plan. Alternatively, since new buildings to the northwest would be out of range of musketry, perhaps Harwood didn't care. It is also very likely that Harwood was not planning to build anything below the barn at Point E because of social reasons.

Now we must address social and worldview reasons for turning the barn out of square with the orderly inhabited structures. Since within the Site C complex, buildings with objects are well aligned with private building groups, the barn has to have been seen differently. How are other buildings retaining objects treated at Site C? A shed is well aligned with Harwood's manor by sharing a gable line of the manor with the long facade line of the shed. A storehouse is well aligned with the ridgeline of the company

compound. So simply saying buildings containing objects are informally treated and buildings containing people are rigorously aligned is true only of the greater town plan. This is since within the fort or home lots in private or internally segregated clusters of structures buildings containing objects are well aligned. What has caused the tensions in the town plan? The answer seems to be that "object-related buildings" in greater relation to "people-related building" must bow to some higher order in a public rather than private venue. If Harwood or the occupants of the company compound housed their own servants in separate buildings within their individual building clusters, we can probably anticipate that the quarters would spatially submit to the main domiciles and in turn the building containing objects would be placed in a subordinate position to these quarters. Thus, the higher order that the barn seemingly bows to is almost certainly coming from the Late Medieval and Elizabethan concept of a "chain of being" which we discussed briefly when considering the core tripartite plan at Flowerdew (Tillyard 1956:25–36). Rather than repeat the Flowerdew discussion again, we will review it but plug Harwood's notions right into it.

The Elizabethan mindset conceived of the universal order in three main forms: a vertical chain, which ranks everything as a series of links moving from lower orders (Harwood, Harwood's manor, the company compound, the Barn) to higher orders (people by social class, God, etc.); a series of horizontal corresponding planes (a direct relationship to the

servants at the company compound and the barn the former's produce) in order of dignity; and a cosmic musical dance by degree in motion (a dance here at planting and harvest, and perhaps a rotation around the central manor).

Since Harwood has connected the domestic site with the company compound by a obverse/reverse facade link (the C-D Line), somehow the domestic site is ranked over the barn since it is more orderly placed and linked to a site (the company compound) that is spatially superior to the barn (the company compound is not tilted, the barn is). The C-D line is a good example of an architectural visualization of a corresponding horizontal plane within the chain of being (Tillyard 1956:83). Tipping the barn out of square with the main link (C-D) line is to Harwood literally making the barn "bow" to the chain of being and people residing in the company compound and the domestic site who are linked in a separate chain. Otherwise, it apparently would be an insult to place the domestic site in an inferior position to the barn since it is further away from the highest link in the chain which is Harwood's humble manor within the fort. The fact that the barn is "bowing" to the C-D line shows that it is in motion and orbiting like a planet in a cosmic dance around higher links of the chain (ibid. 103). In other words, the Wolstenholme Town plan makes a wonderful paradigm in microcosm for illustrating the "Chain of Being" as a perfect whole.

The second seemingly disturbing variance with Harwood's plan from the Shirley plan is that the relationship between the buildings in the G-C-D line seems geometrically informal. Is it good symmetrical planning to create a building line with the company compound's longhouse sighted with its north long facade aligned with the domestic site's south facade? There are three possible explanations for this. One is that in light of the chain of being, the domestic site appears to have felt a rude slighting due to its inferior position to the barn and actually turns 180 degrees away from the town square! We see this by the placement of a rear shed facing toward the town square (rectangle). Two other buildings at Martin's Hundred, one at Site H, and one at Harwood's manor within the fort feature such sheds specifically at their rear and parallel to their long facades (Hume 1982:221, 1983). This seems to be potentially independent resistance to the essential world view vulgarity of the town plan and seems to argue that the domestic site was added to the core master plan and not originally part of it. A second explanation is that, since the buildings face in opposite directions on a single line, this could be an example of a plane of correspondence that is "dancing" in a rotational orbit (Tillyard 1956:103).

A third reason for the basic position of the domestic site inside of the C-D line is probably because Harwood's plan was inspired by Vitruvius and Roman villas, and here we must move right into direct comparisons between Wolstenholme Town and the 18th-century Shirley Plantation. Vitruvius, as

the reader may recall, was a Roman architect whose work was reprinted and translated in the 15th century on. At Shirley, the Renaissance architect Palladio was probably the main inspiration for the Carter family mansion, yet the plantation layout also recalls spatial planning based on an analog of a Vitruvian man just like Wolstenholme Town. In other words, Harwood was apparently tapering his plan in a rational manner because he was thinking about the human body as an ideal form, as did the classical architects. The "head" of the settlement was the bawn or fort, the broad shoulders the company compound and Barn, and by inference the tapering of the shoulders to the "waist" was the domestic site and the next addition intended at Point E (Morgan 1960:72–75).

The lingering influence of the "Vitruvian man" and "chain of being" at Shirley is clear enough and intellectually this is just as important as Harwood's settlement in observing this common phenomenon. Regarding the "Vitruvian man," its head of the settlement is the Shirley mansion; its broad shoulders the first two outbuildings which are lateral in relation to the mansion—these being nearly identical to the Flowerdew core tripartite plan. Moving down, the second two outbuildings taper to a torso by turning their facades vertically to produce a broad avenue, as is the case in Harwood's town. And the final two, turned into converging corners, taper inwards yet further almost looking like "pigeon-toed" feet (Morgan 1960).

If the author has provided an inadequate explanation of the "chain of being" to the reader, Shirley plantation is especially helpful. At Shirley we can see the lingering effects of the "chain of being" simply by looking at the function of each building and seeing decreasing order in it in a manner not unlike descending a ladder. The first two lateral outbuildings are the "Hill House" and the other having a barrel-vaulted wine cellar (the upper building was destroyed). The former housed a plantation office and servants' quarter; the latter contained objects only related to the direct maintenance of the plantation social hierarchy as a business and high-status occupation. In the overall building complex, these are cerebral subordinate buildings directly assisting the "head" (Shirley Mansion). Descending the ladder, the second two buildings, a laundry and kitchen, address a second lower order, that of cleanliness and sustenance, both of which are related directly to people's bodies (feeding and grooming) and the kitchen at least becoming a sort of Vitruvian man's "belly." At the bottom of this latent chain-of-being ladder are buildings predictably containing objects only; namely, an icehouse and granary, which are analogs to the "bowing barn" in Harwood's plantation. The goods in the lowest link on the chain would probably be shared by everybody.

Is modern culture so far removed from the chain of being and the Vitruvian man? We can see a similar order in corporate, academic, or military pecking orders and how they effect locational planning. Briefly,

using a modern business skyscraper as an example, there is stored bathroom and office equipment in the basement and the business director is ensconced in a penthouse above all subordinate staff as both a Vitruvian head and chain-of-being office "head" of the organization and its architecture.

Like Vitruvius and Yeardley, Harwood found appeal in the number 10—the number of fingers on a human's hands—and used it in his key spatial divisions which are based on 10 rod divisions. This again is because the number 10 (number of fingers and toes) as considered ideal in Vitruvian planning (Morgan 1960:72–75). The distance between B-AA is 10 rods, which defines the bisector line for the manor in the fort. Add 10 rods (AA-C) and the manor is aligned to Harwood's satisfaction of simple needs for symmetry. Harwood was not using the actual centerline of his manor as a reference point in his symmetrical division; rather, he was thinking about how his cross passage divided his manor into two key spatial areas. Therefore, the key element in the bisector line A-AA-AAA is based on a 17th-century rational reference point, the beginning of the end of his cross passage.

The use of the cross passage as the asymmetrical key reference point in "symmetrical" two-point house divisions in the early 17th-century mental template is repeated at the company compound (cf. Carson 1969; Hume 1982:187, 194–199). The house block is about 56 feet long—and with its cross passage 2+feet wide, it divides the house into two nearly equal parts with one

initial heated room 28 feet wide, leaving a byre 26 feet wide. So important is the company compound cross passage that it is surrounded by two separate fences bifurcated to preserve the thoroughfare—one for a "toft" a yard division more closely associated with the house (as indicated by the storage house), and a second one for a "croft," a yard more closely associated with animals (as indicated by the presence of a pond and perhaps a shedded hog-sty [if the latter is not a seed bed or potter's work shelf]) (Rowley and Wood 1982). The burial in the croft indicates that originally the separate fences enclosures were reversed, with a croft associated with the original longhouse byre and a toft where the burial was originally implanted.

As new immigrants entered the settlement, the longhouse byre (once the center of dairy activities associated with cattle) was probably omitted in favor of a second heated room indicated by the addition of a hearth attached to the west gable. Through time a large 25- by 15-foot storehouse is added which dwarfs the 12.5- by 11-foot storehouse or shed at the fort (Carson et. al. 1981:193). Obviously, when Martin's Hundred was "sorely weakened" and in "much confusion," Harwood began to pack servants into his pre-existent buildings (Kingsbury 1906 I:587; Hume 1982:65). The importance of company compound is indicated by the size and amount of ancillary buildings at the company compound which dwarf those at the fort. Edwards (1994) has noted that the amount and size of ancillary buildings clustering around a given domicile is a better status indicator than the size of a house. Here

probably the communal nature of the company compound is confusing us; this is a corporate rather than a private estate (Harwood's Fort). Assembly men Boise and Jackson and their servants may have lived in the company compound.

Was Harwood Building a Town, Village, Farmstead, or Villa?

Especially on a frontier site when resources were limited, when someone is trying to do something and fails, the failure itself becomes more important to us than the success provided we can determine what the original goals were. In a frontier settlement, real needs tend to dominate over ideals, so we can zero in on real needs to capture the essence of what is going on at Wolstenholme Town. By using Camblin (1951), Garvan (1951), Reps (1972), and St. George (1990) and their depictions of various New England and Ulster towns for comparison, we can safely assume that Harwood failed to build a town, since in our model he failed to add a structure at point E on the master plan and geometrically this seems to be the terminal progress by March 1622.

Besides the Ulster-like model of the bi-linear town replete with a hierarchical bawn, what objective attributes make us think Harwood was trying to build a town? By implication there is supposed to be a church at Wolstenholme Town, for we know that in 1623 when settlers returned to Martin's Hundred (abandoned between 1622 and 1623), Richard Frethorne

lamented the fact that all that was left was two houses, and, "a peece of a Church" (Kingsbury 1935 4:41–42). While that church improvement may be in the James River, an alternative explanation may be this was a generous title for the grim reality of the "domestic site" in much the same manner that Wolstenholme Town itself is hardly a "town" at all. The domestic site has a spot-zoned communal graveyard around it, perhaps indicating it was a parsonage with a simple chapel with most services conducted outdoors. Perhaps it was used simultaneously as a "rest house" for "seasoning" recent immigrants, possibly cared for by the minister Robert Paulett. Hence, the presence of an institutional graveyard which may have had a parish significance (Hume 1982:64). While the church identification may be unsatisfying, it is somehow believable. There is only one other grave at Site C and it is at the company compound where it probably predated a more official graveyard built at the domestic site, a site appended to the master plan A-B-C as an addition. The domestic site was one apparently socially entitled to determine its own orientation to the town square (it faces backward as we saw above). So the term "a peece of a church" may be an indication that only one building cell was completed, perhaps to a glebe or chapel and doubling as a hospital, rather than a description of a literal physically damaged larger "church" structure. Rowley and Wood (1982:67) define a medieval "township" as a "small nucleated settlement, secondary to the parochial village, but sometimes containing a chapel," which is perhaps

the sort of thinking that went into the domestic site. In the new master plan we have deemed the domestic site as "Rest Area" since these things tend to be associated with religious establishments. Realizing that the real function of the domestic site is still somewhat sketchy, we will move on.

Other evidence of a town plan exists. There is a superficial resemblance to town lots in the arrangement of the yard complexes at the company compound and domestic site. At Londerry and Macosquin and other Ulster towns, the main domicile faces toward the street, with individual yard allotments leading toward the rear (Garvan 1951:42, Figure 7; Figure14). These typically rectangular yards probably led to, or were connected with, their own small kitchen gardens. Following suit, Harwood has apparently instructed his subordinates that their yards must primarily face away from the 20-rod-wide (330 feet) by 270 feet (16.3 rods) town "courtyard" or square (really a rectangle), which they do. In detail the home lots and their yard enclosures are not formalized as town lots; rather, they are like them. Although most yards' main areas face to the rear, they also spill toward the "town rectangle." Notably, this violation of the town rectangle occurs precisely where the company compound and domestic site gables front one another along the C-D line. This is most likely to gain privacy from one another and possibly to resist full surveillance from the Harwood Fort. In sum, they look like urban lots crossed with an odd collection of small Late Medieval farmsteads incorporated somewhat unwittingly within a whole by a

third party. The impression is one of internal individualism, which is exactly the image one gets of early Virginia by reading court records. The town occupants are not servile, nor are they peasants. They have their own high expectations, and this spirit shows. They want their own land after seven years, and are not afraid to attack social betters in court (Kingsbury 1906–35; McIllwaine 1979).

The next step for us is to try to see if we can tease apart whether this is a town deliberately scaled down to a village or to a villa to meet real needs in the emerging tobacco- and cattle-based economy.

In this discussion, the author does not want to get too caught up in semantics. However, a few basic definitions are in order (cf. Chapter 1). A village is a "collection of dwellings forming a center of habitation in a rural district" which is "larger than a hamlet and smaller than a town." A villa, while often used as a diminutive of a village, is chiefly thought of as, "country mansion or residence together with a farm, farm buildings, or other houses attached, built or occupied by a person of some position or wealth" (OAD 1978 12:204). This definition has something in common with a "vill," which in the medieval period was a "small nucleated rural community" which was accordingly probably dominated by a single person or more finite agricultural interest (Rowley and Wood 1982:67).

Small medieval villages such as one in Borastall Buckinghamshire, consist of a hierarchal moated or defensible manor, and a double line of cottages which include a church along one line. These were part of a agriculturally based feudal system (Rowley and Wood 1982: Plate 17). So there are clear village parallels with Wolstenholme Town. However, since the original definition of a village is somewhat functionally vague and is not always dominated by hierarchal concerns, we will abandon the notion that Harwood was trying to build a village here, in favor of an examination of a more villa-like plantation model which more clearly penetrates Harwood's town model in ways we cannot ignore. This is since, as we have seen, it has very much in common with Shirley Plantation. So in light of this, a better question in a brief examination would be, is Harwood building a farmstead or a villa here?

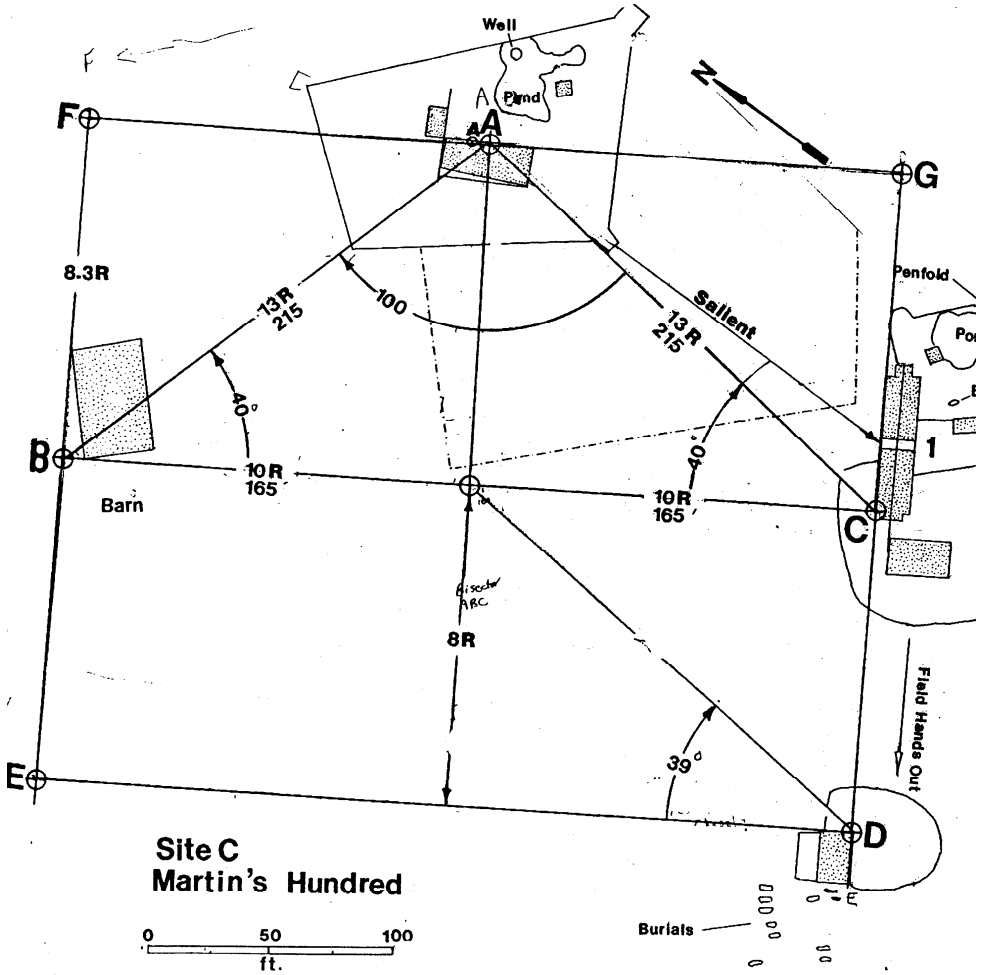
What attributes make us think that Harwood deliberately built a villa-like manorial complex? Remembering the remarkable documentation of Ulster communities noted above, are there streets in Ulster or New England that are headed up by barns as one of two bi-linear files of buildings emanating from a bawn? The answer at present seems to be an emphatic no! Moreover, the placement of the barn in relation to the manor is a major shift from a medieval "farm" which would typically have the barn in an "L" formation closer to the gable of the main dwelling (Beresford 1971:Figure 17; see also Key Analogues chart). So the placement of the barn in Harwood's

plan is a gradual shift under classical influence to create a symmetrical villa out of a farmstead. Clearly, the main new influence on a generic medieval farmstead is the addition of labor to the manor and barn to form a more symmetrical, classically inspired triangle or core tripartite plan. Harwood is interested in creating a broad courtyard between his main structures. And if we were to summarize this as a model, it certainly recalls the configuration of the core tripartite plan within Yeardley's Fort, which looks on the surface to be simply a manor seated above a West English (or northern European) longhouse spatial configuration (cf. Hodges 1993:190–192, Figure2, Beresford and Hurst 1971: Figure 19B). Even so, the angle of the subordinate buildings again suggests a farm model adjusted toward a courtyard between these building, more in keeping with a villa model.

In a hierarchal villa or "rural manorial estate" a farm, which is part of the production aspect of the social hierarchy being supported, would anticipate such things evolving directly out of both a farmstead (manor [Harwood's manor and fort] and barn [the Company barn]) and a longhouse model (byre, living zone [analogous to the company compound], cross passage [the gap between Harwood's barn and company compound]), and service storage zone [the Company barn]). In fact, this particular "farm support" notion is embedded in the definition of a villa (we noted above) and not clearly in the definition of a village. The hierarchal nature of the bawn in relation to this labor-intensive farmstead only seems to underscore trends

already noted by Morgan (1975). In the Chesapeake very early on, sharp divisions in social hierarchy quickly appear which are propelled by the tobacco boom.

What else can we observe at Site C that may seem different from our somewhat stereotypical view of small Ulster towns? There is a 300-foot-wide area between the subordinate buildings. I have included a scale comparison between the courtyarded settlement at Newman's Neck (alias "Corbin's Rest") to show how much bigger this settlement is than a more normal courtyarded homestead whose core structure would be analogous to Wolstenholme Town if the company compound were the manor (Hodges 1990). (See Figure 85.) Clearly at Site C this relatively huge courtyard area is intended to be something more than just a street or utilitarian work area. Because of this large scale, we can probably conclude—not without reason—that Harwood, who had much more labor than Neuman, was thinking big. In doing so he appears to have built for us what is really best thought of as a villa-like courtyard between his subordinate buildings. This was probably replete with communal kitchen gardens and possibly a corral used as a commons. While thematically the production of corn and tobacco may have also been included, additional bigger fields were probably elsewhere. Where were they?



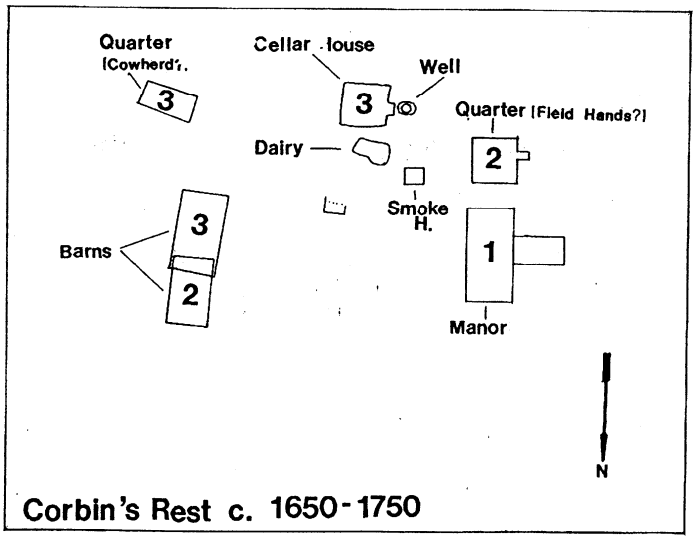


Figure 85
(Top) Wolstenholme Town, (Bottom) Corbin's Rest. Although both sites create a courtyard, only Wolstenholme Town references classical antiquity.

During the earliest period, pre-massacre sites at Martin's Hundred probably consisted of Site C (Wolstenholme Town), G, 2, and 11 (the latter group corresponding with 9/64th-bore-diameter pipe stem histograms peaks) (Edwards and Brown 1993:296, 298). Sites G, 2, and 11 may have something to do with early efforts by Boise and Jackson. If indeed contemporaneous with Wolstenholme Town, Harwood probably had the social power to make all nearby "suburb" residences part of Wolstenholme Town's bi-linear street. But, hypothetically rather than lose labor on previously cleared fields and finished dwellings, he does not. In the meantime, Wolstenholme Town is all Harwood really needs to create the central place or administrative center for the 80,000-acre Martin's Hundred corporate tract. This settlement model is coming from the "Bermuda Hundred Model" which, as we noted in the Flowerdew study, is the maximal frontier adjustment to the Chesapeake focusing on smaller administrative seats in exchange for larger numbers of dispersed farmsteads. Harwood's big mistake, compared to the Ancient Planter Yeardley, was not to nucleate his "town center" within defensive walls; hence, it was easily sacked by Native Americans.

Should we really be surprised that this social and economic atmosphere would twist a town ideal into a more productive and cheaper villa plan? Very importantly, as early as 1619 at Wolstenholme Town, we are seeing clear evidence of a deliberate vernacular shift away from Ulster town models in favor of agriculturally focused villa models in order to streamline

real needs in a more efficient manner that will best meet capital demands. While Harwood was probably told to create a hierarchal/ bilinear plan by his superiors, this site nonetheless just might be referencing Harwood's own concept of not an ideal town, but an ideal Vitruvian villa; that is, a private or corporate rural estate focused entirely on agricultural production. While this may sound out of tune with our current thinking, some simple comparisons will anchor my reasoning.

Let us suppose for the briefest moment, that none of us had ever hard of the Ulster model and that we did not know that these people were planning towns. Instead, let us look at the archaeological remains considering their face value alone as a planning package. In looking for some sort of precedent for the Wolstenholme Town remains, what sort of architectural plans known to educated men most resemble what Hume has found? The answer would be tripartite villas. Pursuing this villa motif, for instance, how different is the physical layout and definitely not the substance of villa Z-Plan and Martin's Hundred Site C as a basic plan Thompson (1993:140). Harwood was in no position to provide architectural substance, but importantly he had plenty of space for a plan that references classical antiquity in some fashion (Argan 1969). Therefore, although a vulgar application of a villa plan we should not fail to miss its deeper origin.

Harwood's Fort

Noel Hume primarily used the Ulster model, the plan configuration, and documentary records of James Fort to identify the Martin's Hundred fort. Briefly noted, the key attributes which Hume (1982:150–152, 187, 217–219, 273) identified in the fort were:

1. A riven plank palisade about 7 feet high, nailed up with tree nails.
2. An interior firing step about two feet wide and three feet high of rammed clay revetted by short ditch-set pales behind the outer curtain.
3. An 8- by 8-foot watchtower at the southeast corner adjacent to an entrance.
4. A smaller, tapering flanker at the southwest corner, with internal supports.
5. A poorly planned perimeter, and overall a rather unpretentious fort design.

There are a number of aspects about this fort which makes one uncomfortable with the meager material evidence provided via archaeology. Reasonable points of ambiguity are listed briefly:

1. The fort violates military grammar; its only two flankers are on the third shortest wall. A Z-Plan fort with flankers on opposite walls would cure this with an identical labor investment.
2. The watchtower design is so simple and many 17th-century sites are so informal that it might be an outbuilding deliberately set at an angle to the perimeter so as to face inward (see Neiman 1980:Figure27).
3. A fort defends a place of importance. The poor preservation or substance of the manor might argue that either the manor was never completed or that it is really a well-preserved insubstantial

structure which is inferior to nearby outbuildings that are well defined.

4. The insensitivity of the well to the fort perimeter is disturbing. This is especially so since plan drawings and some photographs make it look like the fire-step is clearly intruded by the well cap, while the well cap is in turn intruded by the hole-set perimeter (Noel Hume 1982:Figures 8-4, 11-2 note 5th post from watchtower on both illustrations).

5. The presence of a cattle pond associated with the well within the fort perimeter might argue that the bawn failed and reverted into a cattle pound as would be typical of most failed Ulster bawns (Camblin 1951: Plate 12 and 13:note Thomas Raven's captions]; Hill 1970:455–589 note many failed bawns). Post-Massacre use would only be feasible with a Site C re-occupation since Native Americans constantly slaughtered and often ate English livestock during war (Kingsbury 1933 3:555, 557).

6. The ditch-set fire-step in its relationship to the hole-set perimeter is very similar to the confusing walls at Site A (cf. Noel Hume 1982:Figure 3-1, 8-4). The most similar are the least likely to be defensive.

7. The evacuation of settlers after the Massacre of 1622 such as Captain Hamor's martial law command over Martin's Hundred to remove to seven or eight strongholds was in order to build fortifications which were expensive and labor intensive and by implication not already present (Kingsbury 1933 3:610; 612).

Independent research by the author can allow is to re-appraise the fort. The first positive step in the re-appraisal came when the author was able to observe flankers that were superficially similar to the Site C fort at the French settlement at Port Royal, and a defensive entrance at the Harbor View fort similar to the watchtower/trackway interpretation (Hannon 1969:18, 113; Hodges 1993:Figure 5, 208). Second, and most importantly, the author realized that the embedded flanks or faces at the redoubt at 44PG64 (Hodges 1993:Figure 4A) (clipped corners) are also on a short wall, although

facing the James River. So at Martin's Hundred we have some believable secondary characteristics of a fort, but they presently do not make sense to us as a package that flanks all the walls in a rational way because of ambiguities. These ambiguities are shown in the depictions of the site by obscuring them (Hume 1982:Figure 11-2 [fort plan deliberately runs off page at northwest corner]; 1991:Cover drawing [manor hides northwest corner]).

Below we will bravely try to systematically remove as many of these ambiguities as we can, as we try to probe into the design of the fort, in its as an artifact of mental template by using soft structural analysis.

What the Fort Master Plan Tells Us

We have already noted that the origin of the entire Site C "town" master plan is keyed into a point of origin at Point A. However, Harwood's Fort master plan uses another reference point (see Figure 86). On this figure the town master plan reference point A is shown as a very large capital A with the actual reference point shown as a small circle with a cross in it. It is 17.5' along the north facade of the manor from the southeast corner. The point of origin of the fort plan is shown as small capital A at the center point of a large circle. The small capital A is 25 feet along the north facade of the manor from the southeast corner. As will become clear by implication, arguably the completion of the fort design appears to have been a separate

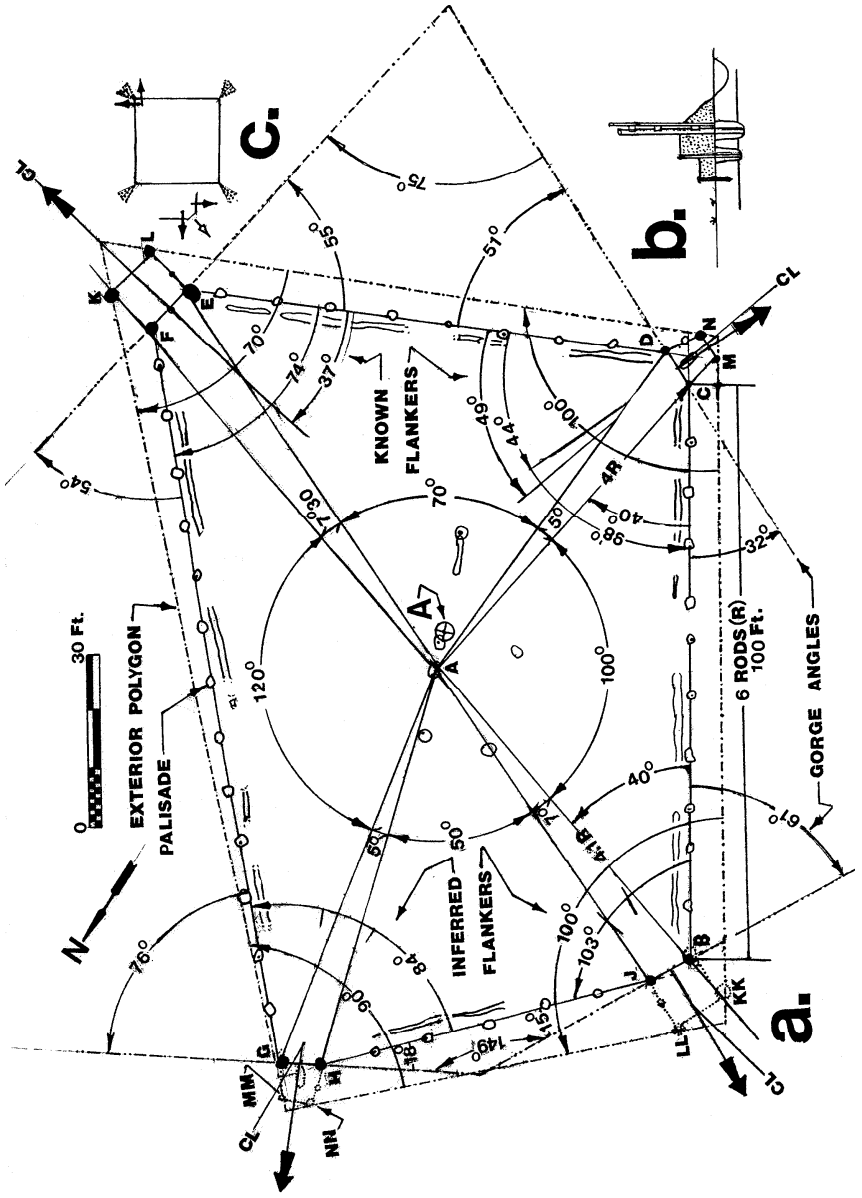


Figure 86
(a) Structural analysis of Harwood's Fort, a working plan,
(b) Hypothetical profile of fort,
(c) Dead ground created at corners and internal flank curve, from Brackenberry 1988.

planning episode with each plan having its own but related integrity perhaps because Lieutenant Keane rather than Harwood built the fort.

Since fort design evidence does not make for good prose, but does make for lengthy prose when associated with a single complicated drawing, the author will explain what the drawing portrays and then digest the evidence for the reader in list form while referring to the key and labeled points.

The BASIC KEY and METHODOLOGY of the fort design drawing is:

Darkened posts are known archaeological postholes associated with flankers and/or perimeter corners and are all labeled with arbitrary letters. We need these named points to isolate what key points we are talking about. The other hole-set palisade posts along each curtain (the outer walls of the fort) are not darkened or labeled and are treated as design by products of the named points.

Hypothetical Posts: Point KK, LL, MM, and NN, are shown as dotted circles and are named as hypothetical posts at each north corner. These points were created by superimposing known diagonally opposite flankers over surviving gorge (the rear of a work) or embedded flank postholes (points J, B, G, H) and drawing them in. We need these posts to calculate salient angles and to see if flankers make sense here as part of the fort design.

Dark Arrows are the symbols used to portray SALIENT ANGLES. In fort design a "salient" is the angle at the projecting point of a bastion, ravelin, redan, or other fortification projection (Hinds and Fitzgeral 1996:74). In Harwood's Fort there are only two surviving salients, the southeast and southwest flankers and these are not pointed, although the southwest flanker is tapered. Therefore, using the known flankers, the salient reference points were calculated at one half line E-F and K-L (watchtower) or one half C-D and M-N (southwest flanker). The resulting line was struck back into the fort to see where it hits the inside angle of the curtain corners. The embedded flanks (clipped corners on the north side) do not really project so we must be creative with them by using evidence from the preserved flankers which were super-imposed over the opposite corner embedded flanks. A mark was

made halfway between points B-J and KK-LL and H-G and MM-NN, again back into the fort to see how it hit against the inside angle of the nearest converging curtains. For known flankers the actual centerline and gorge angles are shown. For embedded flanks both the centerline and salient points of origin are shown as tick marks along the angle of convergence of the nearby curtains.

CL refers to the CENTERLINE of the angle of convergence of the inside angle of two curtain walls. The centerline was located by bisecting the total angle of the nearby curtains and striking a line from this point of origin with a protractor to the outside of the forts perimeter. Note: All of the points of origin for both the centerline and salient angles could not be shown without turning the drawing into a riot of information which interferes with the fort's overall design from a purely graphic standpoint.

Gorge Lines are shown as DOT-DOT-DASH-DASH LINES. In polygonal fortifications, the gorge line—the line formed on the inside or rear of a flanker—are not normally critically important to the design analysis of forts built in the high style, but are by-products of more important things such as the gorge angle, "the angle formed by the junction of the gorge (inside space between the flanks of a bastion) with one of the flanks" (Hinds and Fitzgerald 1996:68). However, for the analysis of Harwood's vernacular fort, gorge lines (rather than angles) are especially useful because they correspond with the inside angles of the fort's flanking fire where flankers are known archaeologically on the south side. Most importantly, they allow us to compare pan coupe angles in the north corners with gorge angle in the south corners, enabling us to see if the pan coupe lines are really gorge lines.

Pan Coupe Lines are also shown as DOT-DOT-DASH-DASH LINES in order to draw a direct parallel with pan coupe lines (north corners of the fort) and gorge lines (south corners of the fort). In military terminology a "pan coupe" or "pancoupe" is defined as "a short side on a fortification formed by cutting off the apex of a salient (Hinds and Fitzgerald 1996:72). As used in relation to the nearby curtain angles, they are used here in virtually the same manner as a "Pan Coupe'" (cut off salient) in Robinson's (1977:Figure 115) work where an angle within the forts polygon has been cut off to eliminate dead ground, as was the case in the Yeardley Sharp redoubt or Yeardley's ravelin or commander. As indicated on the drawing, pan coupe lines are the only archaeologically surviving evidence of flanks (albeit embedded) where the palisade corners are "clipped off" on the north side of the fort at

variant angles to the nearby palisades. The embedded flanks at the clipped corners could also be called "embedded faces" to the extent that they define the outward (hence face, rather than flank or side) direction of fire at the fort's corner. In a square, rectangular, or otherwise polygonal redoubt without flankers, the corners are the closest item to a salient present in the perimeter. So, are the clipped corners a pan coupe or really a gorge line for lost flankers?

The Exterior Polygon is shown as a DOT-DASH LINE. The exterior polygon is the total resulting perimeter of all the fort's exterior angles which are linked by lines and are an important aspect of a fort's design. These clearly hit at arbitrary reference points which I have not labeled.

Fort Design Data

The digested fort design data presented below is intended to highlight the non-random characteristics of the fort's hidden geometry, but draws no major conclusions about what it means. The data complied here show inferred design characteristics of the fort per curtain and flanker or embedded flank. These are progressively presented in a counter clockwise direction beginning with the line A-B. We do not know that Harwood used this progression; it is just a way of breaking down the data at present. The data on the gorge lines and exterior polygon are then also listed. Last, some note of inherent error factors is observed.

1. South Curtain: Harwood created an equilateral triangle (A-B-C; A-B to A-C = 100 degrees, A-B-C = 40 degrees, A-C-B = 40 degrees) with two 4.1 rod (A-B),and 4.0 rod (A-C) legs. Together these distance and angles created a 6-rod or 100-foot-long hypotenuse (B-C) which determined the south curtain limits. There is a 1.65-foot or 1/10th rod error in the equilateral triangle.

2. Southwest Flanker: Harwood added 5 degrees to the 100-degree angle of the south curtain (line A-D) in order to determine the width of his flanker (A-C-D) which was about 7 feet wide. The

completed flanker which tapers to about 5 feet wide is composed of points C-D-N-H. Since the inside angle of the convergence of the south and west curtain is 98 degrees, producing a 44-degree centerline, Harwood apparently shifted the 49-degree salient angle 5 degrees to the west.

3. South Wall: Harwood added a 70-degree angle to the line A-D, in order to create the definition of the south wall (D-E) which was 85-feet' long. The triangle A-D-E is not equilateral.

4. Southwest Watchtower: Harwood added 7 degrees 30 minutes (half a degree) to the south curtain in order to define a larger framed watchtower or flanker (A-E-F). The completed work consisted of an 8- by 8-foot unit comprising points E-F-K-L. Since the angle of convergence of the south and east curtain is 74 degrees and the centerline of this angle at 37 degrees, the angle of the salient and centerline are identical and perfect as a defensive ideal.

5. East Curtain: Harwood threw out a line (A-G) at 120 degrees north of line A-F to create the definition of the east curtain at 130 feet long. The triangle A-F-G is not equilateral.

6. Northeast Embedded Flank or Gorge Angle (if rear of lost flanker):

In order to remove the possibility of dead ground (areas which cannot be hit from the fort perimeter) at the northeast corner, Harwood allotted an additional 5 degrees to the 120-0degree angle of the east curtain, creating points A-G-H. This created a pan coupe about 7 feet wide (G-H). Notably this produced a different angle from either the east or north walls, allowing militia to cover the nearby exterior area with fire from the interior. Since the inside angle of convergence of the east and north curtains is 84 degrees, producing a 42-degree centerline, the salient angle (one half line G-H and MM-NN)) at 25 degrees is 17 degrees off the ideal and shifted toward the south.

7. North Curtain: In order to create the dimensions of the north curtain Harwood threw out a line (A-J) at 50 degrees west of the line A-H. This defined the limits of the north curtain at 73 feet long. The triangle A-H-J is not equilateral.

8. Northwest Embedded Flank or Face (Gorge angle if a flanker has been lost) : In order to eliminate dead ground at the northwest perimeter of the fort, Harwood added 5 degrees to the line A-J, creating a pan coupe about 7 feet wide (J-B). Most importantly, this pan coupe line (J-B) is not at the same angle as the north curtain (J-H) or the west curtain (B-C). Since the inside angle of convergence of the west and north curtain is 103 degrees, producing an ideal centerline of 51 degrees and 30 minutes, the salient angle (one half line B-J and LL-KK) at 68 degrees 30 minutes is 17 degrees off the ideal and shifted toward the north.

9. Gorge Lines: If joined together, the gorge lines on the south side of the fort where two flankers survive create an interior angle of 75 degrees. For the embedded flanks or the hypothetical gorge lines of lost flankers on the north side of the fort, the lines join at an angle of 149 degrees or almost exactly twice the south gorge line angles.

10. Exterior Polygon: Reading clockwise, the exterior polygon is created by the confluence of the following angles if the northern flankers are restored: Northwest corner = 100 degrees; Southwest corner = 100 degrees; Southeast corner = 70 degrees; and Northeast corner = 90 degrees. If all these angles are added together, they equal 360 degrees.

11. Error: There is inherent error in this drawing. Some error is probably coming from Harwood, some coming from the author, and some coming from the vagaries of archaeology. Here I highlight my own error factors. The design data were complied from a 1-inch-equals-10-feet drawing. Therefore, each angle inscribed for this ink drawing is about 20–30 minutes thick (1/3rd to 1/2 degree) while my clear protractor is only accurate to 30 minutes. From the fort point "A," it was difficult to get the triangles of the curtains A-D-E, A-F-G, and A-H-J to hit precisely on A without enlarging ink lines already present and slightly rotating the points of origin. Therefore, I have left these lines bleeding together to show the inherent error. Some named postholes do not have a post mold so I was forced to use the center point of the posthole as a reference.

Discussion, Inferences and Conclusions on Harwood's Fort

The analysis of the hidden geometry of the fort indicates a plethora of non-random behavior which demands a rational explanation here. In general this information tends to underscore the fact that a carefully planned fort is present although poorly preserved. This allows us to cautiously tap right into Harwood's mindset and the function of a decidedly vernacular fort plan.

The Fort as an Aspect of the Town Design

A very important aspect of the plan is that the core plan of the fort, denoted by the triangle A-B-C which defines the south curtain wall, repeats the angles of the town master plan A-B-C which determines the location of the Fort, company compound, and Barn. To wit, the triangle A-B-C within the fort plan is a nearly perfect equilateral triangle. It is perfect, but for a 1.65-fppt or 1/10th-rod error, with a 100-degree reference angle joined by two 40-degree angles. The main Site C master plan consists of a 100-degree reference angle which links the barn and company compound via two converging 40-degree angles (line B-C). The fort line B-C at 6 rods or 100 feet long determines the length of the south curtain; the B-C in the town plan determines the width of the town square at 330 feet wide. So it is tempting to suggest that the town was deliberately measured in at a ratio of 3.3 times that of the fort. It is also tempting to suggest that Harwood was literally trying to spatially harmonize his ideal town plan and fort plan literally and figuratively by using a common mathematical/geometric equation at their

core. The number of compass points radiating around Point A suggest the fort flankers began as an inscribed circle and quadrangle simultaneously based on the union of two large triangles. The former is the basis of the Renaissance fort. According to most scholars, the circle is the perfect architectural and natural form (Reps 1972; Serlio 1982 Folio II:3f).

The fort plan A-B-C triangle with B-A-C at 100 degrees creating the length of the south curtain is the only equilateral triangle in the fort plan. Since it mimics the town plan by inference, surely this is the initial core of the fort plan, as many triangles converge on point A. Interestingly, 100-degree angles are also the angles of the exterior polygon at the southwest and southeast corners which are the only two repeated angles in the exterior polygon. There was probably a method in Harwood's madness since the triangle B-A-C prepared the fort for the two salient angles on either side of the triangle so that Harwood could offer both the company compound and barn some covering fire at their centers. In other words, the salient angle of the southwest flanker seems to target the cross passage of the company compound. The salient angle of the embedded flank at the northwest corner seems to target the "barnyard" of the barn (as many barns have centered long facade entrances as well as gable entrances). At about 150 feet from each salient, both are well within the range of accurate musket fire which is a maximum of 80 yards or 240 feet (Hodges 1993:209–210). The symmetry of these defensive needs reflects back to the exterior polygon where 100-degree

interior angles at the southwest and northwest are repeated there and only there. Harwood perceived no need for symmetry for the east wall in the exterior polygon.

The Fort From A Functional Standpoint

Now turning to the fort itself exclusively, clearly both the perimeter of the fort and the measures taken to eliminate dead ground at its corners indicate that, while a simple fort, little was left to chance. In other words, we are seeing an example of 17th-century personal discipline which was invested into what superficially appears to be a rather sloppy defensive perimeter that has fooled nearly everyone at least once. In order to refine the rational appraisal of the fort perimeter from a functional standpoint, one is urged to consult the inset C (after Brackenberry 1888:Plate V, Figure 8). This drawing, taken from a 19th-century fortification manual, shows the dead ground created by a square or rectangular redoubt which would also be appropriate functional needs for the current trapezium polygon under consideration (Brackenberry 1888:Plate V, Figure 8). In inset C only narrow exterior corner angles are left unprotected by firing from adjacent straight walls. Therefore, in light of this, at Harwood's Fort both the flankers on the south wall and the pan coupes in the clipped corners of the north wall all presently seem to be animated by a very specific desire to eliminate very finite areas of dead ground with few other additional frills. Therefore, Harwood's Fort plan seems to capture a second stage in fortification growth

that is but one stage removed from a redoubt (an unflanked polygon, that is, one without flankers). This is a rational and cheap peacetime fort that is admirably suited the historic context of 1619–22.

But are these clipped corners pan coupes to eliminate dead ground or gorge lines to lost flankers once associated with them? The second most striking aspect of fort design is that the degrees allowed to create the dimensions of the known flankers along the south wall are repeated diagonally in the north wall embedded "flanks" with clipped corners. In other words, the distance between E-F (known watchtower gorge line) is 8 feet, and literally diagonally opposite is the line B-J also at 8 feet wide. Both sets of points are at 7-degree angles with a half a degree error factor between the two. So in Harwood's original fort plan (versus our own modern breakdown), he may have just thrown out the line B-A (already present in one leg of the core triangle A-B-C) and lengthened it to become B-A-F, marked out to 8 feet to the east at B and to the west at F to create the line E-A-J, where the opposite sides of two 8-foot-wide watchtowers already are oriented in perfect harmony. Although not literally diagonally opposite, the same pattern holds true for the known southwest flanker which is 7 feet wide and offset 5 degrees from the curtains (gorge line C-D), and its obliquely opposite corner at 5 degrees offset and 7 feet wide (points G-H). We can see in this a clear resemblance with the overall aspects of a Z-Plan fortification (Hodges 1993:200-207;204;207, 211–212). This certainly strengthens the notion that

the pan coupes on the north wall are really gorge lines, but we will have to return to this argument more extensively below.

At Harwood's Fort we can infer that he may have added a Z-Plan of framed elevated watchtowers to a Z-Plan of tapering earth-elevated flankers even though we only have two flankers to go by. We can make this inference based on the strength of the angles of the exterior polygon, the pattern in the gorge line interior angles, and pattern of deliberate error in the salient angles verses their ideal angles. All of these data are reliant on the others.

The exterior polygon also argues that there were originally four flankers at Harwood's Fort. The author has redrawn the "working fort drawing" to clarify the clean angle figures of exterior polygon and to simplify the flanker study in terms of only the key angle elements (see Figure 87) **(**second plan of fort). If we total all interior angles making up the exterior polygon without using the two inferred flankers, we get a total of 366.5 degrees rather than the perfect ideal of 360 degrees we obtain if we include these flankers. The 360-degree exterior polygon is based on a total of four <u>interior</u> angles: southwest corner = 100 degrees; southeast corner 70 degrees; northeast corner 90 degrees; and northwest corner 100 degrees (illustrated). Therefore, the exterior polygon is almost certainly from a purely mathematical/geometric standpoint based on the use of two converging triangles (not illustrated) since all triangles consist of a total of

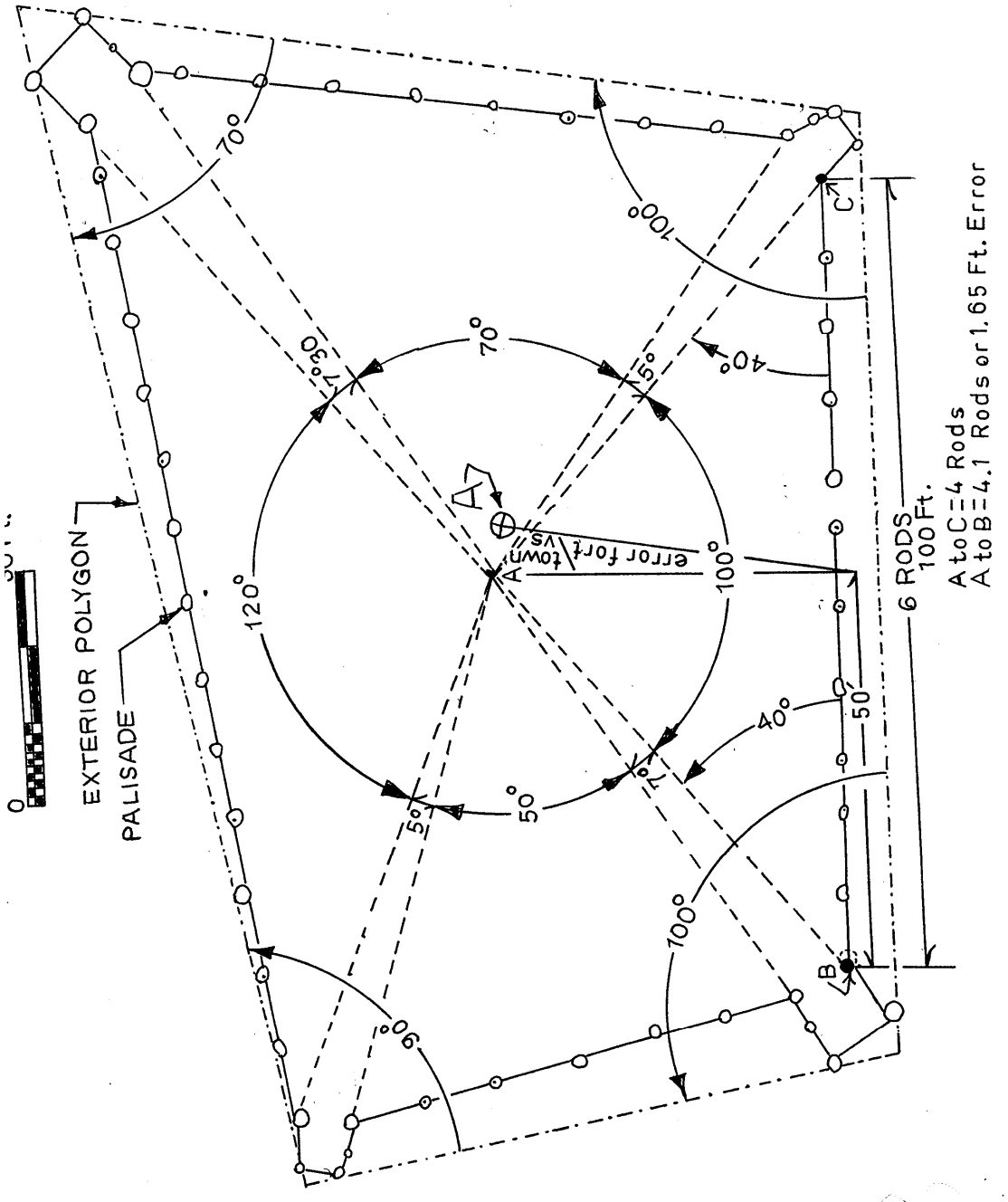


Figure 87
Harwood's Fort after structural analysis. Note clean numbers of feet, angles, and rods.

three interior angles adding up to 180 degrees and 2 times 180 is equal to 360. These two triangles converge in a double hypotenuse line which runs diagonally across from the southeast flanker to the northwest flanker and emanates just outside of both flankers. The hidden triangle legs which runs just outside the south curtain and west curtain consists of a triangle with one 120-foot (7.2 rods) leg below the south curtain, and one leg 108 feet long outside the south curtain, both of which are joined by a 100-degree angle. The hypotenuse of this triangle is 174.5 feet (10.5 rods) long and runs very close to fort point A (within 1 foot) with a 38-degree angle in the northwest corner and a 43-degree angle in the southeast corner. The second hidden exterior triangle which circumscribes the north and west curtains of the fort consists of one leg just outside of the north wall that is 78 feet (4.7 rods) long and a second leg that is 155 feet (9.45 rods) long just outside of the east walls. These two legs join at a 90-degree angle with the northwest corner at 62 degrees and the southeast corner at 27 degrees.

On the north corners where we see only pan coupes archaeologically, the points where the exterior polygon angles come together are right next to points B and G which would make the function of the pan coupes almost totally irrational even for removing dead ground. An ideal angle for a pan coupe would be 45 degrees across the centerline of the interior curtain angle, as was the case in the Yeardley/Sharp redoubt. Since this is not the case in Harwood's Fort, the angles are truly shallow, we can infer that these are

either gorge lines to lost flankers or that actual use of a pan coupe was forced on Harwood when Martin's Hundred fell into decline prior to the completion of the fort. An outstanding example of how a failed bawn would look archaeologically like a redoubt with four 45-degree angle pan coupes has been provided by Garvan (1951:Figure 8, Figure14) not ironically here using Macosquin. Mascosquin failed by 1622 resulting in a manorial garden with four open corners where the gorge angles for flankers were supposed to be, while four bawn walls—now garden walls—survive. Since we know that most Ulster bawns have a square perimeter or rectangular perimeter, the 45-degree angle shown is predictable (see Table 5). Given the overall implications of Harwood's Fort so far, we think we are seeing more than a failed bawn like Macosquin, but rather flanker angles of which only the gorge line survives and that have variant functions.

What contribution do the variant salient angles, gorge lines, and pan coup lines and therefore possible variant functions in the flankers make toward coming up with a believable notion that the fort originally had four flankers? If we look at the sharp disparity of the converging gorge line interior angles, we note that the joined interior gorge line is very shallow on the north side at 149 degrees and very steep on the south side at 75 degrees or only 30 minutes more than one half its steepness. This is a rational pattern of some sort relating to the variant function of the south and east flanks.

A second rational empirical pattern compliments this notion of variant flanker function on the south and north walls. While the salient angle of the watchtower is perfect, the southwest corner flanker is only 5 degrees in error. Yet, the error factor in the salient angle at the embedded flanks verses the centerline angle of the curtain corners is identical at 17 degrees. As we juggle this information we realize that Harwood not only had two flankers on the north side here, but he saw them as being more defensive than the flankers along the south wall because the inferred flankers deliberately turn toward one another (relative to the south wall) to create a cross-fire centered right along the north curtain. Conversely, on the south side where the flankers have not been sheared by plowing, the flankers turn sharply away from one another (relative to the north wall) so that the fort occupants could begin flanking an attack with a crossfire well before potential assailants got near the fort's south wall. So the archaeologically intact south-corner flankers are really more offensive than the north corner flankers which are essentially defensive. So what appears to us as salient error verses centerline ideal is really variant function.

TABLE 5

ULSTER BAWNS FROM PYNNAR'S SURVEY 1618–19

HAVING USEFUL DESCRIPTIVE INFORMATION

Requirements of Undertakers (Hill 1970:82):
(1) 2,000 acres (or more): "a Castle, with a strong Court or Bawn about it;" also in the house or castle must be 12 muskets and 12 calivers to arm 24 men.
(2) 1,500 acres: "a Stone or brick House, thereupon, with a Strong Court or Bawne about it;" also in store 9 muskets and nine calivers, to arm 18 men.
(3) 1,000 acres (or less): "a Strong Court or Bawne at Least;" and 6 muskets and six calivers to arm 12 men.

Settlement Name	Acres	Bawn Dim. In Feet	Bawn Wall Elev./ Bawn Materials	Flanker (# of) Flanker Notes	Hill 1970 Page Ref.
Kilcloghan	1,000	80X80	13'/ Lime & Stone	(2) Round, 12'dia.	453
Chichester	1,000	180X180	14'(?)/ L.& Stone	(2)	458
Itterrey	2,000	80X80	12'/ Lime & Stone	(4)	460
Lisreagh*	2,000	44X20?	12'/ Lime & Stone	(2)	466
Tullacullen	1,000	200X200	14'/ Lime & Stone	(2)	468
Drumheda & K.	2,000	75X75	16'/ Lime & Stone	(4) Round	471
Carrowdownan*	1,000	100X100	9'?/ Stone & Clay	(4)	472-3
Balleconnel	1,500	100X100	12'/ Lime & Stone	(2)	473
Carrowshee*	3,000	70X70	15'(2 sides) L & S	Bawn unfinished	475-6
Aghalne	1,000	50X50	12'/ Stone & Clay	(2)	477-8
Kilspenan	1,000	60X60	12'/ Lime & Stone	(2)	478
Leytrium	1,500	70X70	12'/ Lime & Stone	(2)	479
Gutgoonan*	1,000	60X60	8'/ Lime & Stone	Bawn unfinished	484-5
Tullana	1,000	NA	NA/ Lime & Stone	(3) 15' high	487
Edernagh	1,500	75X47	12'/Lime and Stone	(4)	489
Cornegrade	1,000	68X56	12'/ Lime & Stone	(2)	491
Newporton	1,000	150X120	12'/ Lime & Stone	(3)	492
Lynsey	1,000	68X68	13'/ Lime & Stone	(4)	494
Dromragh	1,000	60X60	12'/ Lime & Stone	(2)	496
Dromcose	1,000	80X80	12'/ Lime & Stone	NA, or not built	497
Drumcro	1,000	80X45	14'/ Lime & Stone	NA, or not built	498
Carrynroe	2,000	100X100	14'/ Lime & Stone	(4)	499
Cargie	1,000	60X60	12'/ Clay & Stone	NA, or not built	502
Boilagh-Outra	1,000	70X70	12'/ Lime & Stone	(2)	502
Dunboy	1,000	70X70	14'/ Lime & Stone	(2)	505
Moyegh	1,000	60X60	14'/ Lime & Stone	(2)	506
Corgagh	1,000	60X60	10'/ Clay & Stone	(2)	511
Shraghmiclar	1,500	100X100	13'/ Lime & Stone	(4)	514-5
Acarine	1,500	100X100	NA/ Lime & Stone	(2) 2 stories	518
Killmacrenan	1,000	NA	16'/12',12',8'L&S	(2)	522
Letterkenny	1,000	60X60	NA	(2) 12'high	523
Gortavaghie	1,000	80X70	14'/ Stone & Clay	NA, or not built	523
Ramalton	1,000	80X80	16'high/ NA	(4)	524
Sir J. Vaughn	1,000	60X60	12'/ Lime & Stone	(4)	525
Capt. Gore	1,000	60X60	NA/ Lime & Stone	(2) 12' high	525
Castledoe	500	40X40	16'/ Lime & Stone	NA, or not built	526
Derrie-woone	1,000	60X60	14'/ Lime & Stone	(4)	531
Eden&Killiny	2,000	70X70	14'/ Lime & Stone	NA, or not built	531
Newtowne&Lis.	2,000	NA	16'/ high, NA	NA, or not built	533

Ballegalin*	1,000	NA	8'?/ Clay & Stone	(2)	541
Loughmauife	1,500	140X60	NA	(3) 14' high	542
Balleneclogh	1,000	60X60	13' high	(2)	545
O'Carragan	1,800	NA	7'/ Clay & Stone	NA, or not built	547
Ballenekeuan*	1,000	60X60	8',(1 Wall only)	Bawn unfinished	550
Benburb	2,000	120X120	14'/ Lime & Stone	(2)	554
T. O'Neale*	4,000	NA	5' high	Bawn unfinished	554
Derrycravy	3,000	180X180	14'/ Lime & Stone	(4)	559
Hamilton	1,000	72X72	8'/ Stone	Round	564
Magharientrim	1,000	60X60	12'/ Stone & Clay	(2)	566
Kilruddan	1,000	60X60	12'/ Stone & Clay	(2)	567
Clancary	2,000	100X80	10'/ Lime & Stone	(4) 13' wide & 2 stories high	568
Claire	2,000	100X80	14'/ Lime & Stone	(2)	571
LONDON COMPANY SETTLEMENTS:					
Gold Smith's	3,210	100X100	16'/ Lime & Stone	(4)	576
Grocers Hall*	3,210	100X100	5'/ unfinished	(4) Bawn unfin.	578
Fishmongers	3,210	125X125	12'/ Lime & Stone	(4)	578-9
Drapers-Hall	3,210	100X100	15'/ Lime & Stone	(2)	587

Note: asterisked sites have suspect information and are used with caution.

BREAKDOWN OF TABLE 4 SAMPLE

1. Relationship of **Bawn Size and Shape** to Plantation Size (total usable sample size: 48 or 100%):

   Total 1000 acres: 29 or 60.3% of total
   Total Square Bawns: 25 or 52.08%, Average Square Bawn size: 60.84'X 60.84', Average Square Feet Square Bawn: 3,701.5'; Total Rectangular Bawns: 4 or 8.3%, Average Rectangular Bawn size: 94.5'X 72.75', Average Square Feet Rectangular Bawn: 6,874.8 square feet.

   Total 1,500 acres: 6 or 12.46% of total
   Total Square Bawns: 4 or 8.3%, Average Square Bawn Size: 92.5"X92.5', Average Square Feet Square Bawns: 8,556.25 square Feet; Total Rectangular Bawns: 2 or 4.16%, Average Rectangular Bawn Size: 107.5'X 53.5', Average Square Feet Rectangular Bawns: 5,751.25 square feet.

   Total 2,000 acres or larger: 13 or 29.06% of total
   Total Square Bawns: 11 or 22.9%, Average Square Bawn Size: 101.8' X 101.8', Average Square Feet Sq. Bawns: 10,363.24 square feet, London Co. bawns all square & large; Total Rectangular Bawns: 2 or 4.16%, Average Rectangular Bawn Size: 100' X 80', Average Square Feet Rectangular Bawns: 8,000 square feet.

2. **Bawn Wall or Curtain Elevation**: Usable sample size is 43 entries or 100%; Elevations: (low elevations may indicate incomplete works), 7' 1 or 2.3%, 8' 1 or 2.3%, 10' or 4.3%, 12' 16 or37.2%, 13' 4 or 9.3%, 14' 12 or 27.9%,15' 1 or 2.3%, 16' 6 or 13.9%; Average Bawn wall height: 12.98'.

3. **Bawn Material**: Usable sample size is 44 entries; Total Lime and Stone: 33 or 75%; Stone and Clay 10 or 22.7%; Stone 1 or 2.27%. (Note: other types of walls are present in Ulster, no detailed information is available on them).

4. **Flankers**: Number of Flankers: Usable sample size is 47 entries or 100%; Total with two flankers 29 or 61.7% (most probably Z-Plan, some may use the fortified house for the location of the opposite flanker from flankers which are entirely alone along curtain walls; others may have two opposing flankers which are both only along curtains); Total with three flankers 3 or 6.4%; Total with four flankers 15 or 31.9% (this is the best ideal for a quadrangular fort). Flanker elevation: There are four entries for elevations two at 12', one at 14', and one at 15', two other entries describe flankers as being "two stories" high. Flanker diameter: one entry noted flankers at 12' in "diameter" (presumably circular); one noted flankers at 13' "wide" (presumably squared or angular).

5. "**Average Bawn**" has a square perimeter (83.28%), with walls of Lime and Stone 12.98' high, with three flankers (2.7 flankers). The flankers may be 13.25' tall or two stories high and 12.5' wide (the only weak figures here).

6. **Watch Tower** is called a "centinel house" in one plantation in Ulster. At Culmoore besides good fortifications there were, "two small Ports which are made of Timber and Boards for Soldiers to watch in," (these might be man sized shelters). At Culmoore (not listed in Table 4) the bawn is made of Sodds, with a Pallazado upon it of Boards, ditched about" perhaps not unlike Harwood's Wolstenholme Town Fort. There is a third obscure reference to centinel houses (see Hill 1970:522, 576, 558).

Variant flanker function bleeds right into what we saw as error in all flankers except the watchtower. The watchtower which was apparently especially elevated has a perfect salient angle, the better to flank the south and east walls. The 5-degree "error" to the west in the southeast flanker salient is a good error as it better flanks the west wall in light of the elevated watchtower. Moreover, it has been also been carefully tuned to protect the company compound. The "error" in the partially destroyed northwest flanker salient at 17 degrees north is the better to flank the north wall. Further, it has been carefully tuned to flank the barn and barnyard. The 17-degree salient error to the south in the partially destroyed northeast flanker is to better flank the north wall, for it offers virtually no support to the watchtower (southeast corner) in flanking the east wall. Note how well the exterior polygon defines the zone of wall defense everywhere except at the northeast terminus of the east wall, where Harwood's loss in his own plane geometry puts in a decidedly shabby functional performance. Here, at the risk of losing our perfect exterior polygon, one might be well armed to argue Harwood either never had more than an embedded flank here or modified his flanker form in some unknown way. Yet, if he never had it, the north wall would be weakened, and again this is a very irrational even ludicrous embedded flank angle.

Summary of Harwood's Fort

In sum, unless Lieutenant Keane or Harwood were an imbecile, which does not appear to be the case, Harwood's Fort originally had four flankers. Of these two surviving archaeologically on the south corners of the fort, at the north corners only the gorge line survives. Since the gorge line would be absurd for a pan coupe line—it is far too shallow to make sense from a functional standpoint—we can infer that: (1) the fort certainly had four flankers in its original design and probably in its completion; or (2) Harwood was stuck with using his gorge lines for intended flankers as pan coupes due to the weakening of Martin's Hundred. Since culturally flanking all four walls with a Z-Plan would be the first process in fort building, leading to a completion of the watchtower and northwest flanker, and we know a southwest flanker was completed in excess of this initial diagonal pair, we can make our final summary inference—plowing rather than incompetence has removed the northwest flanker, while little benefit would be added to the fort's defense with the northeast flanker, so it alone may have been omitted.

In order to complete a cultural restoration of the fort as a mental template package, we will attempt to restore the remainder of what we can by using comparative evidence and inferences which emanate from our design model described above. We will treat the fort just as seriously as we would a mansion house and assume it had four flankers, two opposing square and two opposing tapering.

The overall fort design is a mélange of modern and Late Medieval influences that come primarily from 16th-century battlefields and a late castle building tradition still partially standing in England and Europe. It must be stressed that this is an international "school" of fortification of which Ulster was but a restricted English regional exponent. The design of the flankers is predictably coming from castles and fortified manor houses that had a rectangular or square defensive perimeter.

Harwood's use of a trapezium (a quadrangle joining four lines in a similar fashion to a trapezium, but of variant distance) almost certainly shows that he was planning to expand his fort into a six-sided form or hexagon by using the east wall as a future internal division which was to bisect three new walls to the east. Otherwise, there is no intrinsic defensive value in this fort perimeter and Harwood would have been better off with a square or rectangular perimeter. This argument becomes especially clear if we resort to Spanish colonial sources. Boazio, illustrated St. Augustine in 1586 at the time of Sir Francis Drake's raid (see Figure 88) Chantelain (1941:Map 2). This illustration clearly shows a trapezoid-like fort perimeter which has been embellished into a hexagon in order to protect and retain a fortified annex on the inland side of the more robust fortified water side quadrangle. Were it not for a separate drawing of the parent water side trapeziodal fortification to this hexagon which was erroneously dated to 1593(?) by Chantelain (1941:Map 3) and in reality clearly predates the

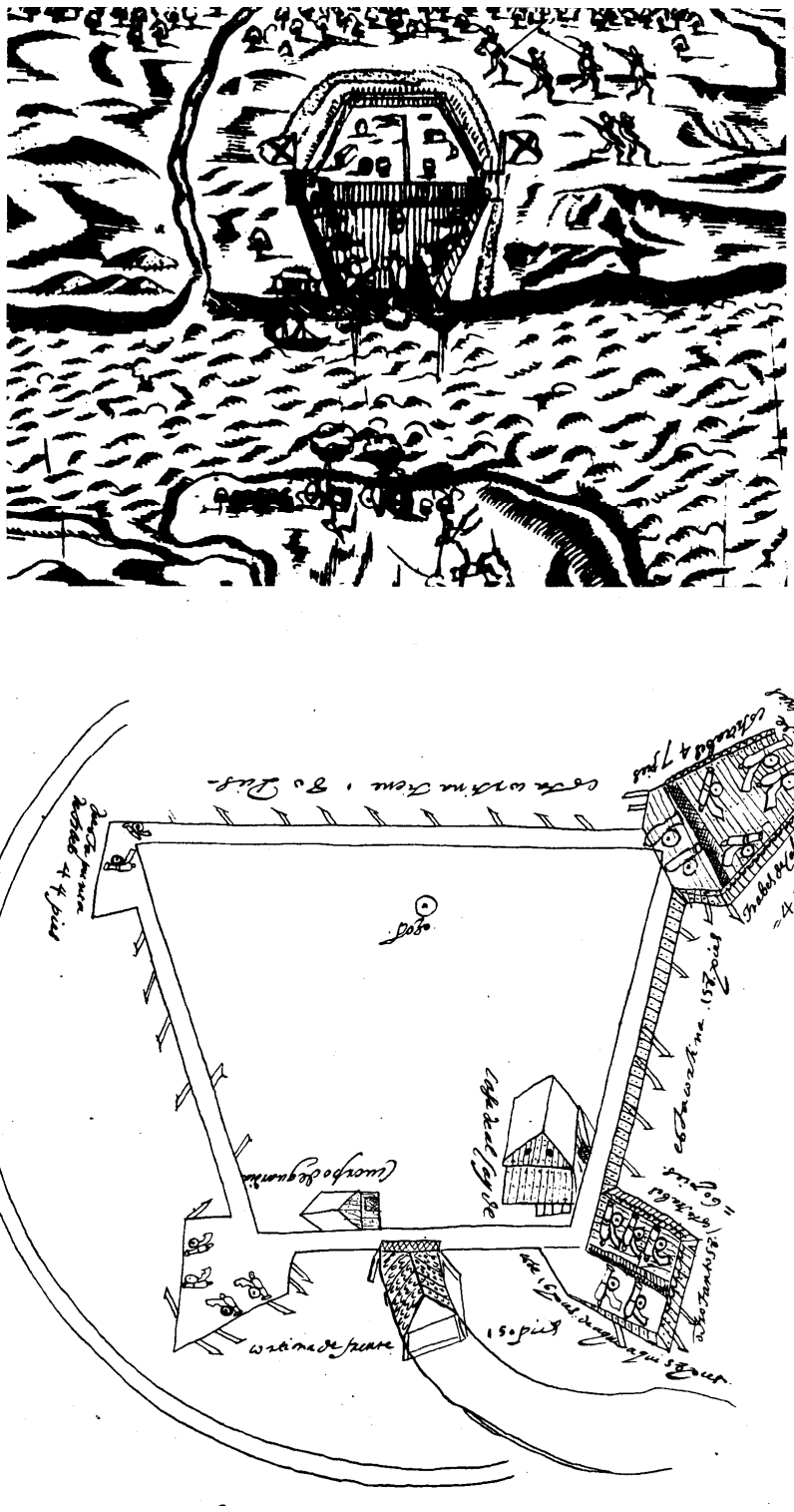
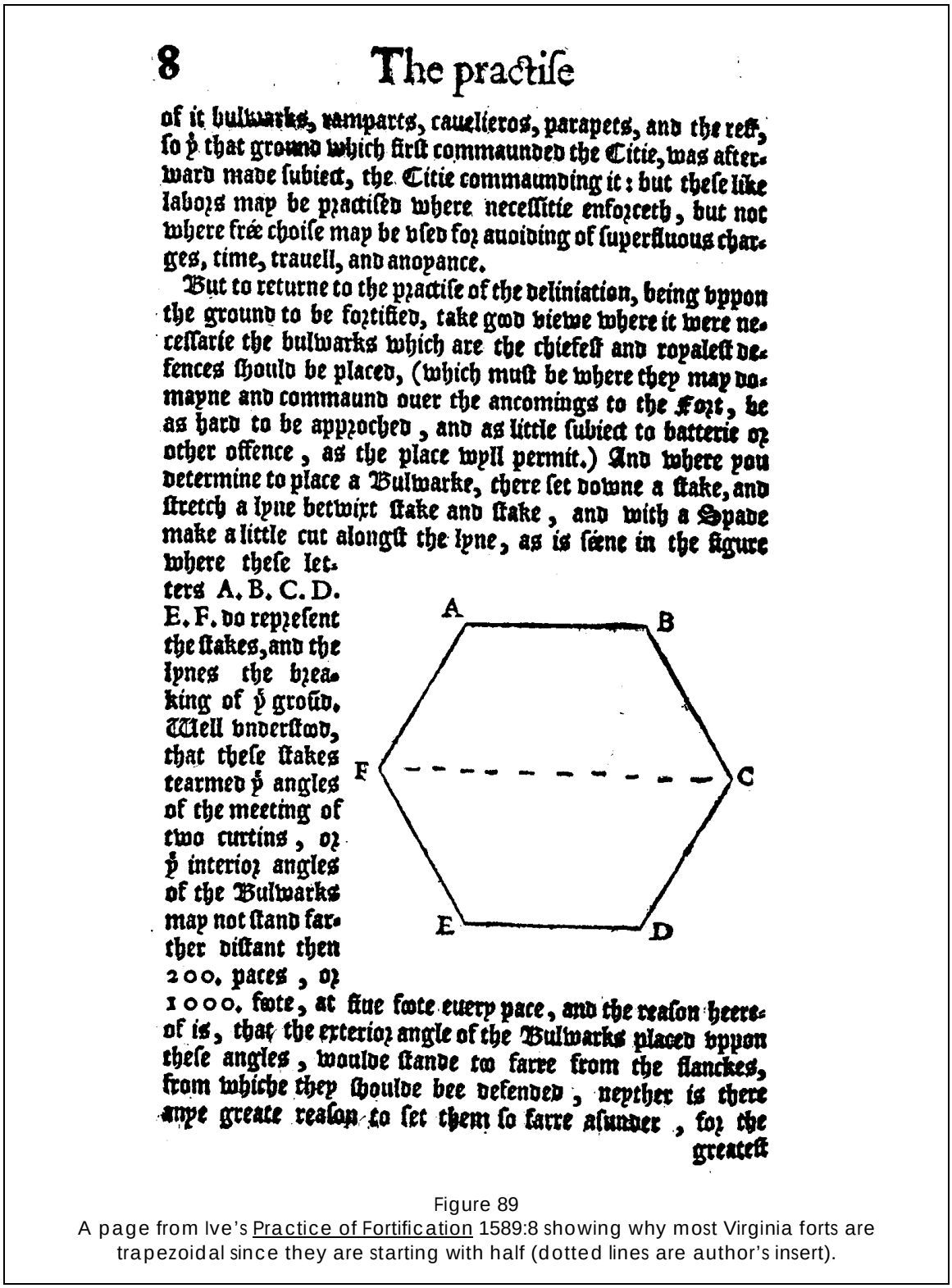


Figure 88
(Top) Drake's attack on St. Augustine ca. 1586. Note base court above trapezoid fort, showing Harwood's growth intentions. (Bottom) The fort at St. Augustine ca. 1585–93 with original core trapezoid from and similar mental template to Harwood's Fort (Chantelain 1941:Map 5).

hexagon incarnation of 1586, we would not be able to appreciate what Harwood was up to. In retrospect, clearly the otherwise insensitive placement of Harwood's well (intruding the fire step) along the east wall was in order to make water available two both sides of a planned hexagonal fort—which of course was never built. In ending the discussion of why forts tend to be trapezoidal, a page from Ive's 1589 work shows a sextagonal work which the author has dotted lines across to show it breaks into seminal trapezoids (see Figure 89).

Harwood's use of his particular types of flankers in a trapezium was not a good functional defensive idea in the surviving fort, but would have been more useful in the planned hexagon. In the surviving fort, poor flanker choice is because they forced a very steep angle on defenders trying to protect or fire down any particular stretch of the fort's walls. Pointed planks at the top of the parapet such as those shown in previous illustrations would make this steep angle of fire—with muskets resting obliquely across a long stretch of the parapet top—nearly impossible (Hume 1991:Front Cover). For this reason we can assume a straight lintel topped all planks along the actual firing line at the parapet which formed a suitable built in gun rest and permitting fire at any angle. However, in the hexagon fort which Harwood and Lieutenant Keane surely planned, the watchtower at the southeast corner and the inferred tapering flanker at the northeast corner would eventually be in a good position to flank what would become the convergence

of the new northeast and new southeast walls (of a new hexagon) and the old north and south walls (of the original trapezium).



8 The practiſe

of it bulwarks, ramparts, cauelieros, parapets, and the reſt, ſo ẏ that ground which firſt commaunded the Citie, was afterward made ſubiect, the Citie commaunding it: but theſe like labors may be practiſed where neceſſitie enforceth, but not where frée choiſe may be vſed for auoiding of ſuperfluous charges, time, trauell, and anoyance.

But to returne to the practiſe of the deliniation, being vppon the ground to be fortified, take good viewe where it were neceſſarie the bulwarks which are the chiefeſt and royaleſt defences ſhould be placed, (which muſt be where they may domayne and commaund ouer the ancomings to the Fort, be as hard to be approched, and as little ſubiect to batterie or other offence, as the place wyll permit.) And where you determine to place a Bulwarke, there ſet downe a ſtake, and ſtretch a lyne betwixt ſtake and ſtake, and with a Spade make a little cut alongſt the lyne, as is ſéene in the figure where theſe letters A. B. C. D. E. F. do repreſent the ſtakes, and the lynes the breaking of ẏ groũd. Well vnderſtood, that theſe ſtakes tearmed ẏ angles of the meeting of two curtins, or ẏ interior angles of the Bulwarks may not ſtand farther diſtant then 200. paces, or 1000. foote, at fiue foote euery pace, and the reaſon heereof is, that the exterior angle of the Bulwarks placed vppon theſe angles, woulde ſtande too farre from the flanckes, from whiche they ſhoulde bee defended, neyther is there anye greate reaſon to ſet them ſo farre aſunder, for the greateſt

Figure 89
A page from Ive's Practice of Fortification 1589:8 showing why most Virginia forts are trapezoidal since they are starting with half (dotted lines are author's insert).

In terms of military precedents, where do the fort's flankers come from and can we find similar works? For instance, the orientation of Harwood's opposing watchtowers bears direct comparison with the 14th century Dacre Castle replete with opposing 45-degree-angle square towers set at opposite angles to the 90-degree-angle domicile/perimeter block (Thompson 1987:24). (See Figure 90.) Similar square towers set at a 45-degree angle to a square perimeter may be observed in a work by Charnock (original publication date

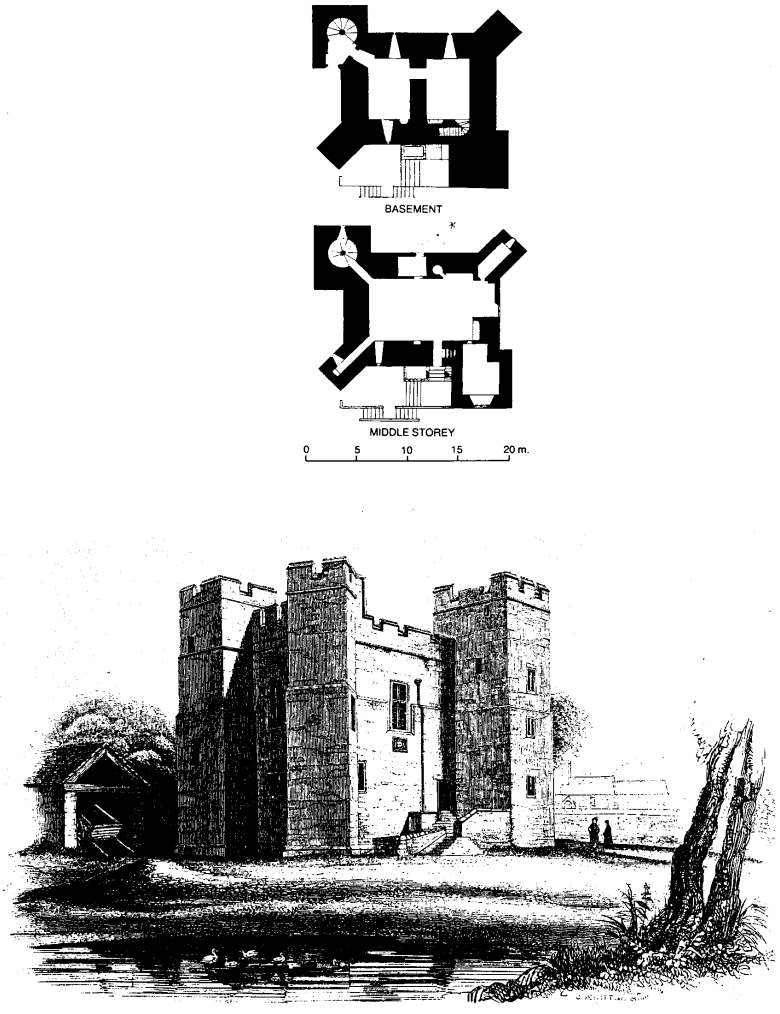
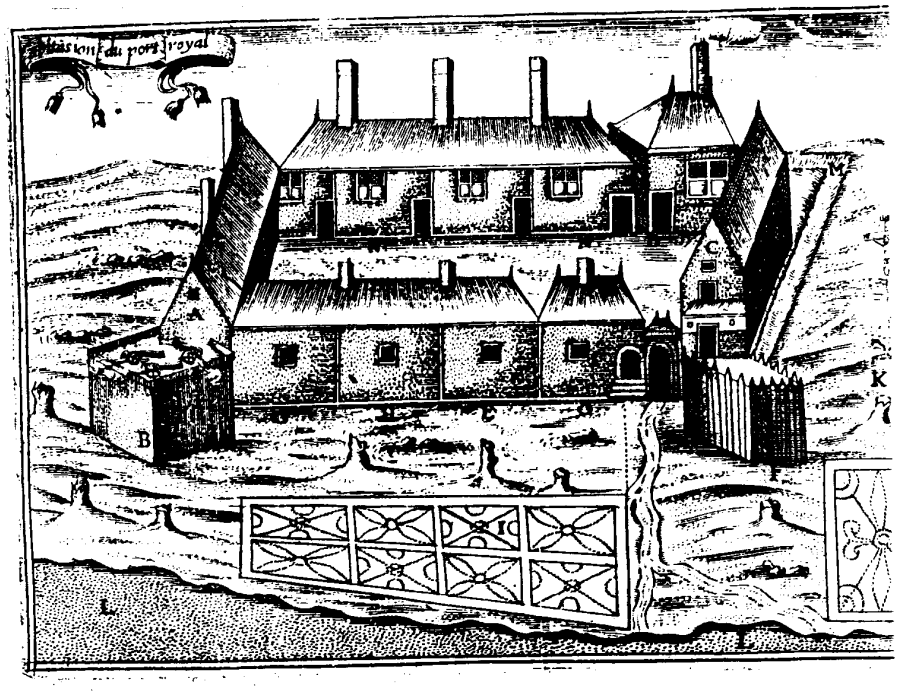


Figure 90
Dacre Castle early 14th-century England. Note squared towers at opposite angles (Thompson 1989:Fig.11).

unknown) who appears to be illustrating late "gunpowder" castle designs (Herman 1992:Figure 1.3). The French, who never saw Ulster, use a very similar rectangular rather than a square tower to defend their incomplete fort perimeter at the 1613 incarnation of Port Royal, Canada, which they were beginning to fortify on the water side (Hannon 1969:18, 113 (see Figure 90a.) At St. Augustine in the ca. 1586 and earlier incarnation, a clearly completed elevated rectangular flanker is literally in the process of being given new flanks (Chantelain 1941:Map 3, lower right). Presumably all of



Key to details: A. *Workmen's houses;* B. *Bastion;* C. *Storehouse;* D. *Champlain's house;* E. *Blacksmith's shop;* F. *Palisade;* G. *Bakery;* H. *Kitchen;* I. *Gardens;* K. *Cemetery;* L. *River;* M. *Moat;* N. *Gentlemen's quarters;* O. *Small house for storage;* P. *Gate. Port Royal was the "castle" of the Sieur de Poutrincourt who had been granted the whole locality by the lordly De Monts, the colonizer.*

Figure 90a
Port Royal French Canada 1605. Note strong French courtyard tradition; left lower bastion similar to Hallowes; right lower similar to Harwood's Fort (Hannon 1969).

these works probably grow from castle designs since Dacre's is the earliest. The square or rectangular flanker blocks at Dacre, Port Royal, St. Augustine, and Harwood's works are all technically demi-bastions (with two flanks and one face). However, in their common vernacular presentation they are all treated as full bastions (two flanks and two faces) in their orientation since they cover two curtain walls instead of the normal one in normal military applications of demi-bastions (each demi-bastion covering only one wall). In all these works the square or rectangular flankers are relatively bad at defending curtain walls but relatively good at flanking people approaching these walls. In all cases except Dacre's, we can safely assume that there were plans to convert these square or rectangular works into full bastions by using the initial crude flankers as a structural building core for flank amendments. Once we add the inferred flankers to Harwood's Fort we can see that prior to intended amendments, the north fort wall is best protected from a purely defensive standpoint.

Although it might sound odd, Harwood's household servants probably lived inside the ground floor of the two elevated 8- by 8-foot watchtowers which were about the size of a soldier's cabin with cooking and heating provided by braziers. For instance, at the Ulster settlement of Tullana, which retained within a defensive bawn, Pynar noted, "in each corner there is a good Loging slated," but of a total of four corners three contained "three Flankers 15 feet high" (Hill 1970:487). Hence, servants were housed inside of

three flankers with a single small additional quarter at the remaining corner. At the Acarine bawn in Ulster, there were two flankers, "two Stories high, with good Lodgings in them, and at Derrie-woone, out of four flankers, two had "very good Lodgings" in them (Hill 1970:518, 531).

The tapering flankers in Harwood's fort, including one archaeologically preserved in the southwest corner and one inferred in the northeast corner (as opposed to the squared flankers described immediately above), have fewer precedents. They are not unlike bastions (normally having two flanks and two faces) whose flanks have been removed and whose two faces have been clipped off into a pan coup (Hinds and Fitzgerald 1996:72). Like the square flankers noted above, they are also technically demi-bastions with two flanks and one face, and like the square flankers (noted above) they are demi-bastions used in a manner like full bastions to flank not one but two nearby curtains. At St. Augustine in ca. 1593, which also has a trapezoidal perimeter, we see the Spanish mounting a rectangular bastion—along with one high-style full bastion, one high-style demi-bastion, and most importantly here a tapered vernacular demi-bastion just like Harwood (Chatelain 1941:Map 3). Therefore, we can hypothesize this particular vulgarization of the military art must surely come from the battlefields of Europe. In turn, the cut-off nose of the tapering flanker (pan coupe) reminds us of the ravelin with its pan coupe in Yeardley's Fort ("commander", or "artillery tower") (Hinds and Fitzgerald 1996:31).

As we noted above, Harwood's Fort is ultimately most like a redoubt giving birth to flankers which are mostly oriented toward removing dead ground. The shapes Harwood used could easily be adjusted to become the core revetments of more sophisticated works, as is suggested best by the ca. 1593 St. Augustine work. In other words, inside of the full bastion may be a square or tapering vernacular first stage flanker.

In this section I would like to tune Hume's initial research on the palisade and firing step so that we can develop a better sense of what it looked like. Noel Hume (1982:150–151, 152, 154, 220–221, 223–224) based his notions on the height of the fort's walls at 7 feet high on palisades that enclosed 4 acres at Ferryland. He based his plank palisades on Strachey's primary palisades of "boards" at James Fort. Hume also made the assumption that someone could step up to a firing step that was 2.9 feet high an unlikely proposition. In every case the parallel with Harwood's Fort is misleading and the interpretations accordingly speculative.

On the strength that a 7-foot palisade of four acres is unlikely to have been especially defensive, it is an unsuitable elevation for a very finite fort perimeter. Recourse to evidence of bawn height in Ulster would be more useful—although this is typically using different building materials not including timber (see Table 4 above). Here, using Pynar's survey (Hill 1970:455-589), we can assume the fort walls were at least nine or ten feet

tall, which is a minimum height with many defensive perimeters 15 feet tall or above in Ulster. If we assume that Hume is correct about the height of the firing step at 2.9 feet, this would preclude the use of the palisade as a breast work (chest-high defense with defenders firing above the wall) and instead would allow defenders to fire through loop holes within in a palisade that completely protected them from arrows and gave some security against musketry.

If defenders did fire from a breastwork, there was probably a second lower step to allow them to get down to ground level to reload. This has been plow sheared away and probably consisted of a wattled earthen bank or boards pinned against the latter with wooden stakes.

Summary of the Wolstenholme Town Complex

The Wolstenholme Town complex is a very useful comparative example of vernacular influences on town development during the Virginia Company period during times of peace (ca. 1619–22). It uses the Romano\Medieval small-scale variant model with an extensive ordinal system. As in the case of the Flowerdew example, Harwood has dispersed the majority of his servant population at the expense of his town center. In turn the town is really a small but relatively effective administrative center containing burgesses. The town is already trending toward a villa—agglomerated around a single manor inside of a fort with two domestic units and one barn. The pattern

seems to be a logical outgrowth of a "farm model" because Harwood had more people and goods than any normal farmstead (see Key Analogues Chart). These are arranged via a geometric triangle which was surveyed in rods, based on Vitruvian classical influence. These Vitruvian models were also an influence in Ulster—rather than necessarily being the face value model for Wolstenholme Town. While it is somewhat unclear, it appears that the "chain of being" which ranks things in Elizabethan England, has something to do with a geometric slighting of the barn in the town plan. We think this has to do with its pure utilitarian nature but also because it contains objects which somehow must be ranked below buildings having people when placed in a community venue.

The fort was as carefully laid out as the town. It shows an interesting combination of influences. These relate primarily to two influences. One, there is a more modern military-styled flankered redoubt model organized on geometric principles seen in the fort's trapezoidium shape and this contrasts with most Ulster bawns because most of them were square or rectangular (see Table 4). Some of the design and layout approaches in the fort's layout resemble the Flowerdew model. Two, the fort uses ca. 14th-century or Late Medieval square or rectangular styled flankers. Harwood is not alone in choosing the latter or the former, and French and Spanish parallels indicate similar catch-as-catch-can timber fortifications during the frontier stage—freely mixing old and new designs.

JORDANS JOURNEY (44PG302)

Town Planning Courtesy of the Weayonocks and Powhatan Chiefdom

Jordans Journey, sister site to Yeardley's Fort and contemporaneous with it, is just as important as the Yeardley/Piersey agglomeration in its own right. This is true especially if one is interested in fleshing out a basic sense of scale within Charles City Corporation regional settlements during cultural conflict with the Powhatan Chiefdom 1622–32. In this comparative analysis, we are theoretically looking at an example of a more frequent second link in the regional defensive chain, for Jordans Journey was never asked to defend the James River from Spanish incursions in the scheme of Charles City Corporation defensive policy. Since we can find comparative examples of the fortifications at Flowerdew which are classical and Renaissance, with comparative examples provided by Spanish, English (Ulster), Dutch, and French documentary sources, in some ways Jordans Journey may be more important to regional studies in historical archaeology than the Flowerdew work. This is a fortification that can inform us about what less-powerful elites did to defend themselves during Native American warfare in the up-river James River basin. Is there archaeological evidence of functional defensive shifts from Flowerdew? Are there corresponding parallels with town-planning ideals here? How much of what we are seeing is due to reactions to Native American behavior? How does this site shift away from

Ulster settlement models to become a regional Chesapeake architectural expression?

The Historic Context and Settlement Model of Jordans Journey

In Barka's (1993:332) overall ranking system based on the Muster of 1624/5, Jordans Journey is in fourth place over Flowerdew, which is tied for fifth place with Neck of Land near Jamestown. The higher ranking at Jordans Journey is probably due to the large number of houses listed in the Muster of 1624/5. Does this make Jordans Journey materially superior to Flowerdew? One reason why one suspects it is not is that, despite the large number of houses at Jordans Journey, there is not a single listing of specialized separate commercial buildings such as storehouses and tobacco houses or a windmill, all items which are directly associated with raising capital in one way or another. As we have seen, Piersey's Hundred has three storehouses and four tobacco houses, probably built by Yeardley. These data indicate that at Flowerdew, separate buildings were required for commercial catchment of bulk storage of surplus food and cash crop items, including corn and tobacco. These are items which presumably could not be stored just in dwellings or specifically their lofts. In turn, by inference, lofts and small cotes (cottages), the latter of which are conjectured from the 44PG302 site plan, surely are where these items appear to be stored at Jordans Journey (Jester and Hiden 1956:14–18, 22).

In addition to lack of evidence of purely commercial buildings at Jordans Journey, the fine texture of the structure of the two 1624/5 muster listings is also different. Every tenant has his or her own housing at Jordans Journey in addition to food stores, weapons, and livestock (Jester and Hiden 1956:14–18). In contrast, at Flowerdew, as we have seen, all tenants except Samuel Sharpe, who is theoretically "at the castle," is simply listed by personal possessions and food items, etc. while their dwellings are listed corporately under the implied auspices of Piersey's servant household and overall possessions (Jester and Hiden 1956:20–22). In turn, other sumptuary goods like a titled minister (Pooley) and artillery concentrations add to this disparity. In other words, Piersey's Hundred seems to mimic a public corporation, while Jordans Journey, like the vast majority of the Virginia muster holdings, appears "on paper" as a series of private holdings retaining an essentially more personal household by household infra-structure. Again, this only serves to make Jordans Journey more important as a comparative example in reconstructing Chesapeake culture during this period.

Barka's (1993:334) analysis of the muster notes that 4 out of the top 7 holdings in Virginia 1624/5 occur in Charles City Corporation. This is probably an additional empirical confirmation of several things. It is probably a product of the higher biomass in the Interior Coastal Plain (Binford 1964, 1991; Turner 1976:82). It is also probably the influence of Dale and Yeardley through removing to this more healthful area as part and

parcel to appreciation of Native American and Anglo-Dutch settlement models. These things appear to be associated with the presence of seasoned Ancient Planter leadership consisting of colonists arriving before 1616 and dispersed from Bermuda and Henricus and the satellite public corporation sites when the center of the colony had moved upriver (Jester and Hiden 1956:xxi). In sum, this overall picture constitutes a second broader major parallel with Native American settlement models in addition to the "Bermuda Hundred Model" first began at Kecoughtan by Gates, Yeardley, and Brewster (Hodges 1995).

Notably, in 1619, Samuel Jordan from whom the settlement takes its name, was a burgess from Bermuda Hundred along with none other than Samuel Sharpe—future plantation commander of Flowerdew (1622–25+) and Westover (1623–24) (Kingsbury 1933:153–154). Sharpe appears to have traveled to various plantations, including Berkley Hundred, to militarily and defensively organize them, which had almost certainly occurred at Flowerdew by 1623. So we are looking at a real neighborhood where the settlement leaders knew each other fairly well and appear to have cooperated with one another.

Similar to Flowerdew, Jordans Journey was one of the seven or eight plantations held by the Virginia Company in the aftermath of the Massacre of March 22, 1622 (Kingsbury 1933:612; Mouer et al. 1992; McLearen and

Mouer 1993). This policy is likely to have been an acknowledgment of decisive defensive action of some sort, for John Smith received hearsay popular news from Virginia that, "Master Samuel Jordan gathered together but a few of the straglers about him at Beggars-bush, where he fortified and liued in despight the enemy" (Arber 1910 2:584). Smith may have gotten this information from Purchas (1926 19:169) who notes similarly, "Master Jordan at Beggars Bush gathered a few about him, and fortified himself despite of the enemie," with slightly less editorial rationalization regarding stragglers.

Importantly, Jordans Journey does not figure at all in the list of "palisaded" strongholds or those having "greate Ordnance" (cannon) boasted dryly in the Virginia reply to Butler's Dismasking (Kingsbury 1906:363, 365–7). We do know that Jordans Journey received martial law acquisition of cattle from Smith's Hundred and we can probably assume it was palisaded by 1622–23 from both its context and its archaeology (Brown 1898:470).

In 1622–23 Nathaniel Causey represented Jordans Journey as burgess, so the agglomeration at 44PG302 may have benefited from him as acting plantation commander due to the recent death of Captain Samuel Jordan in 1623 (Mouer et al. 1992:11). It is possible Causey occupied a second settlement cluster at 44PG300 to the east of 44PG302 (cf. Morgan et al. 1995). During this catastrophic—though often financially rewarding—post-massacre period, wealthy widower Cisley Jordan apparently played a

shrewd, if not duplicitous game of feminine and political maneuvering by simultaneously engaging herself to marriage to both Grivell Pooley (by 1623, the tax-supported minister based at Flowerdew) and Captain William Ferrar, apparent later plantation commander at Jordans Journey (Kingsbury 1935:218–219). Through her clever manipulation of these men, Cisley Jordan enjoyed, one suspects, special chivalrous patronage from the two male suitors who vied with one another for both her affections and estate. Ferrar was a lawyer who, perhaps through those very skills, eventually won Cisley's hand in marriage although Cisley's clever politics were soon afterward prohibited by law (Hatch 1957:67).

In any case, Ferrar's rise to power at Jordans Journey is indicated by his literal listing at the head of the Jordans Journey Muster of 1624-25 similar to that of Sharpe's placement at Flowerdew. In addition to Ferrar and Mrs. Jordan, there are 11 servants and two Jordan children listed in the muster presumably at 44PG302 (Jester and Hiden 1956:14–15). This of, course, is less than a third of Piersey's servant population.

There is no mention of a formal plantation militia commander here in the 1628 court records, as was the case for Piersey' Hundred, Shirley Hundred ("main" and "Island" [Eppes Island]), and the "Colledge" (Henricus), the "Neck-of-Land" (Bermuda Hundred flood plain peninsula), and Westover—all strongholds in Charles City Corporation (MacIllwaine

1979:192). The presence of glass beads suggests that Jordans Journey was, however, licensed to trade with Indians either before or during the 1622+ Native American uprising (Mouer et al. 1992:148–157).

From the historic record, therefore, it appears that Jordans Journey eventually bowed out of becoming an institutionalized militia center after a fairly spirited beginning. Perhaps this was due to having had numerous immigrants sick with scurvy and dysentery dumped on it by the Virginia Company. This factor may have resulted in the large and greatly disorganized cemetery which probably greatly debilitated much of the commercial promise of this settlement due to labor losses (McClearen and Mouer 1993). In turn, the high ratio of houses to the total number of households may be a reflection of large numbers of temporary structures by those passing through Jordans Journey under martial law during the period 1622 to 1623. This was a factor potentially modified by complimentary desires to segregate seasoned labor from unseasoned and frequently ill recent immigrants.

The Jordans Journey Archaeological Site

While the muster of 1624–25 does not note any palisades at Jordans Journey, Virginia Commonwealth University archaeologists have recovered evidence of at least ten or so buildings crammed into an irregular and pentagonal hole-set palisade (Jester and Hiden 1956:14–15). The building

complex is dominated by five large apparent dwellings grouped toward the south end of the palisade (Mouer et al. 1992). This is a perfect match with the number of dwelling houses specifically noted in the muster of 1624–25 under the Ferrar/Jordan household (Mouer et al. 1992; Turner and Opperman 1993:Figure 4) (see Figure 91).

Toward Isolating Initial and Post-Massacre Phasing at Jordans Journey

Since the site was mechanically stripped it is difficult to know where, if present, the original Samuel and Cisley Jordan plantation complex was within the incredibly dense architectural grouping of post-massacre architectural improvements. Without evidence of phasing, the isolation of "town planning" efforts will elude this study. In order to find the first phase, what should we be looking for? One suspects that there would be some evidence of rational planning here. The Phase 1 would isolate a farmstead which is innocent of more pretentious planning activity. Using the Key Analogue Chart, we can observe that the Structure 1 unit resembles a long house due to its use of a gable pen fold analogous to a byre. This was probably once wattled and therefore lost to the plow. An outgrowth of a small enclosure is also preserved at the opposite gable where a stepped-down storehouse (Structure 21) and a separate quarter (Structure 20) are present. This is probably the original Jordan home lot, capturing it at a time when the longhouse needs needed to be addressed by new buildings and new spaces

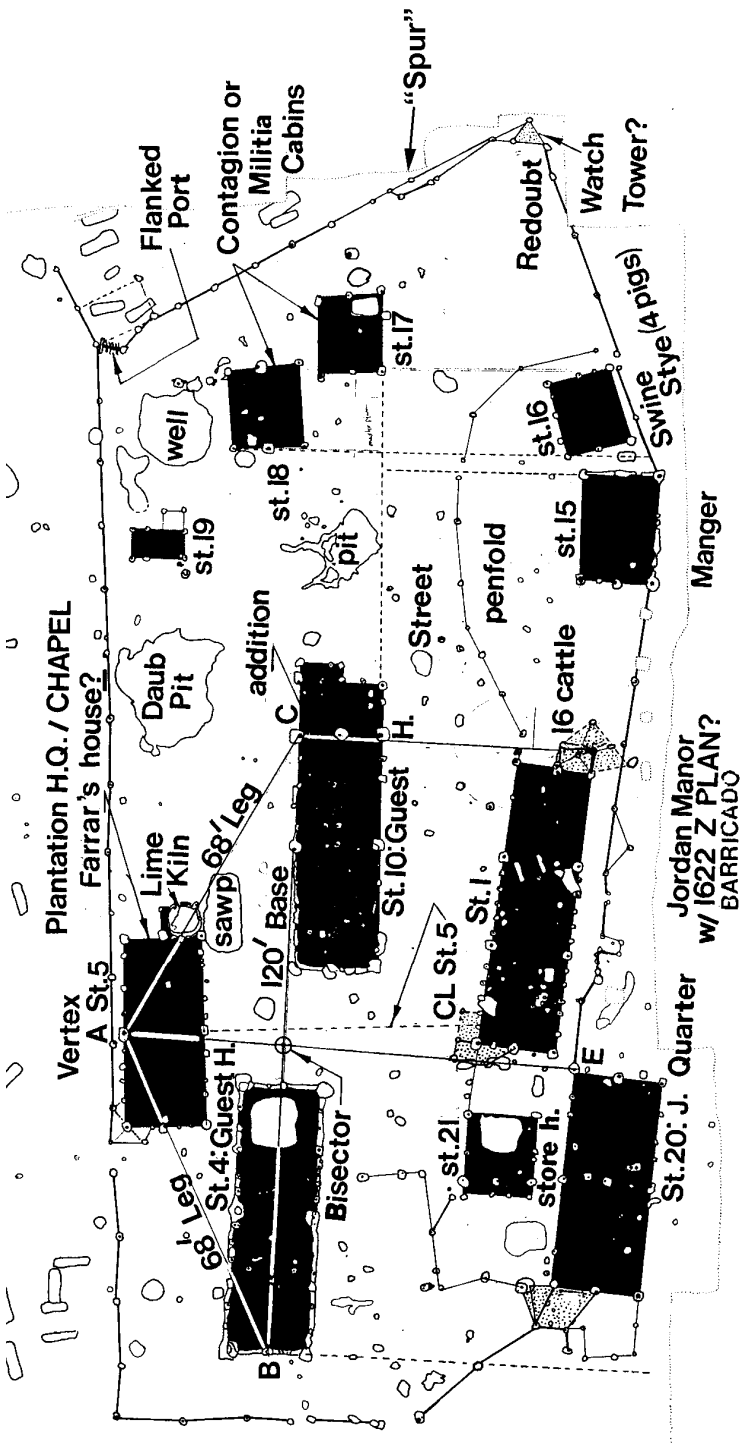


Figure 91
The Jordans Journey false redoubt ca. 1622–25. Note Vitruvian triangle with hierarchical Structure 5 at vertex

simply because Jordan had more resources to deal with following the notion of an "exploded west English longhouse."

Second and following closely on the heels of previous postulates, we should be looking for a post-massacre response that would hypothetically incorporate the earliest portions in the site complex into the reactive defensive enclosure as a labor-saving energy model. This is a factor offered by Structure 20, whose east facade is integral to the hole-set defensive perimeter. Based on the above assumptions and other artifact data, Virginia Commonwealth University (VCU) also isolated Phase 1 as Structures 1, 20, and 21 (Mouer et al. 1992:55–56). So this is our best candidate for the original Jordan manor and it has been independently identified as such by VCU. Thus, the familiar offset but linear builder's group (Structures 1 and 20) is probably the original Jordan homestead (Mouer et al. 1992:59–60).

Let us assume that the new intensive architectural concentration added to the Jordan home lot is a reactive pattern of "in-growth" given the close relationship between the buildings and the match with the immediate post-massacre group of five buildings noted in the muster (Hodges 1993:Figure 3 top right). This is an example of town planning patronized courtesy of the Weyanoc tribal group.

The Isolation of the Tripartite Plan

Based on the above discussion, if we are going to find town planning evidence, it will be seen in the new buildings added to Jordans Journey, which are by default Structures 4, 5, and 10. Is there anything special about this building group? Our tool for spotting this component is identical to that used at Yeardley's Fort at 44PG65—namely plane geometry. Geometric analysis of planning indicates that Structure 4, 5, and 10 are grouped in a tripartite arrangement, with Structure 5 forming the hierarchal core. The grouping is formed by a 120-degree angle which forms a series of hypotenuses at 30-degree angles. These hypotenuses to the triangle are seemingly based on gable post linear divisions of Structures 4 and 10 on 8-foot steps at specifically half their linear width. There are thus a total of three steps from the top of Structure 4 (long facade) to the bottom of Structure 10 (long facade). Each of the subordinate structures is exactly 22 feet apart based on the bisector line of the 120-degree angle, giving the gap of 11 feet on each side. In turn, the bisector links up directly with the vertex of the 120-degree angle which divides Structure 5 right down the center (vertically) into two equal halves, each 18 feet wide where two massive bay posts are also evident. Just as in the case of subordinate buildings of Structure 1 and 2 at Yeardley's Fort and at the Shirley Plantation Complex, the analogous 120-degree angle hits corners of the subordinate buildings at Jordans Journey (see Figure 92).

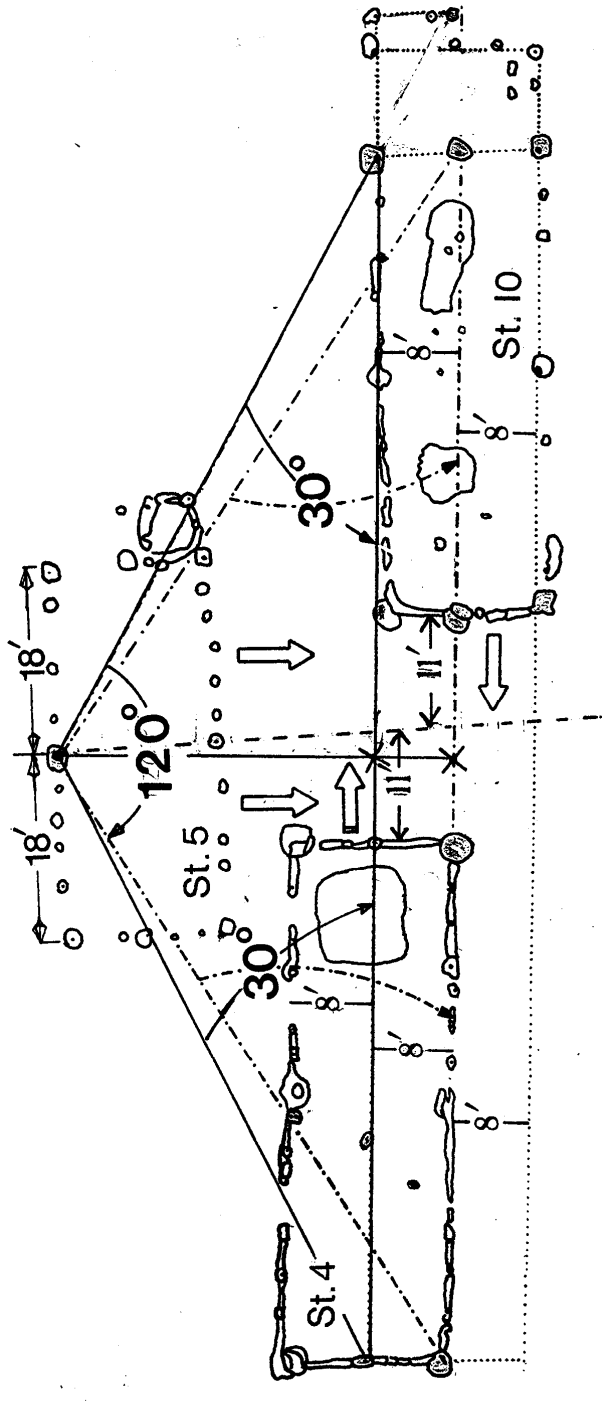


Figure 92
Detail of tripartite core plan Jordans Journey 1622–23. There are 10 points of correspondence here; arrows show possible lines of fire.

So this appears to be reasonably good evidence of a planning mental template.

Again, we are confronted with a spatially staggered tripartite configuration with 14 to 16 points of correspondence, any of which would be lost if the geometric angles are shifted by more than about half a foot in any direction. This is undoubtedly homage to the classical wisdom of Vitruvius. Although the pattern seems almost bizarre, it is, for all its oddness, more symmetrical between subordinate building gaps than Yeardley's A-B line in relation to Structure 1 and 2 at Flowerdew. Simultaneously, it is a less flexible system for controlled additions since cramped space precluded the use of the Pythagorean theory.

The staggering of buildings in this Jordans Journey "core tripartite plan" group is duplicated in the London Company settlement of Magherafelt (Camblin 1951:Plate 12). Here also each subordinate building on the bi-linear street is staggered along a series of regular steps. This may suggest that the original plan at Magherafelt and Jordans Journey is actually based on a rectangular plan which could easily be divided into a series of hypotenuses. These stagger lines are: (1) possibly acknowledging the chain of being to express social down-scaling from the hierarchal building in Structure 5; (2.) are allowing the buildings to flanker one another most efficiently;

(3) they are designed to give privacy through perhaps once present door yards or activity areas; or (4) all of these things simultaneously.

As a completed package, the Jordans Journey town is really bi-nodal or at least somewhat reflexive, and in this it reflects care so as not to offend previous social order. The new tripartite plan acknowledges Structure 5 as its new hierarchal structure, which is where we think Farrar lived, keeping a law office and perhaps chapel as public space in the hall. As a Captain in the militia, Farrar may have chosen to use heavy riven planking set with gun loopholes to side his house, and may have also built a parapet with crenulations on his deliberately low sloping roof to make into a type of variation of a tower house (Brunskill 1971). This is one clear node. The second node which makes a reflexive social statement is symbolized by the original Jordan Complex where the original plantation commander lived. The vertex of the triangle (described above) uses the Jordan quarter as its reference point at an interior and more central building corner (A-E). The actual centerline of Structure 5 (not the triangle) hits Cisley Jordan's House at no particular architectural place. In between these outer nodes were servants (Structures 4 and 10) who were better protected than either Jordan or Farrar (exterior near redoubt wall) in what the author is calling "warm architecture." While the overall bi-nodal plan is shabby in application, there seems to be something going on in this bi-nodal social package that physically links Cisley Jordan and Ferrar, and manages to link all of the subordinate

quarters in a different way. In turn, the entire unit is linked by the C-H line and the Jordan hearth and the line heading off below point B which shows the opposite square of the core tripartite plan as paralleling the gable facade of Structure 20 (Jordan Quarter). In between these nodes are guesthouses (Structures 4, and 10) thrown up for newly arrived immigrants, many of whom are deathly ill on arrival and during the 1622 famine died as attested by the riotous grave yard to the west.

In sum we are looking at a recognizable although slovenly shameless scramble to make Jordans Journey look like a town between 1622 and 1623 in response to Butler's criticisms, and Sandy's pleas for "orderly villages" in new plantations. We are a far cry from the more monolithic architectural statements made by Yeardley and Harwood, because less labor and financial backing is present. By the same token we cannot say that this plantation is devoid of a Renaissance spirit through its statement of humanitas referencing Vitruvius. In Martin and Goujon's 1547 printing of Architecture De Vitruve, a copy of a Roman military camp or bastide illustrates a series of options on how to stagger bi-linear streets some match Jordans Journey's simpler incarnation (Martin 1547:18).

Fortifications At Jordans Journey: The False Redoubt

On the master plan the author has shown somewhat unclear suggestions of fortification embellishments in excess of the outer palisade

wall or incorporated into it. Below, while we will emphasize the outer wall as the main defense, we will very briefly note things which are best attended in the future by the original VCU archaeologist rather than the author. There might have been efforts to fortify the Jordan's Manor very early on. These might include a Z-Plan attached to the manor, perhaps operating in concert with an enclosed door yard. If so, these were probably Z-Plan barricadoes at ground level with a flanker near the Structure 1 chimney that are very poorly defined since the plan would have to include demolishing the chimney and cannibalizing its posts. There does appear to be a lobby entrance into the Jordan home lot (a small square of posts) and VCU suggests a redan (V-shaped embellishment) here also. There may be a flanker attached to Structure 20 and another attached to Structure 5, but the latter is poorly placed except to edit entry.

Given the unclear information noted above, we will focus on what we call a "false redoubt." We call the pentagonal fort a false redoubt as a sort of bowing to its vernacular application here verses a purely military model. This term is more preferable than "defensive enclosure" or "enclosed settlement" because the Jordans Journey settlers are doing their best to reference a military redoubt. We know this because the shape of the enclosure is non random. It has a three clipped corners; one near Structure 20 is like those at the Yeardley\Sharp redoubt and within Harwood's Fort (pan coup or gorge lines). The gorge lines at Harwood's Fort

are extended as a piece of military grammar in what would be called a "spur" by the contemporary English soldiers (the sharp angle facing the river near Structures 16 and 18). There is a triangular watchtower or at least a raised firing platform at the apex of this spur. Notably there is a redoubt built in the basic form of the Jordan palisade during the siege of Coevorden by Maurice of Nassau's troops in 1592 (though the illustration may have been idealized as it was not published until 1616). The redoubt's entrance location suggests a Spanish outwork along the first perimeter (Hogg 1981:118). Again returning to Maxwell's (1950:63) model, he notes, after they grouped with houses of better numbers they, "fortified with pallisadoes and redoubts [author's emphasis]." Other international an English precedents for the Jordans Journey woks should be noted. The 16th-century Spanish at Santa Elena built a spur attachment to a Z-Plan fort (South 1991). Frenchman, Champlain's 17th-century Quebec settlement, also has a bullet-shaped or bastion-shaped overall perimeter featuring a spur and an opposite clipped corner angle (Reps 1969:Figure 23). Doe Castle, in early 17th-century Ireland, has an earthen spur attached to its original perimeter (Leask 1977; St. George 199:259). Spurs, typically as expansions of pre-existent forts, continued to be popular with the English in West Africa in the 18th century (Lawrence 1964:Figure 3). (See Figure 93.)

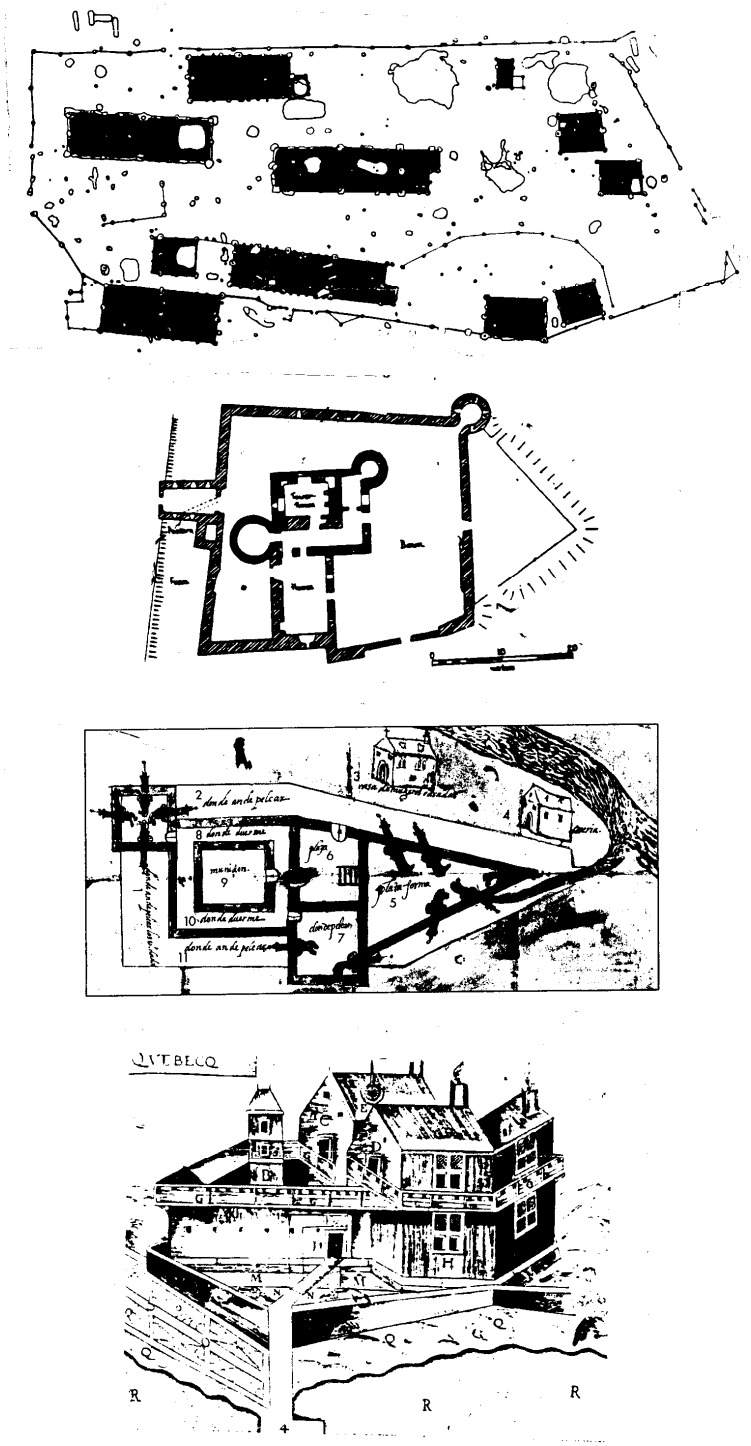


Figure 93

Redoubts or forts with spurs.
(A) English: Jordans Journey 1622–25+.
(B) Irish: Doe Castle late 16th century, early 17th century (St. George 1990),
(C) Spanish: Fort San Marcos (Z-Plan fort with spur) 1576 (South 1991:9)
(D) French: Quebec, Canada, ca. 1605 (Hannon 1969). Note: A to D read from the top.

How much effort was put into planning this false redoubt? Is this a catch-as-catch-can "folk" redoubt or part of a disciplined though vernacular Renaissance tradition as it is laid out?

Analysis of this plan suggests that while it is not a great work, it was carefully planned based on plane geometry (see Figure 94). The analysis drawing shows the sorts of things we're seeing at Flowerdew and Harwood's Fort but the rationalism in the plane geometry in much simpler. Arabic reference points 6A, 6B, 6C, and 7 are referencing a sensitivity to the original Jordan home lot (Structures 1, 15, 20, 21) when the perimeter was thrown up. Buildings 5, 16, 17, and 18 are showing their sensitivity to an already present false redoubt and palisade perimeter.

When we draw in the exterior polygon of the redoubt (lines linking every angle of the fort), we can see that it was based on an inscribed square (reference points 1, 2, 3, 4). We have probably numbered them in the sequence in which they were originally measured out. The militia official who laid this out (Captain Jordan, Captain Sharpe, or Captain Maddison of the Charles City militia) inscribed the rectangle at reference point 4-8, 6-9, 5-A, 6-A, and 7-A. The key angles create symmetrical incisions of the rectangle block. The angle between 6-A-8 is 140 degrees, as is the angle 4-A-9. The angle 4-A-6 is 40 degrees, as is the angle 8-A-9. Using the archaeological plan as a basis for study, most of the angles appear in clean round angle

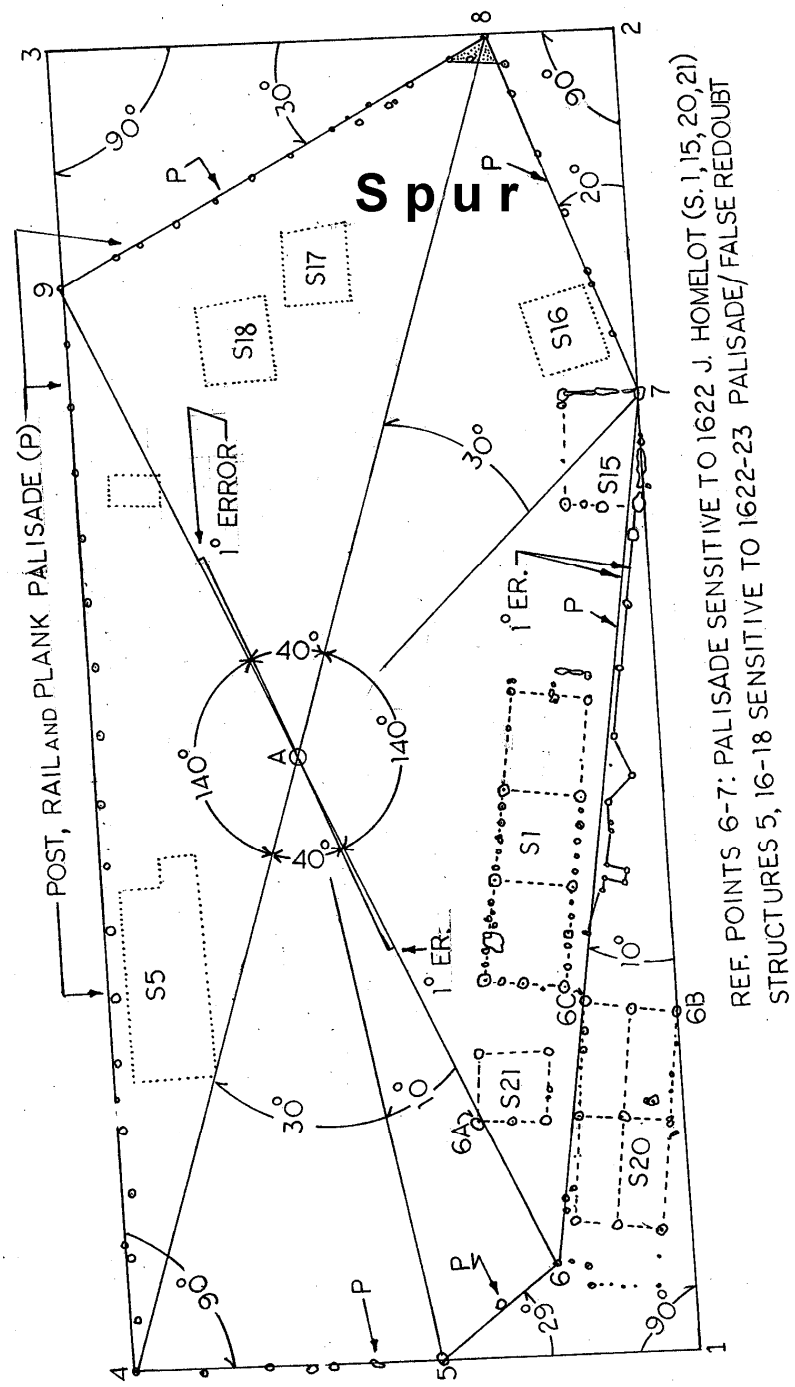


Figure 94
The structure of the false redoubt at Jordans Journey with Pts. 4, 9, 8, 7, 6, 5 being the exterior polygon.

numbers including all but one secondary angle. There is a one-degree error in angle 6-A-9, and one secondary angle (1-5-6 at 29 degrees) is also off by 1 degree. These are very tolerable error factors given the centuries of plow shearing at this site.

Based on this hard design data revealed through soft structural analysis, it appears we have revealed the actual contemporary plan and the mental template behind it. Like Yeardley and Harwood, this person had a clear knowledge of plane geometry and used it with confident ease. Given this compelling redoubt plan, it is very possible that Structure 20 was cannibalized to make palisades and other houses within the false redoubt's perimeter while its west wall may have been retained to become part of the palisade. Notice how the resulting perimeter allows for settlement growth with in the spur area. Also note how it retains cattle and pigs during Native American warfare, as was the case in Yeardley's Fort.

Summary of Jordans Journey

Important to this study, Jordans Journey proclaims its English civility through use of a carefully measured-out Vitruvian triangle during times of war. This is a wonderful example of a small-scale variant and vernacular Romano\Renaissance plan. It is Romano because of the Vitruvian core tripartite plan which is centered on Farrar's House and the hypothetical chapel which doubled as a courtroom. The bi-linear street so created dead

ends on the Jordan Manor and a palisade. There is a second street which passes between the Jordan Manor and Structures 4 and 10 and leads to a defensive spur—as opposed to a street leading to a bastion. While the civility is "spare," it is present.

The false redoubt is carefully laid out as a vernacular copy of a military redoubt. The redoubt is not a fort; no exterior walls are flanked. Despite this, no self-respecting Native American warrior would get near this settlement except to fire it (and then in small numbers who had to contend with watchdogs). If warned of serious foreign threats, male militia would depart to Flowerdew, where the Jordans Journey occupants helped build and maintain an anti-European fort every Sunday or every "so many" Sundays. In turn, it is more than likely that Flowerdew, and Shirley Hundred militia and servants help build the palisades and possibly Structures 4, 5, and 10 in a reciprocal exchange system not unlike a rather earnest barn-building event. Here we should not fail to note the architectural similarity between these structures and Structure 2 at Flowerdew with their earthfast studs between hole-set bays. Moreover, Piersey probably acquired Jordan' Journey's saker (a medium small cannon) sometime between 1624–25 and 1626 when Jordans Journey bowed out of its emergency post-massacre phase. It is also possible lawyer Farrar's courtroom took on a more-than-ordinary value to Charles City Corporation during the period of our interest.

Inspection of the Key Analogues Chart suggests that Jordans Journey is the "odd ball" site in our study group. This is because of the bi-polar or bi-nodal dynamic in the ordinal plan which honors both Ferrar's and Cisley Jordan's Manor as the hierarchical units. Nonetheless, here a tripartite ordinal plan presides over an exploded west English farmstead, which is used as a bread-and-butter work area supporting the brief town configuration.

THE NANSEMOND FORT: TOWN PLANNING COURTESY OF THE NANSEMOND INDIANS

During the Third Anglo-Powhatan War (1644–46) Governor Berkeley appointed Captain William Clayborne, the former Virginia Company surveyor and Sir George Yeardley's protégé, as "Generall and Chief Commander" of county militia operations throughout Virginia (Shea 1985:62). A string of forts was established along the western frontier by military entrepreneurs who were willing to take on the responsibility for their upkeep and provide an adequate garrison for the defense of each English holding. Because the forts were established under private patronage, albeit paid for by the public "Castle Tax," it is likely that the design of each was left up to the individual commanders.

These public works included Fort Charles, located near the falls of the James; Fort Royal, probably near the present town of West Point, at the confluence of the Pamunkey and Mattoponi rivers; Fort Henry, at the falls of the Appomattox River, in the present city of Petersburg; and Fort James, on

the bluff of the Chickahominy River above Moysonec in what is presently New Kent County (Hening 1809–33 I:293-294, 326–7). At the conclusion of the Third Anglo-Powhatan War, each fortification continued in use as a trading post for the Indian trade. For Norfolk and Isle of Wright Counties, the options were grim during the war which pitted them against what was still one of the toughest and most populous tribes in Coastal Virginia—the Nansemonds. Due to the impoverishment of public funds and the cost of conducting war, the local county government was informed by Virginia government that local fortification would have to be taken by their own financial initiatives (Hening 1823:315).

Because of the responsibilities associated with upkeep of a fort and support of a garrison, we can postulate that whoever built the Nansemond Fort of 1644–46 was a wealthy and influential individual relative to other planters in the area (Hodges 1993; Kelso et al. 1990; Luccketti, pers. comm. 1992). Possible candidates would include Captain Willoughby and Captain Edward Windam, who, along with Richard Bennett, John Sibsey, Thomas Dawe, and others were the most prominent militia officers in the area (Stewart 1902:32, 34).

It is not known whether the fort was publicly funded. Its inland location may indicate that it was a fully private defensive effort. Alternatively, the militia may have chosen to establish the fort at an inland

location for fear of being sacked by foreign rivals while preoccupied with the Indian war. Nonetheless, the difficulties associated with amassing the labor needed to erect a fort suggest the effort was assisted through the castle tax. Regional fortification clearly was financed locally, with commanders receiving 6,000 pounds of tobacco, lieutenants 4,000 pounds, and sergeants 2,000 pounds a year. Every 14–15 tithables were to pay for one soldier. We know through such underpinnings that Lower Norfolk County was able to fund 40 men during the Third Anglo-Powhatan War (Hening 1823:315; Shea 1985:62; Stewart 1902:31).

Site Structure

Four phases in the evolution of the Nansemond Fort have been identified by Nicolas Luccketti's and Bly Straube's analysis. The site began as an unfortified home lot, was transformed into a palisaded defensive work, and ultimately reverted to an unfortified homestead. See Figure 95. In Phase 1, the settlement consisted of two dwellings (Structures A and B), at least one outbuilding (Structure C), and an unpartitioned yard. The Phase 1 plan of the Nansemond settlement exhibits a familiar linear domestic growth pattern similar to the Phase 1 plans of Jordans Journey and Newman's Neck and the relationship between the company compound and domestic site at Martin's Hundred (Hodges 1990; Mouer et al. 1992; Noel Hume 1982).

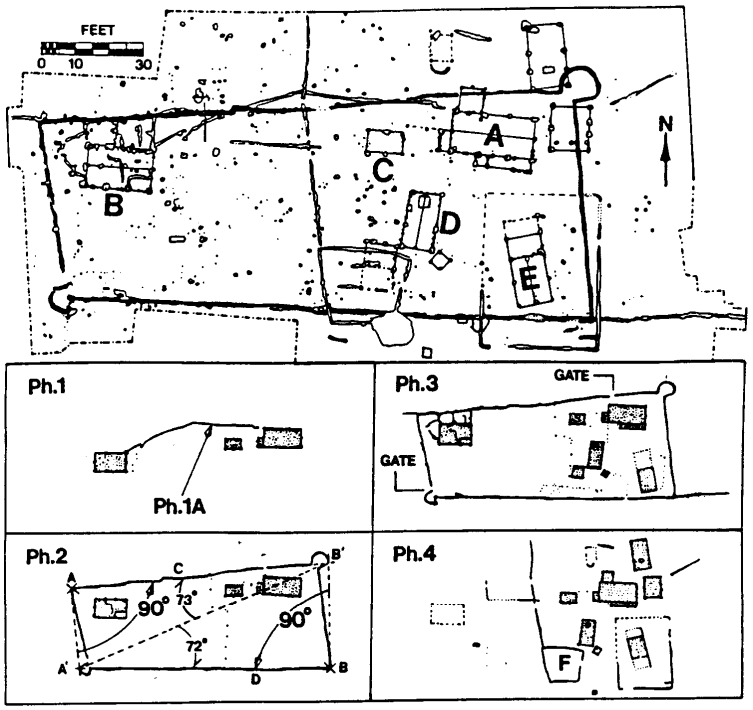


Figure 5: (above) Simplified Plan
of The Harbor View Fort; (below) A Preliminary
Site Evolution from 1635+/-5 to 1720-40;
Phase 1: ca. 1635, Linear Yeoman Homelot
Phase 1A: ca. 1644, Threat Stage Giant Demi-Lune
Phase 2: ca. 1645, Bawn Constructed w/ Master Plan
Phase 3: ca. 1645 - ?, Accommodation to Bawn
Phase 4: To ca. 1730, Bawn Cannibalized, "Nansemond

Figure 95
Plan of the evolution of the Nansemond Fort/Site ca. 1635–1730
(Hodges 1993:Fig. 5.)

Perhaps with increased access to labor and the support of the castle tax, the builder was better able in Phases 2 and 3 to express the planning ideals which comprised his mental template. The result was a hierarchical configuration formed by a manor (Structure A) and two new subordinate structures located to the south: a quarter (Structure d) and a barn or warehouse (Structure E). The settlement was also enclosed during Phases 2 and 3.

The plan of the fortification is a trapezium, or four-sided polygon having no parallel sides. A line drawn between the bastions in the northeast and southwest corners of the fortification divides the trapezium into two right triangles with opposite angles of 72 and 73 degrees (the error created by a musketeer). This master plan squares its angles with the bastions (A-A prime; B-B prime) in a manner similar to the Clifts Z-Plan. This design appears part of a rational strategy to provide as much room as possible for a new tripartite core building plan within a larger inner courtyard, while accommodating cattle, swine, and possibly horses in a smaller space in the western outer courtyard of the site. By 1646 "parties of hourse" have become popular with the militia and "scouts" (similar to rangers) since the horse, whether ridden or used as a pack animal, better enabled them to keep up with Native American warring parties and allowed them to increase the range of their patrols (Shea 1985:62-63, 67). Therefore, Structure B probably became a horse stable and dairy barn once the fort was in full maturity.

The mental template expressed by the mature Nansemond Fort is very similar that expressed at Flowerdew (see Figure 96). The basic structure at each site is a manor, or seat of the plantation commander (Structure A at the Nansemond Fort), surmounting an exploded West English longhouse plan comprising (moving from west to east) the byre (west enclosure and Structure B at the Nansemond site), hall (Structure D, the quarter/garrison house), cross passage (avenue between Structures D and E) and service/storage area

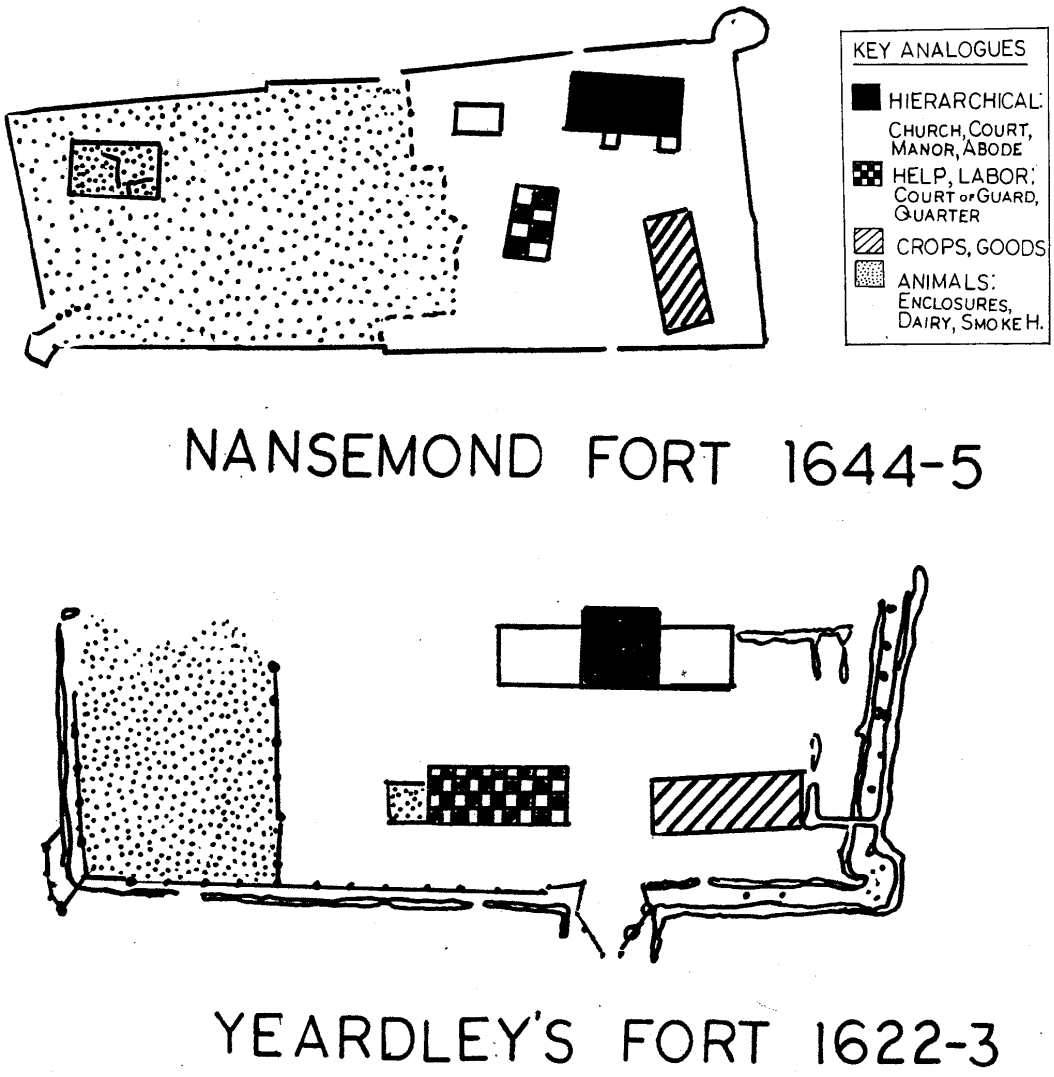


Figure 96
Beyond the variability in the angle of outbuildings, the overall structural pattern between the two forts is functionally identical.

(Structure E, inner room). It is interesting that this spatial code is seen again at the much later site with no basic changes in placement but certainly in building orientation. To accommodate the code, the function of Structure B at the Nansemond Fort changed through time from a quarter to a stable/byre house with drains and a sheiling (see Beresford and Hurst 1971:Figure 38; Fussel 1966:38, bottom; Rowley and Wood 1984:Figure 16). Both sites have the same solar angle (Keeler 1978). Similarly to Flowerdew, Jordans Journey, and Magherafelt, in the tripartite plan at the Nansemond Fort, the subordinate buildings are also staggered. As in the case of Yeardley's Fort, the storage unit at the Nansemond Fort is farthest from the manor, perhaps due to the lingering influence of the chain of being—or alternatively, purely utilitarian needs for large dooryards especially near the gable of the barn. In Figure 97 Flowerdew and the Nansemond Fort are shown together next to an early Norman motte-and-bailey castle; all three appear to have "base courts" reserved for animals.

The main difference between the spatial code in the Flowerdew and Nansemond settlements is not in the structure of the functional spatial code, but rather in the facade orientation of the two new subordinate buildings which contribute to the tripartite plan centered on the manor. While at Flowerdew, Jordans Journey, and Magherafelt, the tripartite plans comprise buildings sharing a common orientation of their long facades, at the Nansemond Fort the subordinate buildings, Structures D and E, are turned

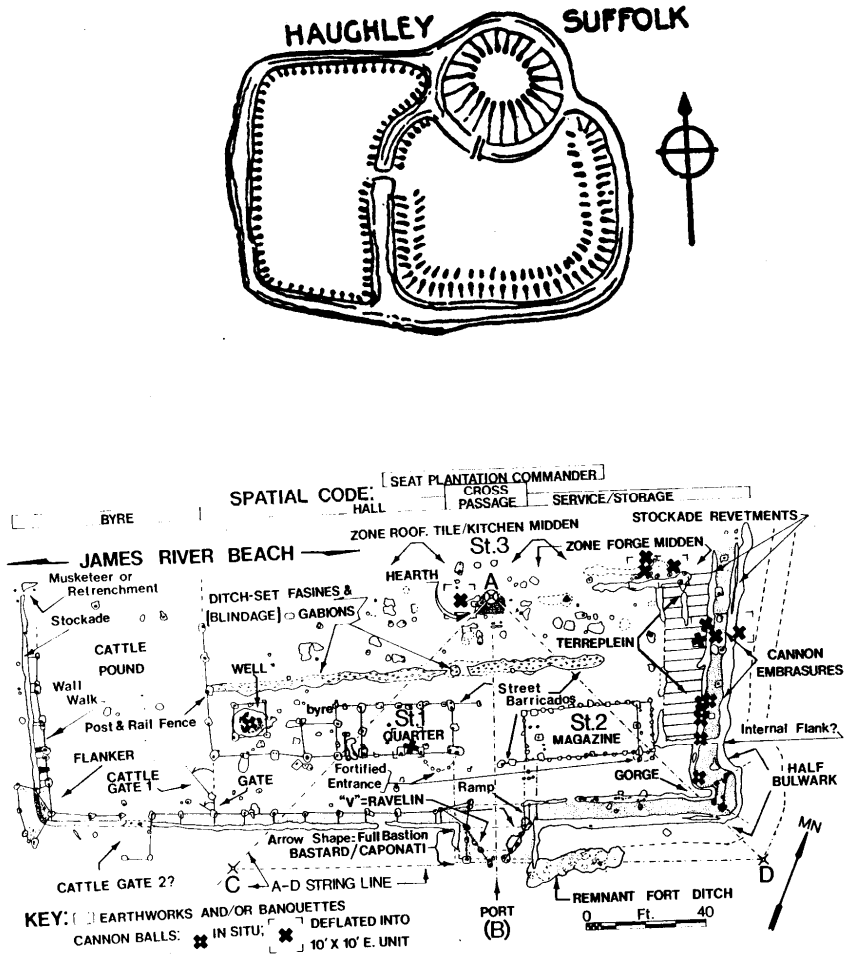


Figure 97
(Top) Early Norman motte-and-bailey fort. Note service "base court" to left (Toy 1984:53);
(Middle) Yeardley's Fort base court to left (cattle pound) (Hodges 1993);
(Bottom), Nansemond Fort base court livestock and horse corral to left (Hodges 1993).

so that only their short north facades face the long south facade of the Structure A manor. Therefore, the site is most similar to Wolstenholme Town, which as we noted above seems to have a "farm model" influence behind its villa-like broad courtyard (see Key Analogues Chart).

We have drawn a detailed plan of the interior of the fort which we will troubleshoot for competence and the overall ambiance of the forts core architectural statement (See Figure 98). The east facade of the Quarter (Structure D) is five degrees out of square with the west gable facade of the manor (Structure A) (line A-B-C). A barn (Structure E) is 10 degrees out of square with the east gable of the manor house (line D-F). It is also 5 degrees out of square with the east fort curtain (Line K-L-N is square as a 90-degree extension). It is also out of square with the south curtain wall. The tithe barn in sum is definitely shabby from most any angle—in terms of would-be formal placement.

Is there any cultural ambiance here besides a wonderful vernacular version of a tripartite core plan? There appear to be two porches attached to the manor; these <u>may</u> define the location of an east chapel chamber from a separate fort commander's hall. This notion is based on the Roman principia model of a dirt-cheap temporal and religious social configuration. If the owners are not aware of this connection—which seems likely—then this is <u>not</u> humanitas—that is, not a non-corremative reference to classical

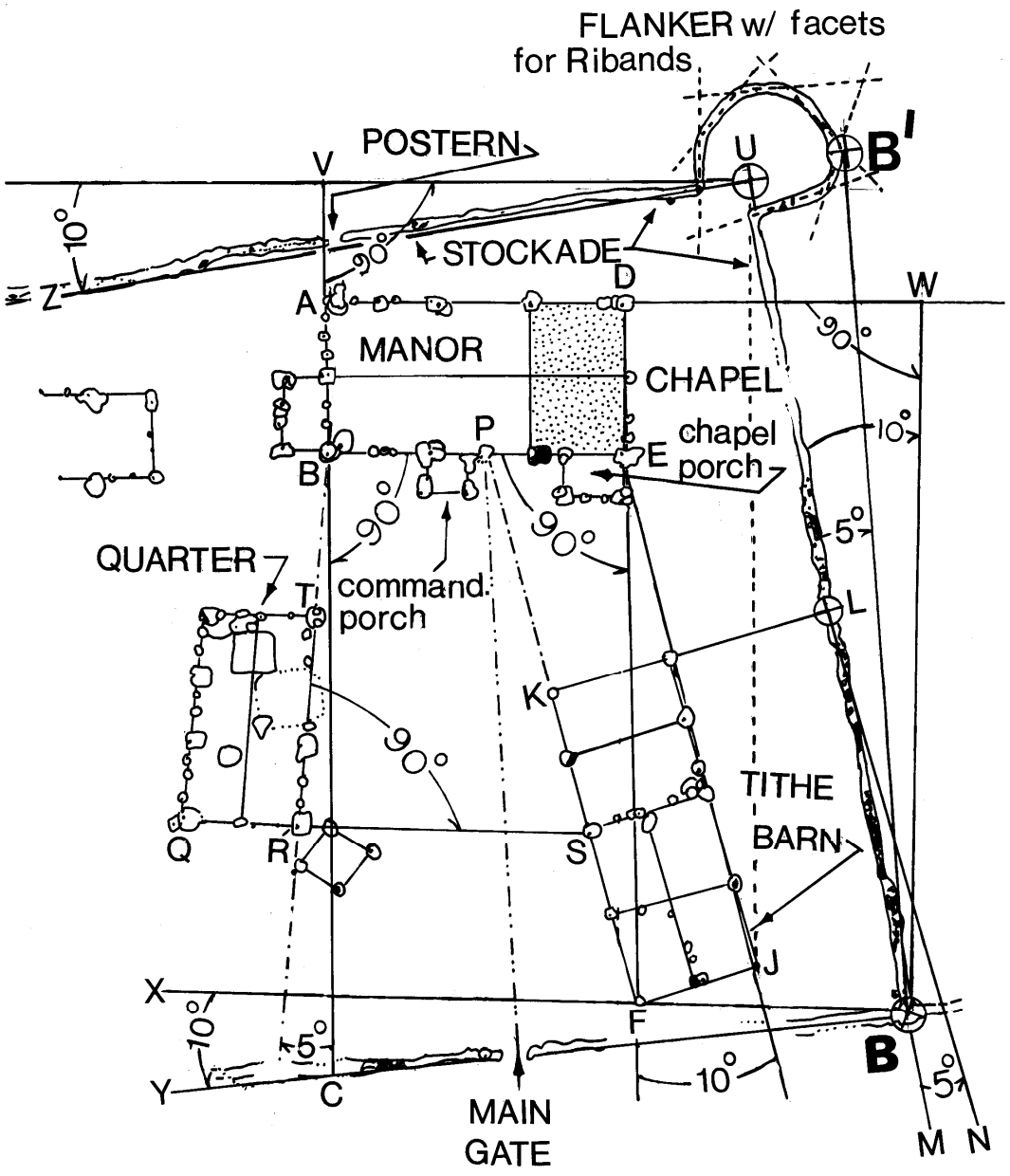


Figure 98
Detail of core tripartite plan at the Nansemond fort. Note out-of-square building regimen.

antiquity. Rather, it is a simple hierarchical structure which was certainly perceived by all the occupants of the fort, perhaps in imitation of previous examples. A militia captain, his wife and children, and perhaps a minister lived here. Additionally, maid servants who help feed and wash clothing for the men probably were here, especially when Structure B was rolled over as a horse stable an dairy barn. As in the case of Flowerdew, these ladies were also integral to dairying practices at the fort.

The quarter added to the new fort based on Luccketti's and Straube's research suggests that we can call this unit a garrison house. We can presume a sergeant lived there (married or unmarried) presiding over a company of perhaps 20 men who almost certainly were impoverished bachelors. We suspect any maid servants have shifted to the manor by the time of the full fort garrison social event.

Additional variant small-scale town planning behavior occurs in the community rather than entirely private utility of the barn. Above, it was noted that every 14–15 tithables were to pay for one soldier. Consequently, we suspect this is literally a tithe barn since it was added to the fort. This of course recalls the Flowerdew magazine and the storehouse at James Fort which were publicly owned at least during war or early settlement, respectively.

The variance between the orientation of the buildings at Flowerdew and the Nansemond Fort may reflect the variance between, respectively, the iron discipline of the Anglo-Dutch Virginia Company martial law and the less-rigorous and, therefore, more precarious social control exerted by corporate interests and militia levies in a frontier context. It is quite possible that the Nansemond Fort represents an earlier private settlement commandeered by the Virginia militia. Surveillance of the inhabitants might be of particular concern in such a context. When the stockades at the Nansemond Fort were cannibalized or demolished in Phase 4, the storehouse or barn received its own enclosure. This, one surmises, is the sort of defense of commodities intended to keep labor out and commodities in, which Deetz (1993:33–34) has discussed in relation to the ambiance of the Flowerdew Fort.

The Nansemond Fort as a Fortification

It is generally understood that the Z-Plan fortification, as employed at the Nansemond Fort and elsewhere, allows only two flankers, rondells, or bastions to flank all four walls. The relationship between the Z-Plan fortification and the Renaissance mental template is less clear. Some preliminary research has suggested that the Z-Plan, familiar from Ulster examples employed to defend individual manors, is Scottish in origin if only published information in English is consulted (cf. Hodges 1993:211–212).

Surprisingly, there is also evidence that the seemingly unpretentious Z-Plan flanking defensive system was used by town planners in Italy during the Renaissance.

Large angled bastion embellishments are quite expensive to construct, and Italian Renaissance town planners employed Z-plan defensive systems to flanker entire town wall systems as cheaply as possible. For example, in the Codice Magliabecchiano by Giorgio Martini (printed 1451–64) the plan of an ideal city crossed by a river is depicted. In addition to normal exterior defenses, the city features diagonally opposing, huge, angled bastions in a Z-Plan whose throats form fortified entrances which serve to protect an eight-sided town wall that has smaller rondels (round towers) flanking each polygon angle (Argan 1969:Figure 8). The Z-Plan design also attracted the interest of Leonardo Da Vinci who, sometime between 1482 and 1499, sketched the Castello in Milan, a small work appropriate in size for comparison to the Nansemond Fort (Pedretti 1985:66–67). (See Figure 99.) Da Vinci's quadrangular Z-Plan castello is a brilliant shorthand version of a gunpowder castle bristling with gun ports and narrow windows, although it lacks Alberti's and Martini's angled bastions.

Richard Barthelett's circa 1603 drawing of an unknown late 16th- or early 17th-century Native Irish work shows a Z-Plan system used to defend against English siege attackers. Inside the Irish work is a Vitruvian

Figure 99
Z-Plan forts. (Top) Irish fort defended against English from painting by Richard Bartlett ca. 1590–1602 (Archives Dublin); (Bottom) a fortified pavilion in Milan designed by Leonardo Da Vinci (Pedretti 1985:67).

hierarchical arrangement of creights (Ryan et al. 1993:216). Spanish use of the Z-Plan fort is illustrated by the Planta de Argol, built by 1637 in Chile, which contained a classically organized town (Guarda 1990:Figure 391). Another Spanish work, the Presidio of Santa Barba, dating from ca. 1788, provides another example of a Z-Plan fort defending a small town in a villa arrangement (Morrison 1952:Figure 206, 241). While we commonly associate the Z-Plan system of fortification with smaller manorial defenses, these examples show that it was also used as a practical means of defense for small communities.

Other more practical factors other than Renaissance models influenced the form of the perimeter of the Nansemond Fort. For example, the bastion associated with the inner courtyard containing the manor, quarter, and barn is much larger than the opposite bastion in order to accommodate the larger human population concentrated in northeast quadrant of the fort. The larger bastion also flanks the north wall of the fort, which faces the most broken terrain. This face of the fort potentially was the most threatened. During Phase 1A an earlier palisade was erected between Structures A and B defending this face of the buildings (William Leigh, pers. comm. 1991).

It would be incorrect to call the flankers at the Nansemond Fort "bulwarks," since there is no evidence of artillery at the site (Ramm et al. 1964:101). What makes the use of the bastion-like flankers at the

Nansemond Fort especially interesting is the influence of bulwarks (or tambors) as well as demi-bastions on their design. The northeast bastion has only a single obviously straight flank facing south. However, its otherwise curvilinear plan can be broken into facets showing the location of straight ribands (see detailed plan of the core settlements).

Within the curvilinear builder's trench of the smaller southwest flanker is evidence of two faces and two flanks, yet the arrow shape of a bastion has been abandoned. Instead, the faces of the flanker extending beyond the line of the west curtain have the familiar bay window shape of the demi-bastion at Yeardley's Fort at Flowerdew. An additional flank angle was added by shifting the entire unit to the south so that it extends beyond the south curtain.

The southwest flanker at the Nansemond Fort is similar to the tower bastions at the Hallowes/Steel Tower House, which are seemingly cleverly cheated demi-bastions which nonetheless have the two flanks and two faces of a normal full bastion (Hodges 1993:206–207). In both designs, face angles were created to join the flank angles.

At the Nansemond Fort a line of maul-driven posts representing a post-and-wattle revetment is located just north of the southwest flanker, opposite the entrance into the cattle pound or horse corral. The revetment indicates that the flanker almost certainly had a turf-laid (sod), elevated

firing platform. The revetment also would have served to direct animals away from the defensive work.

Any evidence indicating that a similar firing platform was associated with the northeast flanker apparently has been destroyed by plowing. Also presumably removed by plowing is all evidence of a shallow ditch which would have followed the exterior of the stockade perimeter. The ditch would have increased the effective height of the wall and would have allowed water to drain away from the posts which comprised the perimeter. Exterior turf walling was probably reserved to reinforce only the angled and curvilinear flankers, since artillery attacks were not anticipated. In turn, the Nansemond Fort probably uses large "flowlers" (not unlike punt guns), or "wall Pieces" were probably used in place of artillery in its flankers.

Summary of the Nansemond Fort

In sum, the relatively imprecise execution of the plan of the interior of the Nansemond Fort contrasts sharply with the freely applied mathematical precision of the plan of the fort perimeter. This suggests that a skilled and knowledgeable party laid out the fort (perhaps Claybourne), but subsequent additions to the settlement were planned and executed by less inspired individuals. Luccketti (pers. comm. 1998) noted that the fort's captain was probably an indentured servant during the Virginia Company period (the author is presently unable to locate or recall his name). This person was

probably more precisely less well educated and less personally disciplined. Overall, the settlement's ambiance as an architectural statement seems to make it an artifact of a more rough-and-tumble "folk" or "yeoman" social orientation since geometry seems to be based on "eyeball" layouts of the core plan. Because of this the site is an extremely important artifact of past culture since the vocality of the owner's worldview has been preserved in some manner (Deetz 1977).

Rowley and Wood's (1982) research allows us to point out that it is likely this is a "farm-styled home lot" converted to a "farm-modeled fort" based on a late medieval unit in which typically a barn was set at an "L-shaped" angle to a domicile and shed. If we are accurate in our identification of this plan, then we can say that its main addition is an opposing servant housing opposite and staggered with the barn. Whoever occupied the fort was a successful and popular farmer and saw farming needs as the main thrust in planning the interior of the settlement. For this person the fort phase is probably a temporary inconvenience. If the barn or storehouse (Structure E) had a north-facing gable door, the variant orientation of the subordinate structures at Nansemond might be explained as a means to facilitate pedestrian movement from the manor or surveillance of access to the store (see Neiman 1978: 1993). These factors would have been of little concern at Flowerdew, where Structure 3 was hedged in against the storehouse and quarter by the "blindes" or quick-set hedge.

Although the Nansemond Fort was not designed from its inception according to a classically inspired plan, it does informally meld a "rustic" interpretation of a Vitruvian ordinal plan with an L-plan English farmstead or "farm" plan with a sort of "action based" immediacy reflection its new public burden in an "other directed" format (Geertz 1973). The Vitruvian plan is adjusted rationally to accommodate separate housing for the labor force, a feature lacking in the farm plan; the barn and storehouse, normally separate buildings in the farm plan, also are combined (Beresford 1971:Figure 17).

Although the type of tripartite plan used at the Nansemond Fort is essentially different from those seen at Flowerdew, Jordans Journey, Magherafelt, and Shirley, the Nansemond Fort is superficially similar in a broad sense to Palladio's more geometrically precise Villa Trissina, in Vicenza, and to Mount Airy and Mount Vernon (Morrison 1952:276, 321, 356–357).

The layout of the Nansemond Fort is also reminiscent of a number of Renaissance-inspired quadrangular fortifications simply because there are only a limited number of options for tripartite building placement within the square or rectangular forms of Roman principia, forum, camps, or Renaissance works. The defensible chateau at La Ferme Du Manor in Hesdigneul, in the Pas de Calais, exhibits this sort of plan with the tripartite

units joined to the courtyard walls, as does the fortlet at Chateau De Saint More. Both of the chateaus at La Ferme Du Manor and the Chateua De Saint More are 15th- to-1616th-century French defended manors with turrets (round towers) at every angle of the architectural perimeter (Eberlein and Ramsdell 1926:Plate 41, Plate 156). At Princestown, Gross-Friedrichsburg, in West Africa of 1688, a similar, although more rigidly geometrically based plan, was built by German engineers in 1688 (Lawrence 1964:Plate 51a). Familiar applications of this simple tripartite plan, which create a courtyard, include the Governor's Palace in Williamsburg and numerous similar neo-classical 18th-century plantation complexes in the Chesapeake which feature an angular application of a "C-shaped" plan that is symmetrical along a planned hypotenuse.

Similarities in the arrangement of the buildings within James Fort (as interpreted by Foreman 1938), Yeardley's Fort at Flowerdew, and the Nansemond Fort suggest reference to a shared mental template. The only significant variances among the plans are in the specific orientations of the buildings and the function of the ordinal building.

THE SUSQUEHANNOCK FORT

As noted in Chapter 1, the Susquehannock Fort is included as a Native American control site in this study. It is a fortified Native American town with a European-influenced defensive perimeter. The Susquehannock Fort

directly affected behavioral activity at the Clifts and Hallowes English colonial sites and may have benefited from Yeardley's protégé, William Claiborne (Fausz 1988). Consequently, we place this fort in front of Clifts.

Minor raiding from Doeg Indians triggered initial fears of Indian raids in Virginia in 1675. These fears got mixed up with the popular perception that a wholesale Native American uprising associated with King Phillips War in New England might occur in Virginia (Kevin Kelley, pers. comm. 1996; Washburn 1957:25, 38, 40). The Susquehannocks were unfairly implicated in the Native American depredations which eventually led to the events we have come to call Bacon's Rebellion. It may be, however, that as a result of interactions with Europeans through the fur trade, some Native American groups by the third quarter of the 17th century had reached parity in armaments with most English homesteaders, engendering in the colonists a profound sense of insecurity.

According to Jennings (1988:17–18), the Susquehannocks originally were extensively involved in the Swedish fur trade as allies against the English, Dutch, and Delaware Indians. The Swedish leadership employed the Susquehannocks as surrogate mercenaries in 1643, fully arming and drilling the warriors with muskets and even artillery to compensate for the Swedes' lack of manpower. The Susquehannocks eventually were displaced from western Maryland and eastern Pennsylvania by Iroquois rivals, and in

1652 made peace with the Maryland government by ceding land (Jones 1988:191).

In 1675 the Susquehannocks sought safe refuge from Iroquois warfare near Piscataway Creek at the stockaded village of the Moyones, a tributary Indian group. Here the Susquehannocks built a strong fortification and refused to move, occupying the fort for approximately 18 months. In 1675, the 100 Susquehannock warriors, along with women and children who occupied the fort, endured a siege of six weeks by forces of 500 militia each from Maryland and Virginia. Only siege-enforced famine eventually forced the Susquehannocks to flee to the Northern Virginia frontier. The retaliatory raids they conducted here are likely to have directly inspired the Clifts Bawn and Hallowes Tower House and surely helped to fan the fire of Bacon's Rebellion.

The Susquehannock Fort was the subject of archaeological testing and excavation many years ago (Ferguson 1941). The site had been plowed extensively and subjected to severe erosion from the river. Approximately one half of a 200-foot-wide heavily stockaded fort was located during subsurface testing. The stockade posts generally measured 5–8 inches in diameter and all exhibited evidence of burning, perhaps a result of the English siege.

Ferguson's (1941) drawings and descriptions of the fort include no references indicating that the stockade posts were set within a ditch (see Figure 100). This could be a uniquely Native American feature of the fortification. It is more likely, however, that the posts had sunk into the lighter subsoils below the fill of the builder's trench as was sometimes the case at Flowerdew. Inside the stockade were found a small ossuary, several pits which may have contained ritual offerings, and curvilinear traces of at

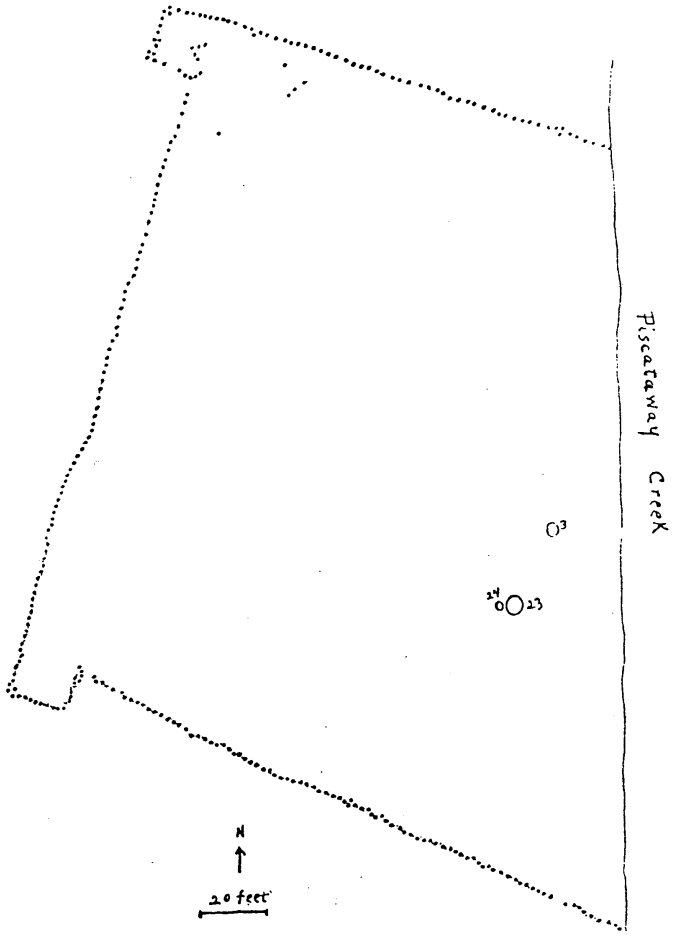


Figure 100
The Susquehannock fort, a flankered redoubt 1675. Note entrances next to each demi-bastion, revetment of top demi-bastion (Ferguson 1941).

least two or three incompletely burned structures (Ferguson 1941:9). The fact that only traces of the buildings remained indicates that the stockade posts were deliberately set more deeply than those of the structures, as was the case with the Weyanoc palisade at 44PG65 at Flowerdew.

Two squared demi-bastions (half bastions) were installed at each of the two surviving curtain wall corners of the Susquehannock Fort. Each demi-bastion was placed so that a salient projection existed primarily to flank only one length of curtain, with the result that the bastion faces look similar to a cartwheel. As in the case of the Yeardley Fort, this disposition was designed primarily to provide flank fire down each single curtain wall only, and permitted little desirable cross fire between the bastions. Ferguson (1941) noted that the post molds in the demi-bastions were on average larger than those within the zones of the curtain. The faces (the sections projecting outward) of the demi-bastion were about 16 feet long, while the flanks (the sections projecting at right angles to the curtain walls, to enable fire down the length of the wall) were about 12 feet long. There was a distinctive gap between the flank and the adjacent flanking curtain wall. As seen in the southwest bastion at the Nansemond Fort, this gap created a fortified entrance protected by each adjacent elevated bastion (Purchas 1625 10:1753).

Inside the northwest bastion of the Susquehannock Fort was a series of post molds forming a nearly complete square open on the side against the

north curtain wall. This construction represents an attempt to revet with a counterfort an elevated earthwork platform, with interior stockade revetments within the demi-bastion that could only be entered from a ramp/gorge within the safety of the interior of the fort. It is likely that a similar construction was used within the southeast demi-bastion but its traces were erased by plowing.

Thomas Matthew, a contemporary observer, described the Susquehannock Fort as follows:

> "The walls of this fort were high banks of earth, with flankers having many loop holes, and a ditch round all, and without this a row of tall trees fastened three foot deep in the earth, their bodies from five to eight inches in diameter, [these were] wattled 6 inches apart to shoot through with the tops twisted together, and also artificially wrought as our men coud make no breach to storm it, nor (being low land) could they undermine it by reason of water--neither had they cannon to batter itt, so that twas not taken, untill famine drove the Indians out of it." (Maxwell 1850, as cited in Ferguson 1941:3-4).

The technique used at the Susquehannock Fort of wattling the tops of the stockade posts is suspected to be of Native American origin. Situating the fort on low-lying land, which ensured that the ditches would be wet and function similarly to a moat, has antecedents in Dutch systems of fortification, and prevented attackers from undermining the fortification (Duffy 1979:91–93). It is likely that the Susquehannock Fort had a box rampart only at each raised demi-bastion, since Matthews' confused

description would make it impossible to fire through loopholes if the stockade were "without" (outside of) the ditch and therefore a primary palisade.

The Susquehannock Fort is remarkably similar to the "flankered redoubt" pictured in Ward's (1639) Animadversions of Warre, the only difference being that the demi-bastions illustrated by Ward are half arrow-shaped bastions with one flank suitably angled to facilitate the transformation to a quadrangular fort with four full arrow-shaped bastions (Ramm et al. 1964:50, 102). See Figure 101.) The north flank of the bastion at Yeardley's Fort is also angled, indicating that Yeardley intended to shift to full bastions. The Susquehannocks, however, intended their demi-bastion to be more like blockhouses if added to on opposite flanks.

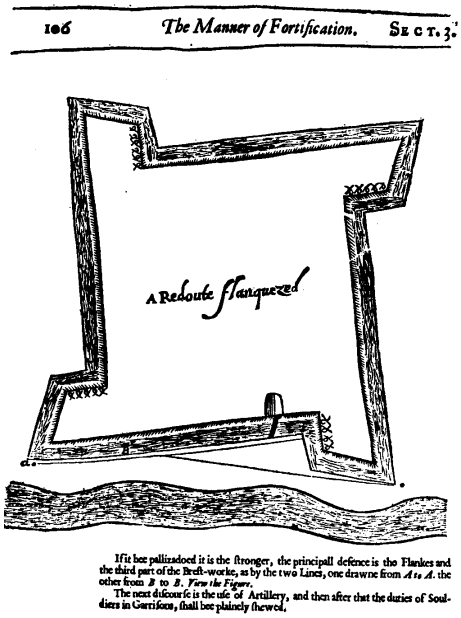


Figure 101
A flankered redoubt from Ward 1639 (compare with the Susquehannock Fort) (Ramm et al. 1964:Fig. 176).

The Susquehannock work is a wonderful illustration of selective acculturation since it melds traditional Native American building traditions with fortification techniques inspired by Swedish or Dutch antecedents. It is possible the European design of the fort was the result of William

Claiborne's patronage. Claiborne was allied with the Susquehannock through trade relations, and he had extensive political alliances, often against the Calverts of Maryland (Fausz 1988:67–91). It is remarkable how the influence of Yeardley's protégé, Claiborne, extended across three subsequent periods of warfare in Virginia.

Archaeological excavations have revealed that the Susquehannock Fort housed caches of valued Native American and European trade items as well as ossuaries. The fortification thus served as a strongly ideo-technic arena for its native occupants in a manner comparable to James Fort, which housed the English settlers' church (Arber 1910 II:433–4; Brown 1890 I:184A).

THE CLIFTS SITE AND FORTIFICATION: 1675–1705

When the Susquehannocks abandoned their fort, their 75 warriors separated into small war parties with the intent of killing 10 Englishmen for every tribal leader who had been murdered by the English during a parlay prior to the siege of their fort. Approximately two-thirds of the frontier in the Northern Neck was vacated by the English out of fear of the Susquehannocks' retaliatory raids. The string of frontier militia forts established by the English was now considered useless to defend the private citizenry, so they were abandoned. As ordered by Governor Berkeley, the militiamen were redirected to selected fortified houses which included Clifts (Washburn 1957:22–25, 32).

The Clifts Fort (Hodges 1993:203–205, Figure 6; Neiman 1978, 1981a, 1981b) and the Hallowes/Steel Tower House (Buchannan and Heite 1971; Hodges 1993:205–208, Figure 7) date from the fourth quarter of the 17th century. While it is possible that these settlements were erected prior to the siege of the Susquehannock Fort, when militia left their houses it is certain they were built in reaction to the subsequent retaliatory raids of the Susquehannocks. Once again, as noted by Maxwell at the time, the English defense required local community cooperation:

> "In these frightful times the most exposed small families withdrew into our houses of better number, which we fortified with pallisadoes and redoubt, neighbors in bodys joined their labors from each plantation to others alternately.." (Maxwell 1850:63).

Of the two fortified houses from this time period which have been excavated in the Chesapeake, Clifts has the most potential to further our understanding of planning ideals associated with fortification. The Clifts site hypothetically was built by Thomas Pope, who was the son of a militia Colonel.

Neimnan's study of this site is perhaps the best and most comprehensive single site study to have emerged from the 1970s (Neiman 1980a. 1980b). Consequently we will move right into the interests of the present discourse.

The Clifts Courtyard: A Debased English Interpretation of a Rustic Vitruvian Villa Or Just A Farm?

By about 1670 the Clifts frontier plan consisted of a manor, a quarter, and a smokehouse partially enclosed by a snake fence—a possible reuse of the catena principle of gravity fences given strength by angles (see Chapter 2) (Neiman 1980b:2–3). The Clifts Z-plan fort built in 1675 was demolished by at least 1678, and the settlement, composed of the manor and a subordinate quarter located to the southwest, subsequently grew steadily in a very curious manner, apparently unfettered by fears of Indian attack. By 1705, a barn, indicative of increased wealth and cachement needs, had been added to the east of the quarter, as well as a dairy near where the smokehouse once stood (Neiman 1978:Figure 4, 1981a:24–25).

Let us focus briefly on the competence of this plan to see if we can note any behavioral characteristics which will help us gauge the attitudes toward the buildings Thomas Pope may have had. (See Figure 102.) The Phase 1 quarter was built at a nearly perfect right angle to the south facade of the manor (Line E-A-B with 1-degree angle). The Phase 2 quarter was built within 1 degree of accuracy to a right angle from the manor (Line E-C-D). Pope seems to be very concerned with creating order in relation to these buildings containing people and his own house. In contrast his dairy is 9 degrees out of square with the Phase-2 quarter (which was almost perfectly square with the manor) (Line J-L-M against M-L-N). His new barn appears

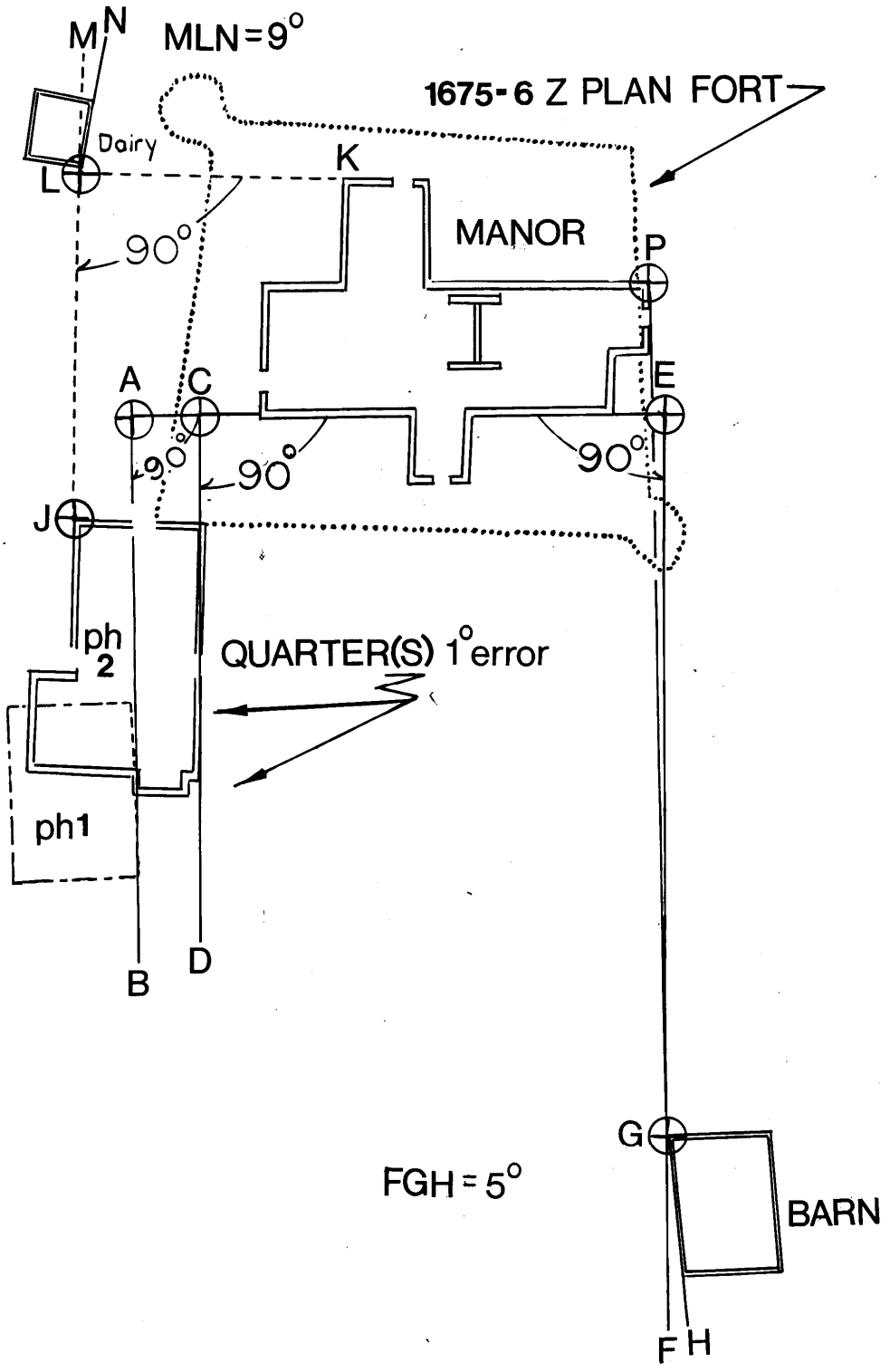


Figure 102
Detail of the core tripartite plan at the Clifts site. Note tight plan of quarter vs. loose outbuildings.

to be sighted south against the east gable of the manor. The barn is 5 degrees out of square with the south facade of the manor (Line A-E-F against F-G-H). Possibly two things are happening: either Pope is less concerned with the precise relationship to the house that buildings containing objects have, or he is thinking about convenience and pure utility. In the first case we may be seeing the lingering effects of the chain of being so that people are not only closer to the manor but in an orderly chained relationship to it through hierarchal social rank (manor over quarter) and correspondences ("people house" are more closely linked in the cosmos than "object- or animal-related houses"). In the second case Pope just doesn't care about detailing the geometry of outbuildings except in terms of functional placement in a more open and therefore abstracted yard. Outbuildings facade adjustments are not irrational but relate to accessibility and convenience to work areas and door yards, many of which are somewhat invisible to us archaeologically.

With the simple addition to the settlement of a quarter and barn, the plan of Clift recreated the most basic aspects of the tripartite plans of Yeardley's Fort of 1622–32 , Wolstenholme Town (1619–22) and the Nansemond Fort during construction phases 2 and 3, dating from ca. 1644–46+. The resemblance to Wolstenholme Town and the Nansemond Fort is the strongest, since the long axes of the subordinate buildings at Clifts are oriented perpendicular to the long axis of the manor. In the staggered positions of the quarter against the barn, the symmetry of Wolstenholme

Town drops out also, giving the Nansemond Fort the strongest parallel. In this parallel we think we can still see what is essentially a Late Medieval farm model that has had the addition of labor housing added to it in order to create a sort of courtyard between the quarter and barn and behind or in front of the manor (see Key Analogue Chart). The front door is probably facing south qiven the symmetry of the lobbied south door chamber within the door chamber itself and along the south facade of the manor in general.

The three settlements also exhibit more fine-grained similarities in the spatial codes which are expressed. These can be seen specifically in the manner in which meat and dairy processes were integrated into the plans of the settlements. At Clifts, the smokehouse (installed during Phase 1, ca. 1675–85) and dairy (added during Phase 2, ca. 1705–20) are immediately west of the manor and quarter. Of these, the smokehouse was installed in about 1675–85, the dairy by 1705 through 1720. At Yeardley's Fort, located west of the Structure 1 gable were a shedded byre, buttery, annex yard croft/byre, well/dairy yard, and cattle pound or bawn. At the Nansemond Fort, located west of the Structure B sheiling were the Structure B quarter converted into a cow barn and stable, replete with drains and stalls (see Rowley and Wood 1984:Figure16).

By 1725, with the expansion of the manorial complex at Clifts, the quarter, once used primarily for housing laborers, assumed more of a kitchen

role, perhaps following the "provisioning quarter" concept seen at Structure 1 at Yeardley's Fort (Neiman 1978:Figure 5, 1981:26–27). A walk ran along the west side of a garden fence, leading toward an offset porch entry flanked by a series of outbuildings. Antecedents for this plan can be seen in the surrogate street at Yeardley's Fort, running to Structure 3 between Structures 1 and 2, and the avenue and informal courtyard between Structure D and E at the Nansemond Fort.

As with the Nansemond Fort, one cannot describe the plan of Clifts as classically inspired, per se. What we can say is that Clifts resembles an English farm plan which expresses some of the statements of humanitas expressed in the Vitruvian rustic villa (Geertz 1973; Morgan 1926:174, 175). Vitruvius stated, "The first thing to settle is the standard of symmetry, from which we need not hesitate to vary." In other words, convenience and efficiency should never be sacrificed to the ideal plan. At Clifts, the symmetry of the convenient plan is maintained by balancing the quarter with a diagonally opposing barn. The Clifts plan is a far cry from the institutional architecture of site 44PG65 at Flowerdew, yet the base model is identical. The plan of Clifts appears to be based on Late Renaissance interpretations of Vitruvius' Greek and Roman rustic farmhouse models, which are often less symmetrical than the more formal plan of the Roman villa because these were normally utilitarian units (Morgan 1926:183–188). The existence of a hierarchical plan is evident at Clifts, although the subordinate activities,

which are centered on the hierarchical manor, are themselves arranged in a more organic plan. For instance the dairy is almost about as close to the manor as the quarter, which devalues the position of the barn in an application of "Vitruvian man/Vitruvian triangle " order.

The Clifts Z-Plan Fort

Clifts is a Z-Plan fortification with a palisade wall or "chemise" which closely skirts the fortified house (Hodges 1993; Neiman 1978, 1980; Salter 1985:155). (See Figure 103.) Antecedents for this fortification suggest the proximity of the manor and the chemise is an acknowledgement of the vulnerability of both the timber-built stockade and hole-set frame house to fire.

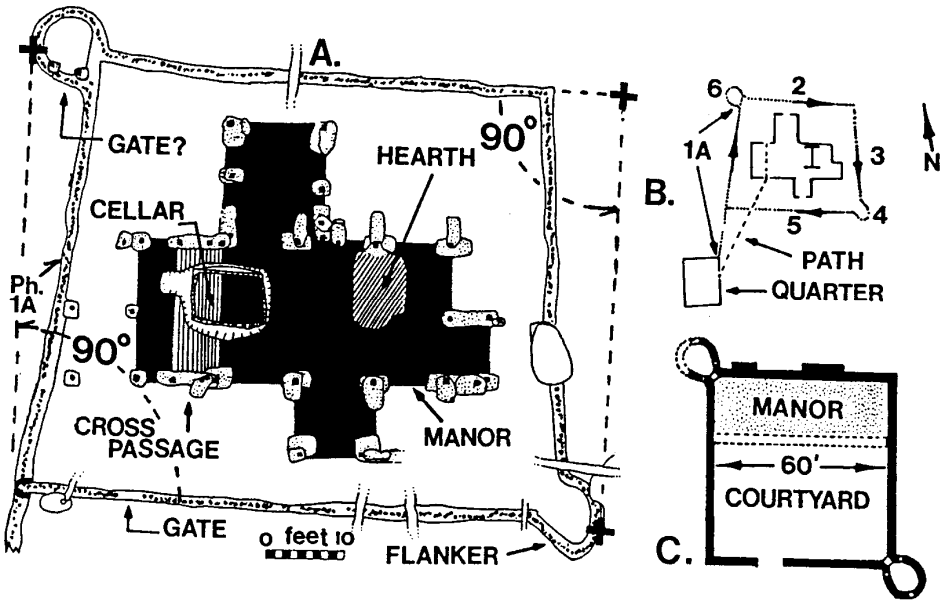


Figure 103
The trapezoidal emergency Clifts Z-Plan fortlet compound compared with the Ulster, Ireland Skinners Company "Bawn" (Hodges 1993; after Neiman 1981, St. George 1990).

In searching for the origins of the application of Z-Plan fortification to a manorial holding, as opposed to a town or citadel, the author has identified an English miniature illustration from an early 15th-century edition of The Buke of John Mandevill, published ca. 1425 (Chrisp 1924:Figure CCCX). This example pre-dates Italian Renaissance works such as Martini's ideal city (1451–64) or Leonardo Da Vinci's (1482–99) Castello in Milan (1482–99) (Argan 1969:Figure 8; Pedretti 1985:66–67). Although it might be North English or Scottish, this fortification is tentatively identified as French, based on the distinctive style of the high conical round turret or rondel roof. This style was popular elsewhere on the Continent, but not in England (Platt 1981:Figure 41, 107, 147). Given the date of the miniature, the fortification is likely to date from the second phase of the Hundred Years' War (1396–1457). Thus, this effort to flank a small courtyard predates previously published dates suggested for the origin of this technique by 75–100 years (Dupuy and Dupuy 1970:409–418).

The early Z-Plan Mandervill work suggests that some of the supposedly French chateaus, such the Chateau la Ferme du Manor in Pas de Calais in northern or western France, may in fact be of English origin, dating from the second phase of the 100 Years' War (1396–1457) when England owned or contested these sections of France (Dupuy and Dupuy 1970:412, Eberlein and Ramsdell 1926:Plate 41). Examples of Z-Plan houses in such places as Les Trovrelles-Echinghen and Chateau Jacquot (Eberlein and

Ramsdell 1926:Plates 71 and 164) indicate that the Z-Plan castellar house (whose farmstead courtyard is often hard to date) originated as early as the second quarter of the 15th century from the need to defend small manorial holdings within territorial buffer zones between France, England, Burgundy, and later Scotland.

With the exception of details in the walling, the basic plan of the work depicted in the miniature is the same as that of the Salters and Skinners Company Bawn in Ulster, Ireland, illustrated in St. George (1990:257). Each work has two opposing "turrets" or rondels, incorporates the exterior wall of the manor with the perimeter, and has a single defensive courtyard whose width is equal to the distance of the manor from the front of the perimeter (Hodges 1993:Figure6c; St. George 1990). The illustration of the Salters and Skinners Company Bawn also depicts a separate, full masonry castle with a bi-linear line of peasant cottages outlining the avenue which leads to its front main gate. The bi-linear town model here appears to have resulted through the efforts of peasants, and perhaps unlicensed merchants, to insinuate themselves into the town.

Other examples of Z-Plan design can be seen at the core of the late 16th-century Spanish fort plan at St. Augustine, which has an added annex courtyard attached to it (Lorant 1946:25) and in Chile at the second quarter 17th-century Planta de Argol(Guardia 1990: Figure 391, 198). A Z-Plan

dominates the presidio in Santa Barbara, California, built by the Spanish by 1788 (Morrison 1952:241); and a stable at Fort Laramie in the Wyoming Territory has an Ulster-like Z-Plan Bawn (Robinson 1977:Figure 97). English, Anglo-American, and Scottish examples are shown in Figure 104.

In sum, the Z-Plan is a minimal statement of competence for achieving the goal of flanking a defensive perimeter. As such, it meets the technical definition of a "fort" (Ramm et al. 1964:101). The Z-Plan was used in a variety of contexts which had in common the need for an economical system of defense. The Z-Plan originated during the early Renaissance period as projectile weapons such as the crossbow and the first guns were first being used, and the subsequent use of the Z-Plan in the Chesapeake and elsewhere has little or no relation to its use in Ulster. The timber-built Clifts Z-Plan Fort probably has more, not less, in common with the original North Border defenses of the 15th century before they were rebuilt in stone in the 16th and 17th centuries. Consequently, it, together with the Hallowes-Steel Tower House, are precious examples of a very rare early "pele houses" (houses of fence) which are totally absent from present Europe and therefore European publication regarding standing masonry castles.

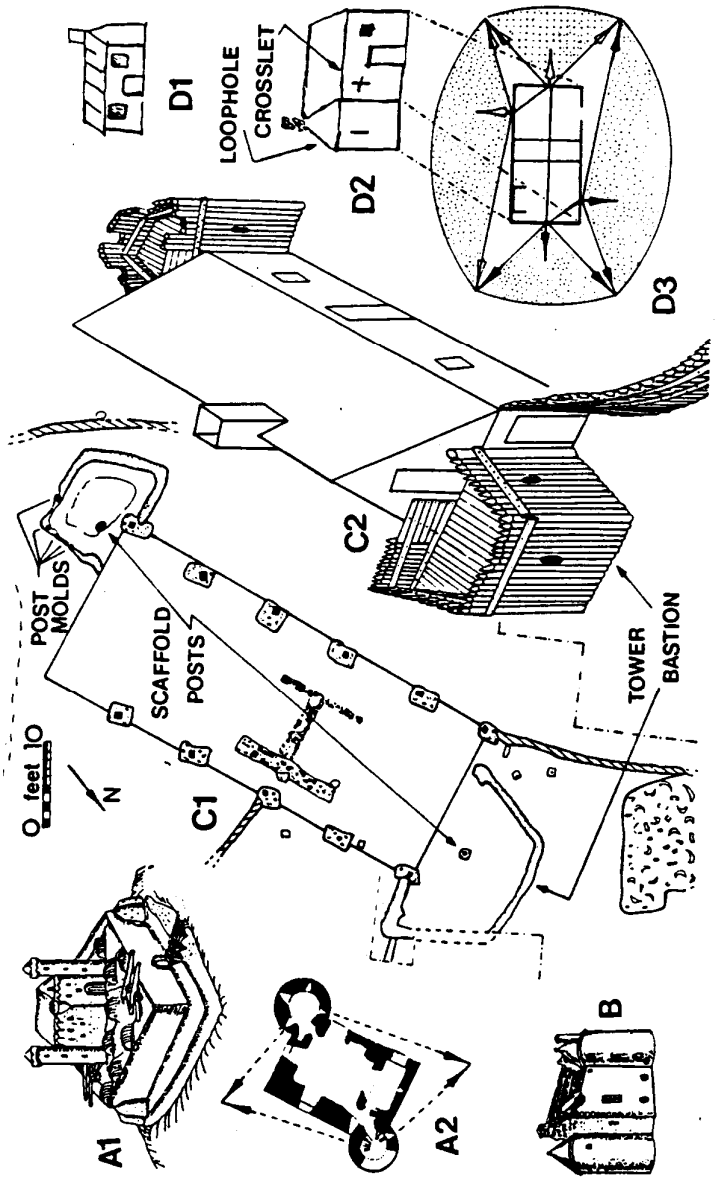


FIGURE 7. A. Burt Castle (Leask 1977): 1. View in 1601, 2. Ground Floor Plan and Enfilade; B. Terpsie Castle (Simpson 1966); C. Hallowes Tower House: 1. Site Plan (Buchanan and Heite 1971), 2. Conjectural Reconstruction; and D. May/White House: 1. May House 1664, 2. Major White House 1680 (Forman 1938), 3. Suggested Enfilade.

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Figure 104
Z-Plan forts and castles and related works (Hodges 1993:Fig. 7).

SUMMARY DISCUSSION AND CONCLUSIONS

In some ways this document has become a parody of itself. In order to understand Flowerdew, we have chosen to study mainly one individual—Sir George Yeardley—during a period in which the individual was the culmination of cultural dignity, namely the terminal Elizabethan Renaissance (Rice 1970:79–82). In order to understand Renaissance activity we have resorted to the comparative method, a methodology developed in the Renaissance using modern archaeology which began with Renaissance excavations into classical antiquity seeking wisdom of past behaviors (Rowse 1977).

In this document, we really only set out to understand one single settlement, 44PG65 at Flowerdew, which we found we could not interpret without recourse to a larger database. In attempting to frame research on 44PG65, this document has endeavored to locate the presence or absence of any form of English "civility" that would place small Virginia forts, or hierarchically organized courtyarded farmsteads on a sound basis within the parameters of Renaissance international city planning models or a more conservative rural farming building tradition (Garvan 1951; Deetz 1977). It was hypothesized that either "folk" or "yeoman" behavior would be referenced or, alternatively, that references would be made to classical antiquity (Beresford and Hurst 1971; Deetz 1977; Garvan 1951; Reps 1972). Our reason for this effort is because it was thought that these works, through

their evidence of defensive or civil courtyarding, would attempt to maintain either a dialogue between these two variant traditions or lean toward one or the other.

We suggested that a strong tradition of classical and Renaissance planning ideals might create consciously scaled down parodies of larger models that we could appreciate through the bounded nature of fortifications or courtyards. We theorized that Renaissance fortification would reference larger Renaissance models and therefore classical antiquity over parochial Ulster models which were deemed but one expression of similar behavior.

One supposes that all we have accomplished is "thick description" of site plans and the cultural "webs of their meanings" (Geertz 1973:5). As fate would have it, little other choice was to be had, and an enormous research vacuum has been attended to in some hopefully useful manner. Our examination was divided into two main parts, an analysis of fortifications and an analysis of the cognitive basis of planning itself within small nucleated forts, villages, villas, or farmsteads.

Summary Fortifications

First it would be useful to dispose of fortifications as examples of rational and even scientific Renaissance cognitive behavior, so that we may go on to what one suspects might be more important hierarchical behavior

within forts and on courtyarded sites. Our database for forts has been profoundly weakened by methodology limitations to only include study sites that also have core tripartite plans which include habitations. These notions were thought to be useful to minimally humanize military defensive technology.

In Chapter 1, Bawn models supplied by St. George's (1990), Garvan (1951) and Reps (1972) supplied us with major models which have informed this study since bawns and forts intersect with town-planning models on several fronts, while use of Argan's (1979) Vitruvian analysis of town plans has helped us understand Garvan and Reps in a very useful manner. St. George's (1990) arguments have been less useful, simply because of his lack of a functional and contextual approach in favor of modeling along broader theoretical lines, which has proven a dangerous course. For instance, in St. George's (1990) work, the majority of examples of contemporary courtyarded sites, or 19 out of 35 illustrated examples (54% of the comparative samples) are on a specific defensive footing as may be observed by the presence of flankers, tower house, and such like. Of these 19 defensive works, 100 percent that were probably actually called "bawns" during the contemporary period in which they are used are from Ulster, Ireland, and date ca. 1610–25. Therefore, these particular named "bawns" were not courtyarded out of an elaborately profound ideological inspiration as St. George maintains though a study of "utterances," but instead were on a

defensive footings as required by the laws of 1608–09 in which settlers were given two years to meet the "Order and Conditions of Plantation" based on the level of investment of undertakers (Hill 1970:79, 89)(see Table 4).

Therefore, the basic competence (conceptual plan) of the cognitive bawn models lies in the high-level organizers of the Ulster experiment, in much the same manner that Governor Argall might make a proclamation about palisades in Virginia in 1618.

The performance (actual results of plan) of each settlement illustrated by St. George often references a castle-building tradition dating from at least the 14th century. Those with four corner flankers or bastions were referencing a lingering masonry Anglo-Norman building tradition surviving through standing works, Roman, Greek, and Byzantine tetrapygons studied by Renaissance thinkers and, through Alberti and others, original Italian Renaissance ideals dating from the 15th centuries. Those with diagonally opposite flankers were referencing a brilliantly simple Italian and French Renaissance plan dating from at least the first quarter of the 15th century (Crisp 1924 II:cccx; Lawrence 1979:178–180; Toy 1985:47–48). Many of the private Ulster defenses imitate pared-down models of those of previous military campaign-fortified camps and forts as shown by Richard Bartheletts maps of ca. 1603, or courtyarded defensive models which clearly predate both Estienne, Surfleet, and Markham (Lacey 1993:204; Ryan et al. 1991:181, 204;

Simpson 1966:78–79). In sum, technically this system of "bawn" courtyards is referencing a defensive coutyarding tradition that is almost as old as civilization itself (Toy 1989:1–10).

Second, out of a total of 16 recognizable non-defensive courtyards, out of 36 illustrated courtyards by St. George (1990), 9 or 26% are simply townhouses which are courtyarded through Renaissance villa ideals and the vagaries of physically restricted town life. Most of the townhouses he illustrates mimic the basic grammar (rules) of Renaissance versions of Vitruvian plans which are preceded by elite castle designs such as the ca. 1386–90 Bodiam Castle ((Martin and Goujon 1547:93 qiij; Toy 1984:Figure 136). The original defensive plan at Bodiam—as it plays in the townhouse forms of St. George—are in the new "bawn versions" simply courtyards that are equally well organized but denuded of turrets or defensive towers since, by the early 17th century, no private household could stand against a modern army anyway, and defense against theft and unedited social entry is the main goal (Sampson 1992).

In turn to actually illustrate the types of rural farmstead that are most like the Bray Rossiter farm of 1652–60, St. George uses a total of 7 or 20% out of a total of 35 illustrated examples which actually convey in some manner Markham's and Estienne's essential ideals which St. George is seems to be primarily concerned with in his essay. These, in turn, appear to be

based on modern Late Renaissance adjustments to the essentials of Vitruvius' Greek and Roman rustic farmhouse models which are often less symmetrical than the more formal ordinal Roman villa or forum plan (Morgan 1926:183–188). So by not contextualizing the Ulster material, we can abuse it by mixing our metaphors and defensive models up with courtyarding that is entirely innocent of serious defensive intent, except perhaps from theft and social intrusion.

In any case, one feels that given such "would be" defensive ambiguity, we should discard the notion of using the term bawn at all in Virginia, in favor of military and defensive terms that do have specific meanings that can convey a less mystified ambiance. There are probably cases when this "bawn" ambiguity can work for us, such as in the term "Yeardley/Piersey Bawn" when a para-military settlement enclosure might need to be comprehensively included with serious fortifications—for most bawn defenses are clearly compromised by commercial and farming needs. Yet, in the Chesapeake the word "bawn" has been more often used to mystify rather than clarify cultural meanings. In contrast, by using technical military terms even if they are contemporary terms in that context (which are always difficult to work with), the functional descriptions we use will more often cut across works built by the, English, French, Spanish, Scottish, and native Irish from ca. 1425 to 1867. These fortification meanings will clearly have almost nothing to do with the Ulster Model. The Ulster parallels themselves

remain invaluable because of their similar contexts if we read them with caution.

We will now leave discussion of Ulster temporally. In this document the author has taken recourse to classical defensive works to understand Flowerdew defenses since this is the direction the parent Dutch works and Eighty Years' War works originally led us to (Duffy 1979:91; Parker 1986:12–13, 18–19). Knowing that the Romans invented wheel barrels, if one uses a wheel barrel, whether gardening or on an archaeological site, one is not necessarily referencing classical antiquity; rather, the linkage is more often through moving dirt. Yet we have shown through the Flowerdew case study, Anglo-Dutch military technology and the Renaissance field fort—at least in terms of design and fabrication technology—did have a consciously known Roman heritage since most field works, like Roman military camps, were temporary affairs. Therefore, for at least the first generation of Virginia's Anglo-Dutch soldiers, fort building was indeed a form of non-commemorative references to classical antiquity provided by humanitas. This humanitas was largely because the masonry castle was doomed by cannon, and earth-and-timber forts needed to be revitalized to defend mobile state armies in the field—or static European towns—more cheaply and rapidly. Study of Vegetitus (Milner 1993) and Vitruvius (Morgan 1926) shows strong influences, along with Renaissance scientific improvements and field simplifications of the same.

This document could not have been written without employing other European models, including especially French and Spanish contemporary material. What did the French and Spanish learn from the Ulster Model? Arguably, they learned and needed nothing. Each area had its own defensive traditions which were melded during European warfare because of the international composition of the state and mercenary armies, resulting in a huge 16th-century school of field fortification—such that French fortes, chateaus, and Spanish fuertes and presidios and English forts and bawnes have more in common than not. This paradigm is that throughout Europe there were active frontiers and buffer zones in which small defensible: manors, garrisons, and self-sustaining farmstead agglomerations were needed from at least the 14th to 17th centuries when all were doomed by state armies. This was not the case in "Third World" countries like North America where the vernacular defensible manor and small timber fort or earth-and-timber fort was given a new lease on life—because it still "worked" as suitable defenses against Native Americans and small European fleets.

The various archaeological sites could not be briefly compared against high-style Renaissance design components in order to establish objective information regarding their performance. Obviously, it is foolish to assume that any of the early Virginia works were even pretending to be high-style works. Nonetheless, Alberti's standards, which only reached their main vogue by the 16th century, give us an objective set of standards and a sense of

functional variability that helps us isolate vernacular trends in the performance of fortifications (Parker 1986:5–16). The great variability within our study group is not only functional or contextual; rather, it is also the result of the individuality of the English leadership.

What are the basic hypothetical categories of works that we have observed? The categories listed below are taken from Ramm (et al. 1964:100–103) and indicate that temporary field works are the predominate type of works in our data suite whose appropriate identifications are attempted. Below, many of the works that would be called "flankered redoubts" by the mid-17th century and later might have been called "sconces" (especially if their base plan was square or star-shaped and the works were temporary) by the early Elizabethan and Jacobean soldiers (Hale 1964b:xccii). These are best listed:

1. Yeardley's Fort—Irregular Quadrangular Flankered Redoubt;
2. James Fort—Triangular Flankered Redoubt;
3. Harwood's Fort—Quadrangular Flankered Redoubt;
4. Jordans Journey—Redoubt with Spur;
5. The Nansemond Fort—Z-Plan Flankered Redoubt;
6. The Susquehannock Fort—Quadrangular Flankered Redoubt; and
7. Clifts Fort—Z-Plan Flankered Redoubt.

Of these works, only one, the "fort" at Martin's Hundred, is not part of a Virginia militia war or well-documented threats of foreign intervention. Of this group all six are clearly referencing Renaissance defensive traditions which were developed between from 1425 to 1600, with chief inspirational categories being the Renaissance-defended manors (Z-Plan works at 1425+) and the huge macro-school of the Eighty Years' War (1566–1648) which re-absorbs the Thirty Years' War (1618–48) (Dupuy and Dupuy 1970). In the latter category, masonry-reveted Renaissance citadels were reduced to more useful and cheap earth-and-timber works and, disregarding the Renaissance perimeter configurations, they otherwise employ classical building technology emerging directly from assiduous study of Roman-fortified military camps. The stockade perimeter is thought to be the result of the Roman "valli" and a super abundance of timber resources.

If we try to maintain an objective perspective on this very short list of sites, the most important examples of fortifications or courtyards in this study group in terms of new or challenging information emerge from Jordans Journey and the "fort" at Martin's Hundred where we are least able to apply meaningful explanations and where ambiguity is still a major problem (Binford 1987). We hypothetically learn from Jordans Journey about hasty Native American warfare behavior by unpretentious plantation owners with minimal militia support. Regarding the "fort" at Site C at Martin's Hundred, and Jordans Journey, we have been forced to learn more about the

importance of the exterior polygon and design modeling in general. Wolstenholme Town may be telling us that we should possibly look more carefully at the ca. 1619–22 Phase 1 at Flowerdew. The other types of fortifications are fairly or very well documented, and mostly what we learn from them is about earth-and-timber fort building technology itself through archaeology—rather than contemporary military text books, which generally leave much to be desired. We have learned details of eccentric English demi-bastion influence on flankers, and curtain configuration and fabrication.

We will now turn to each recommendation of Alberti dating from the 1440s (Devries 1992:269) to get a sense of the actual performance of 17th-century Virginia works against high-style works.

In category one there are really two categories of work: "that fortification walls facing gunpowder weapons should be short enough to easily see the ground below them and wide enough to withstand the impact of cannonballs." That is, "part one" walls must be short, and "part two" cannon must be resisted (Devries 1992:269). Here, only part of Flowerdew (especially on the water side) and James Fort (especially at the corners) could withstand artillery cannon balls so far as we can presently determine. In terms of height we can assume that all fort walls served their purpose.

Turning to category two: "that artillery towers projecting at an angle beyond the walls should be added to the fortification—this would not only

protect the fortification itself, but also keep offensive guns at bay and cover blind spots along the fortress walls" (Devries 1992:269). We find the following hypothetical or known results of these recommendations. Flowerdew has one artillery "tower," the ravelin. The bulwarks were lower at both James Fort and Flowerdew. At the Nansemond fort, the Susquehannock Fort and Clifts, wall guns or "fowlers" were mounted on elevated flankers, but these were not really towers. Jordans Journey had a saker, probably mounted on planks on the ground for a brief period (1622–26).

Category 2 offers few surprises because of the great functional variability of the works. In general, use of musketry flankers is typical in smaller works for anti-English or anti-Indian defense in the same way as Alberti's artillery towers, and this tradition probably most clearly references the manorial defenses of the European private frontier dating from ca. 1425 primarily intended to defend against limited raids. Virtually every site with an artillery tower is along the coast and supported by war booty or public funds or some sort. In reading contemporary writers, it is clear that the soldiers did not see their forts as passive nouns, but as verbs from which each bastion was intended to "play" upon each curtain (Barret 1598).

In the category of high-style Renaissance fort number three, Alberti recommends, "that angled bastions projecting out at regular intervals from

the fortress walls be built, giving increased flanking cross-fire along the surface of those walls" (Devries 1992:269). This is a recommendation for additional flanking works along the wall in addition to curtain corner works. At present this category is easily disposed of in the Virginia data set through Yeardley's fort with its bastard or flat bastion along the fortification envelope. Numerous Ulster "bawn" examples display this characteristic, used typically as fortified entrances that also flank walls and since, these have already been noted in the text, we will move on—rather than focus on a rare attribute in Virginia.

In Alberti's category 4, "that as time passed further refinements should be added to the fortification: wide and deep ditches along the walls to keep enemy artillery at a distance and to cut down on mining with detached casements or bastions called ravelins built beyond or across those ditches to further impede enemy artillery or infantry attacks" (Devries 1992:269). Mouer (et al. 1992) feels that single earthfast postholes beyond the main hole-set palisade envelope at Jordans Journey might be a redan. At Yeardley's Fort a ditch 5–7 feet wide was found in zones not annually below the water table. A casemate or "murder/slaughter house" was implanted to defend the front ditch. At James Fort, turves rather than deep ditches apparently made up the main earthwork system, while at present a 4-foot-wide ditch may have helped create a "batter" outside the stockades and drain the site as would be most similar to a temporary fortified camp if this isn't a

double-wide robbed parapet ditch. The Susquehannock fort, by its placement on a flood plain, eluded mining.

In category 5, of Alberti's high-style Renaissance fortifications, he recommends that, "extensions should be built to these fortifications, complete with crownworks or hornworks, to protect outside strategic areas." (Devries 1992:269). James Fort up until 1614–14 used blockhouses as outworks within a macro-landscape, with one on the narrow Neck of Land (1609) to edit land entry, one at Hog Island (1609–10) to warn of foreign shipping,and one on Backe Creek (ca. 1613) to watch over cattle. At Flowerdew a redoubt (built by at least ca. 1625–26) was added to help triangulate cannon fire on ships and defend the outer settlement perimeter. In a vulgar application of the concept of an outwork, neck-land pales were secondary defenses, certainly at Flowerdew. The pentagonal work at Henrico acted as an outwork to the paled town, as did neck-land pales at Henrico, Bermuda Hundred Coxendale, and Rochdale, some of which were replete with commanders or fortified "bordering houses." The paired forts at Kecoughtan at Fort Henry and Charles were part of a macro-defense of Fort Algernon at Point Comfort.

Although many of the field works erected in early Virginia were "rough and tumble," they apparently worked as useful defenses. Fortification technology tends to be associated with high-status settlements and public efforts often provided through private contracts to the Virginia Company or

the Crown colony. All forts in this study are laid out with the identical care as may be observed in building a house, although the plans are occasionally more complex. Accordingly, most cannot be described as "folk defenses" (Deetz 1977:39–40). Does our study group automatically prove the Renaissance mind is present? Probably at Flowerdew and James Fort and the Nansemond Fort, it does. Yet, the Susquehannock Fort—which is, along with James Fort, interestingly the closest to a modern textbook fortification in the entire study group (at least in terms of form)—demonstrates that a Renaissance defensive perimeter may be just that, a Renaissance defensive perimeter. In other words, the material culture within the Susquehannock Fort indicates they are still retaining many aspects of their traditional culture, and they have only chosen to use things like firearms and forts because these are tools for them. Except for the first generation of soldiers, this might be the case for other fortifications—they are just tools and do not necessarily indicate the trappings of a full Renaissance ideology.

Since all English works seem to vary in one way or another from textbook examples of the same, many alterations are possibly due to vernacular influences pertaining to the English subsistence economy (west English plan), farmstead layout, and perhaps efforts to make social statements to and orient resident and non-resident English. Despite this, mastery of geometry was apparently something of a source of pride for the white planners, and the Susquehannock Indians apparently also took these

notions to heart. Perhap, this sort of militant "power geometry" is one of many direct ancestors to Paca's "power garden" (Leone 1988).

The Core Tripartite Plans: What do they Mean? Why are they Important?

Dell Upton (1988:425) noted, "far from being a period of medieval lassitude, the 17th century in Virginia was an era of rapid architectural and social metamorphosis that laid the foundations for the familiar landscape of the eighteenth century." Very preliminary study of a handful of plantations spanning the 17th century suggests that settlers were profoundly constrained by the insular nature of adaptations to the Chesapeake tobacco mono-culture which is nothing new, although within public forts the fur trade was also important (Carson et al. 1981). What might be newly offered here, is clear evidence that more grandiose planning ideals noted in seminal studies by Garvan (1951) and Reps (1972), including especially what we have chosen to call the "Romano/Medieval small-scale variant" pattern, were never fully abandoned by some Chesapeake social elites who had amassed enough labor to express their ideals.

As the first generation of settlers began to reconcile real plantation needs with town planning ideals that were beyond their reach, they appear to have chosen to reduce the model of a tripartite plan which was originally intended to be surmounting and defining full bi-linear streets—into just that—a tripartite plan, a tripartite plan which is familiar to us chiefly

through typically grand stately 18th-century architecture! If this study has any value at all, it is surely here, for through these common tripartite plans we are now entitled to begin to appreciate the differences between the two cultural periods and their common antecedent models.

Our study group seems to reveal the fact that there was a phase in Renaissance architecture when often less formalized Vitruvian experimentation preceded rigorous applications of Palladian architecture—with the exception of the competence (not the performance) of Yeardley's Fort. The seemingly flagrantly informal nature of a handful of Chesapeake agglomerations has fooled us because we only looked for idealized planning models. Vitruvius said, "the first thing to settle is the standard of symmetry." Few of us realized he also added in the same sentence, "from which we need not hesitate to vary" because under the concept of humanitas the original elite settlers were allowed to interpret where to draw the line in freely interpreting classical wisdom (Morgan 1926:174, 175). Along with 44PG65, only two other sites really recommended study by geometry, the Vitruvian plan at Jordans Journey and the villa-like Wolstenholme Town complex. The rest of the archaeological study suite seems to have chosen to create informal rustic farms or villas, but we dissected them also to record this systematically too.

Only four Chesapeake sites can really be called town efforts—James Fort, Wolstenholme Town, Flowerdew, and Jordans Journey. All Ulster plans used for comparative evidence in this study employ the Romano/Medieval town plan model—with some sort of bawn enclosure superimposed over a subordinate tenant- or servant-occupied bi-linear street. Out of the Chesapeake group, the town plan is profoundly biased by defense; James Fort, described in 1610, is under the condition of war (1610–14) and must defend the chief entreport. Flowerdew and Jordans Journey are built in war threat or war contexts (1621–32). Sixty-six percent of the war-biased Virginia group employs the intensive Romano/Renaissance Plan, while 33% employ the extensive Romano/Medieval Plan. Both of the latter are either joint stock companies (Martins' Hundred) or simply private plantations (Clifts). The presence of cheap ideo-technic plans in defensive agglomeration may account for the Vitruvian plans rather than the Ulster Model per se.

By comparing our study suite to the Ulster sites of Macosquin, Magherafelt, Moneynmore, near Cloraine (agglomeration outside of town below a ordinal cattle pound), Salterstown, and Belleghy, we hope to at least introduce comparison with Ulster with a little more depth. These Ulster sites are unfortunately only known to us only through contemporary illustrations (Camblin 1951; Garvan 1951; St. George 1990). When the functional use of buildings is considered between Ulster and Virginia plans overall, this information, provides fairly compelling evidence that the Virginia settlement

models were not blindly copying the Ulster Model at all—even from the beginning. Out of a total of six Chesapeake sites, 1 or 17% comprised subordinate "tenant/quarters" on both sides below the ordinal structure, with Jordans Journey being the only example during a war context resulting in an intensive plan. In contrast, of seven sampled Ulster sites with ordinal bi-linear plans, 100% have tenants or servants on both sides of typically much more robustly occupied street plans. In Virginia 83% of the settlements have chosen to include a storage facility in the first and often only rank of the initial tripartite group. This catchment would probably include tobacco only once in cask, corn, and other farm stores. While it is not always clear from the Ulster drawings, cachement buildings appear to be absent. In Virginia they show the "villa" or "farm model" influence is stronger from the beginning. This may also be due to the imitation of cheap fort models created during the military regime, largely by Dutch and Ulster veterans.

Focusing on the Virginia Group, four tripartite plans or 75% (not counting James Fort, which is a specialized work) contained tenants or servants on only one side of the bi-linear layout. In those four sites (not counting James Fort) 100% have a quarter on the right or west side of the manor, and a storage facility on the left or east side as seen from the manor looking toward the agglomeration. This is hypothesized to be a form of social etiquette, as the right side is favored for servants over objects, which are placed on the left or less appreciated side. If Hume has correctly identified

the hierarchal structure at Martin's Hundred, this right/left etiquette is not always favored, as all servants and tenants are placed to the left in an apparent anomaly (either because it is on the northeast bank of the James River or for other unknown reasons). If the more symmetrical and robust company compound is the manor, the site is flanked on both sides by tenants and servants following the Ulster model.

Default variance from the Ulster ideal is not restricted to the Chesapeake. Out of a total of six Ulster plans, only 33% (Salter's Town and Bellaghy) were able to honor the orders of undertakers' recommendation that, on larger plantations, a defensive castle with a bawn court be placed over a bi-linear street. At one or 17% of the settlements including only Macosquin, clearly a settlement of the "upper rank" of undertakers, the castle and bawn defaulted into a courtyard, presumably surrounding a manorial garden. At two settlements (or 33%) including Magherafelt and Moneymore, the bawn defaulted into a cattle pound with no manorial occupation at all. At one (or 17%) settlement near the suburbs of Coleraine, potentially low-ranking undertakers or Scottish settlers loosely cluster around what appears to be a communal cattle pound.

Admittedly, inclusion of Chesapeake rustic villas or small militia forts with Ulster towns is not really a fair comparison. So all we are looking for here is an attempt at getting a very basic sense of praxeological default

variability verses idealized plans which did not always play out as intended. Given these serious sampling biases, nonetheless, this flawed analysis indicates in sum that defaulted town plans in both Virginia and Ulster tend to have functionally shifted to more pressing subsistence or catchment needs, through either lack of funds (Ulster) or lack of labor (Virginia). Smaller agglomerations in Virginia, as the reader may recall, are thought to be because many tenants and servants on the same plantations are out of nucleation in planting fields in what we have called the "Bermuda Hundred Model." The greater frequency of shifts toward pastoral specialization is an environmental and Celtic-influenced shift in Ulster, while in Virginia the shift to catchment is a probably a product of tobacco and corn agricultural specialization and therefore alternative investment.

Social Space and Etiquette

In sharp contrast to the 18th-century sites, virtually every site in our small study group has gone out of its way to stagger hypotenuses or spatial arrangements among the subordinate core structures—except at Yeardley's Fort where the Pythagorean right angle competence is perfect, but the performance is either bungled or deliberately jettisoned by 2–3 feet. At Wolstenholme Town the plan was also perfect and yet it was deliberately defaulted out of symmetry. Deetz (1977:111) predicted asymmetrical patterns for 17th-century sites 20 years ago because Renaissance-based

architecture had not penetrated the informal 17th-century farmstead or housing within it. Is there a cultural significance to this variant relationship?

The main new ingredient in Beresford's and Hurst's (1971) and Rowley's and Woods' (1982) traditional English "farm plan" seen in the 17th-century Virginia sites is the addition of separate buildings for labor. Neiman (1978) has argued that the movement of labor out of initially communal housing in the manor was in large part a consequence of the introduction of slavery—at least at Clifts. In our study group spanning from 1607 to 1725 the addition of labor is generally a consequence of forced building expansion, typically of English servants. At Martin's Hundred, for instance, the Site C company compound starts with one end chimney, has a second added, and then expands to a domestic quarter to accommodate sickly immigrant arrivals billeted at the domestic site (a presumed rest house). Extreme wealth or martial law got a lot of our study sites occupied with additional labor. Adding this new labor to the frequently southwest side of the manor opposite southeast farm stores—even before other buildings such as barns or stores were added to our study sites—suggests that even at Clifts a Vitruvian plan was in mind from the beginning which would allow for a passage between buildings as the planned plantations grew.

The hypothetical reason why the quarter and storage facilities are spatially staggered in four out of five sites in our 17th-century study group is that closeness to the manor (and spatial orderliness in relation to the manor) is quite possibly part of a deeply socially invested resulting ordinal pattern. If this is the case, the hidden cultural message is the ordinal arrangement and makes a very simple statement that servants are ranked above objects in an essentially Elizabethan statement of the "natural order" of things. In other words, the manor is ranked architecturally above the quarter which is ranked second in nearness to the manor, while objects are ranked third. If there were deep concerns over protecting the stored objects from servants, one suspects this pattern would be reversed, with objects ranked closest to the anxious eyes of the senior militia or planters (see Neiman 1978, 1993). We also noted above that, with the exception of Site C at Martin's Hundred, of the two subordinate buildings the building code always places servants on the right or "good" side of the manor and is always seemingly more clearly in geometric harmony with the manor than storage facilities which may be less important culturally.

The theoretical underpinnings behind the inference that the buildings are staggered by closeness in rank to the manor is offered here with great caution. This hypothesis emerges from three sources. First, in military encampments, tents or buildings are ranked both by space and size. The general's tent or dwelling is always larger or distinctively embellished and

placed within a central or hierarchal location in relation to smaller subordinate structures or tents. This was a part of the Romano/Renaissance small-scale variant model discussed in the overview and research design (Barret 1598:157–158; Digges 1579:120; Hannon 1969:118; Ramm et al. 1964:Plate 10 left; Ryan et al. 1993:181). In the military especially, but also within society at large, social rank definition tends to lubricate cooperative activities by cutting down on direct competition through a directional flow down from the top. Therefore, our study sites are like carrots, reminding soldiers, tenants, and servants where they are in the scale of things and—in the settlement ideal—where they might be headed.

Second, such activity as the rise of individualism in the Renaissance probably underscored a need for more elaborated rank definition since social fluidity in the beginning of the "me generation" meant that everyone's expectations for advancement were on the rise. Natural nobility of character began competing with nobility of birth. Blue blood was increasingly less important than superior courtly behavior and skills as suggested by Castiglione in, The Book of the Courtier (Rice 1977; Simpson 1959:8–12). Carson (1994) argues that as early as the 16th and early 17th centuries this increasingly fluid social activity combined with increased urbanity created by travel, created a need for a sort of mutually accepted language of good taste between people and objects which allowed strangers to interact with one another. He argued that social stratification based on a demand for things

beyond "create comforts" drove the consumer revolution. In our model social stratification occurs within spatial placement within settlements.

Bushman (1993:xii, 32–44) suggests that part of the rise of gentility in America was an awareness of visually and socially communicable social rank which also lubricated courtly behavior, allowing ease of negotiation of space and social boundaries. He suggests these polite graces were derived from princely court books defining to courtiers just what sort of behavior was appropriate in the 16th and 17th centuries. For instance, when walking with a superior, the superior was given the right hand place (Bushman 1993:39). If we look at our solar-oriented settlement plans and we stand at a quarter (southwest) and face the manor (north), it is in the right-hand place. As we have seen, this mutual respect system allowed the quarter to be seen on the right-hand side of the manor.

French courtesy books were especially popular in the 17th century. One version translated into English in 1671 noted, "In Courtin's [courtesy book] every person, every place, and even individual objects were ordered by rank, and every act was to be performed with these rankings in mind. Every room had a head and foot, the location farthest from the door being the place of highest rank; in a bedroom, the bed was the place of honor" (Bushman 1993:38). Yeardley's personal nearness to Dale and Gates, as a body guard, and through travel to the court of King James I, clearly helped him soar up

the social scale. This is because of his apparent ability to negotiate courtly space and get close enough to powerful patrons to then operate on personal charm and charisma, which he apparently had in abundance.

Switching to other examples of architecture, for example at James Fort, the church was farthest from the gate; in Yeardley's Fort, Structure 3 was farthest from the gate; at Nansemond a south gate below the cross passage/street places Structure A in the place of honor, as are the church and manor of the former. By the same token, if the quarters or court of guard were not placed closer to the church or manor than the storage facilities, then it might be that this would be considered an insult to the servants or soldiers. Servants in Virginia were only temporary indentured or militia levies (who were servants in the same condition) or simply smaller planters seeking succor in numbers within a community fortification. These people would have probably felt uncomfortable being placed parallel to objects. Servants in the coldly geometric Palladian symmetrical system would be told that they were ranked on the same scale of things as objects. At Yeardley's fort, in contrast, a ranking of people and objects on the same plane was simply a matter of orderly space, which was felt necessary to regiment movement and rational organization within the site in an institutional manner—afforded by the social security of the rigid military rank present there. This well-defined rank definition allowed space to be abstracted in favor of pure form—arguably in contrast to the "socially invested" space on many other sites.

At Jordans Journey we can probably assume that the nearest Structure to the ordinal structure (Structure 5) was Structure 4 since this was closest to the ordinal structure. By being opposite the ordinal structure at Jordans Journey, a high place of honor could also be retained by Cisely Jordan—just as in some small-scale Ulster plans a church would be opposite the bawn (Reps 1972). At the Nansemond Fort and Clifts, the 17th-century Virginia planters did not see space as an architectural abstraction the way we have since the 18th century when pure form was allowed free expression without a similar concept of social and objective nearness in every ranked spatial detail. In the Palladian plan everyone and every thing is placed in an inferior position to the main abstracted design and ordinal building. It is an entirely different—if not self-indulgent—or coldly impersonal plan in which everything submits spatially to the main house and its owners.

Third, as the reader may have surmised these rankings, are not just concerned with social status, but are part of a more comprehensive system of natural order and world view merely alluded to above. Tillyard (1942:66–82, 94) suggests there were still considerable aspects of the medieval mind beneath much in Elizabethan thinking. One key factor that was predominant was always seeking to "order correspondences." For instance, the order of the body politic, peasant, squire, sheriff, aristocrat, and king was thought to be a reflection of a cosmic or macrocosm order. By the same token, good, evil, savage, civil, order, and disorder were complimentary reflections of

a whole. Perhaps a good Virginia example of the order of correspondences might be Yeardley's letting Indians hunt for him, as this was considered a natural thing to do since Native Americans were closer to nature in the natural order of correspondences. In our particular crude planning paradigm, the ranking of buildings could simply define a natural order rather than a socially invested order with the occupants of the manor, over servants, over objects. As we invoke James Fort into comparison with more secular fortifications, the placement of the church in a superior ordinal position simply suggests that godly order ranks over military force (court of guard) or objects. Hence, the cleverness in placing a chapel in association with plantation commanders at Flowerdew and the Nansemond Fort in order to morally dignify a religious and secular conflict between "heathen" and godly Christian virtue.

There are of course less profound reasons why the buildings might be staggered. While the author does not know if these ideas are original to Thomas Hubka (1984:9, 71), he suggests that around each architectural form on New England farmsteads are invisible spaces called dooryards, or backyards, etc. that define both work and leisure activity areas which are extensions of each building. These appear to effect how nucleated 19th-century New England farmyards are organized so that each activity area forms a convenient energy model for farmyard use. Each activity area has hidden paths often linking them. These articulations cut both through and

across architectural spaces. This may explain why staggered yards were built into Jordans Journey and Magherafelt plans apparently from the minute they were laid out in the planner's mind. This attribute is thought to be inspired by French Renaissance conceptions of an ordinal Roman military camp plan which anticipates alternating service yards or "dooryards" on a playful checkerboard grid (Martin and Goujon 1547:18). A second motivation is surely practical convenience which acts as a modifier in the less formal spatial groups.

Cognitive Space and Patterning

James Baker (1994:355–356), in probing the mysteries of the Pilgrim myth—partially through the dialectic of museum interpretations of Plymouth Plantation's evolving museum programs—observed that initially the Deetz-inspired museum staff got rid of many absurd Pilgrim myths. However, during the Vietnam era, he replaced them with new myths that the pilgrims were ultimately "just plain folk" presented as "earthy and hard-living peasants" and "communards". Additional study indicated the pilgrims had not really been true medieval peasants, but were often of middling status with strong convictions rooted in their own imminently more complex culture. This document has endeavored to exorcise this same "folk culture myth" for the Virginia Chesapeake using evidence from Virginia described, not in the author's words but that of the words and deeds of the original cultural protagonists which required reading not just from the 17th century—but from

Roman times through "the exact pen of Vegetitus" and Vitruvius (Kukla and Fausz 1977; Martin and Goujon 1547; Milner 1993; Morgan 1926). The author is not saying that there wasn't a folk culture present in Virginia, but is simply pleading the case that this folk culture was a larger and lower tier to a powerful minority of social elites who had absorbed northern European humanism inspired by their own interpretations of Renaissance. Unless we accept greater complexity in our holistic conceptions of the 17th-century Chesapeake "mind-set," then research in Virginia, the Chesapeake, and New England will be condemned to be the equivalent of two oarsmen on a row boat—facing in opposite directions and therefore paddling in a circle leading nowhere.

The archaeological evidence of architecture discussed primarily in this thesis is simply surface manifestations of larger things. It is not a fair characterization to describe 17th-century elite cognitive behavior as traditional or medieval in structure. There is instead a multi-tiered society where an elite group is familiar with plane geometry, mapping skills, the profession of arms, mercantile practices often on an international scale, courtly behavior, and all sorts of non-traditional behavior. According to Cason's (1994) consumer model, the middling planters are looking toward these social elites for setting the standards of civil behavior.

Although our archaeological study group is very small, the author has argued that the cognitive basis for the abundant legendary cliché of the "bawn centered above a bi-linear street" is a direct reference to humanitas, non-commemorative references to classical antiquity. Not counting 15th- and 16th-century examples or 18th-century examples of tripartite plans, this study has provided 12 data sets from the 17th-century English colonial settlements bearing resemblance to Manila and Montreal. These references were therefore made by and shared between English, French, Dutch, and Spanish colonists to the New World and Africa (Cummings et al. 1974:42; Camblin 1951; Garvan 1951; Lawrence 1963:Figs. 4a, 7b, 13a, 37, 51, 87; Reps 1969:Figure 14, 15, 17). Both civil and military behavior were guided by the demands of the ground and the available resources present as well as loftier ideals. The staggering variability in the larger database shows in these international works—as well as the similarities—and argue that this was a vital, dynamic, and highly individualistic tradition of humanitas since classical antiquity was not commemorated blindly—it had to serve real non-commemorative needs.

This Vitruvian-based humanitas (permissively or non-permissively geometric)—seen more frequently in our small study group than Palladian-based humanitas (always rigorously geometric)—does not have to totally replace the Structuralist cognitive model posited by Deetz (1977), who had a very limited database when he penned his assertions. Instead, it allows us to

approach change in the Structuralist model, to see the 17th century as a period of experimentation as Upton has suggested which occurred not only in towns, but within elite plantation agglomerations which was the real heart of the Virginia experiment and economy. This change allows us to observe a shift from informal Vitruvian (Nansemond Fort, Clifts) and formal Vitruvian behavior (Yeardley's Fort, Wolstenholme Town, Jordans Journey—admittedly possibly a garnish), to the comprehensively rigid formality of 18th-century Palladianism. Only in the 18th century would direct metaphors, such as Greek cornices and white pillars alluding to classical antiquity, become an obtainable or desirable mode of expression.

In our study suite we cannot avoid mentioning that the professional military through Sir George Yeardley, and gentry military through Captain Jordan, seem to be on the cutting edge of a fundamental change in cognitive behavior. However, at Yeardley's Fort and Jordans Journey, the formalism of the plans might also argue that there might be a correlation between the level of cultural threat and the degree of rigorousness in which plans are created. In this process the Vitruvian plan at Jordans Journey is based on a 16th-century French bastide interpretation of a Roman military camp (Martin and Goujon 1547). Wolstenholme Town softens this military edge by positing a model of personal discipline for a villa plan—one that is perhaps the clearest anticipation of 18th-century mansion complexes.

In contrast the rigors of the plan at Yeardley's Fort is almost certainly a more direct copy of the authentic spatial ideals of Roman military camps which were studied assiduously by Andrea Palladio in the 16th century. This important architect was absolutely fascinated by the study of Julius Caesar's and Polybius' military campaigns—as he was by standing or buried Roman and Greek villas (Hale 1983:471–490; Rowe 1977; Willey and Sabloff 1993:1–3). Palladio's own studies therefore admirably thread together the "web" of military and civil planning "significances" which this document has argued are not contradictory elements in appreciating "world view" seen in vernacular architecture (Geertz 1973:5). Palladio's studies of classical ruins also thread together the web of significances, which are the foundations of our profession of modern historic archaeology, more soundly grounded in the liberal arts and the comparative method which got us out of the "medieval mindset" (Rowe 1977).

Deetz (1977:92–93) suggests that vernacular architecture is built by the occupants of settlements themselves and reveals a sensitive indicator of what they considered important. This is a very good idea. This is in opposition of academic architecture which is typically hired out and often therefore a less sensitive indicator of world view on any particular archaeological site or standing building regimen. However, as we learn more about the concept of humanitas we find that even "high rollers" such as President Wingfield, George Yeardley, military engineer Digges, and Thomas

Jefferson deliberately reference the classical world specifically by their own actions and interpretations to create an authentic "action-based" personal architecture rather than an essentially submissive academic architectural statement. In this process, all of our study sites are addressing the basic aspects of Renaissance architecture, mass (tripartite plan), symmetry (literal or staggered), and perspective (hierarchal, optical, historical) (Kruft 1984).

Use of classical wisdom to underpin the insecure civil populations at Flowerdew and Jordans Journey— whose hidden spatial code has been broken in this document—makes a clear statement that ideo-technic architecture for the English was intended to be Roman based. Their perceptions of their own civility or "world view" are telling us of the classical world, which they have chosen to identify themselves with in the frontier experience in a direct contest between perceived savages "in discord"—and "personally disciplined" servants of the invasive Christian state (Jennings 1980:2–5; Shackel 1993). As well as being useful and rational plans, references to Roman imperialism display their cognition of their own perspective of what is really occurring in the Virginia experiment.

The stability of the English colony created during the context of the Second-Anglo Powhatan War convinced the English that they were indeed a civilized people who "had arrived." Given the brutal aspects of the frequently un-civil or un-chivalrous ethnic conflict, this "spare civility" seen in simple

tripartite plans was desperately needed as cultural symbols of greater things which they were not able to express in more elaborated forms through the kinds of direct metaphors we have often sought in vain.

Rustic villa forms such as the Nansemond Fort and Clifts are seemingly melding Vitruvian wisdom with farming needs, as the seminal manor is clearly placed in a hierarchal position. They use their hierarchal/subordinate farms in the same way as a neo-classical Vitruvian plan, but the informality of their layout still yields to daily convenience—alien on the great plantations of the 18th century. It just may be that, by the time of the construction of the decidedly "rustic" tripartite plans at the Nansemond Fort and Clifts, their world views preserve an increasingly debased vernacular vulgarization of tripartite villa plans. Perhaps this is because the original florescence of the Elizabethan Renaissance had seriously waned to the point that the original classical references appear to be lost. The early tripartite plan at Martin's Hundred, however, suggests that these plans are simply informally applied vernacular versions of Vitruvian town plans as they are used since all of the five plantations studied share functional similarities on a building by building basis (Geertz 1973).

If we briefly pause, to approach the frequent three-part basis and dialectic of structuralist theory, namely two parts—in opposition, and the third part—resolution of the same, we can get predictable results in an

almost anecdotal fashion. The hierarchal manor or headquarters (1) can be seen as the resolution of and the controlling force behind labor and action (quarters); (2) and objects (storehouses, capital gains, extracted colonial products created by actions); and (3) (Levi-Strauss 1963). If this is the case, a spatial paradigm of Virginia society and its ethos in microcosm could indeed be invoked as was the case in Upton's (1986:97–98) study of seating in 18th-century ecclesiastical structures (which we noted in our brief revue of James Fort). Upton's two rows of church pews centered below an altar with a crucifix is, of course, similar to patterns seen in Post-Medieval gardens, paintings, and certainly the small-scale variant Romano/Medieval town plan itself.

If this microcosm model is really the case, under this model Virginia is the exploded west English longhouse or west English plan (with all its requisite functional trappings) with a manor superimposed over it. This manor is the seminal and key organic part of the "Vitruvian body" (analogy between human bodies and architecture) as its "head" literally and figuratively. Thus, in our structuralist dialectic the manor does not resolve the opposing tensions between labor (quarter) and goods; they simply are articulations of basic needs. Therefore, looked at in another way, this is really a symbol signifying itself, if you will, which should not be mystified.

If we take the "Vitruvian head" model seriously, by implication where this "head" is in the Virginia landscape is important. Marshall Newce, Sir George Yeardley, and Samuel Jordan were going nowhere after the massacre. Based on the atomist qualities of the cultural protagonists, their fortified settlements are statements of individual or personal secular power which is a hallmark of the Renaissance psyche (Rasmussen 1951:66–69; Rice 1970:76–78, Upton 1979). In other words, these people are telling us that they, as disciplined individuals on their own plantations, rather than in constrained communal towns, are the personification of expressions of English civility in its rawest and most direct form. These highly individualistic people are resolved to determine their own fate and—so to speak—their own town plans: plans which they have simplified and interpreted as formal or "rustic" villas, with imminently more appeal in the Chesapeake landscape.

PRACTICAL SPACE

In the following summary discussion the author tries to tease apart vernacular building influences from Renaissance and Vitruvian influences to obtain a more balanced and down-to-earth approach to our study group.

Through analogue linkage with James Fort and Yeardley's Fort, the familiar tripartite pattern might indicate a military plan in which the most basic needs of a small settlement and market town are met with no frills—in much the same manner that the contents of a suitcase summarize the most

basic needs of a traveler. Reduced down to the main core structural units, this simple plan features three basic components: a centered manorial seat, a subordinate quarter, and a subordinate barn (magazine or warehouse) which always provide a macro-cross passage leading to a church or manor which variously masquerades as a plantation headquarters and chapel.

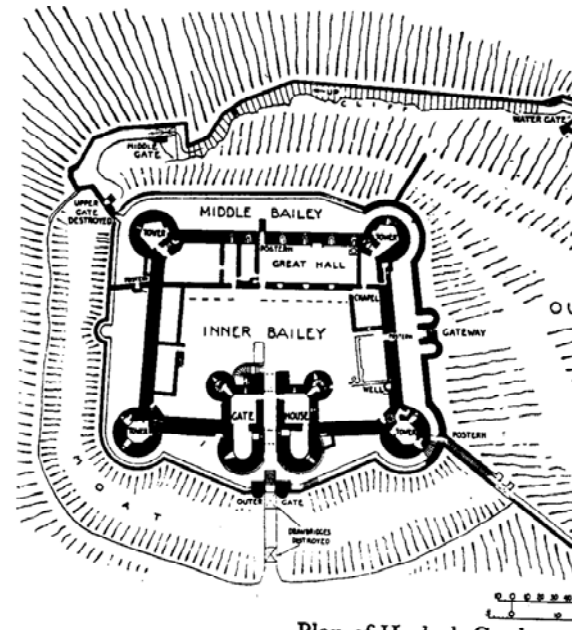
The archaeological plan at Yeardley's fort is more monolithic because it served largely through an institutional capacity as a protected town and market center. Thus, formal and informal paths needed to be clearly demarcated. In contrast, the Nansemond Fort is indistinguishable from civil Clifts of 1705, based on its most essential core architectural spacing—beyond its relative constriction to incorporate improvements into a defensive shell. This similarity in functional plans among the study group could suggest a "grange model" or some sort of a broader model can best hold this frontier settlement model together. Do they lie in familiar vernacular architecture? Is it possible to tease apart the influence of traditional vernacular building influences on the Vitruvian plans to get a fairly good idea of realistic specific impacts?

During the medieval period Beresford and Hurst (1971:Figure 17, 104) and Rowley and Wood (1982:Figure 13, 44–45) suggest that there is such a thing as a "peasant farm" or a "farm plan," respectively. This plan consists of simple rural farmstead agglomeration consisting of three buildings

containing (1) a rectangular dwelling house, (2) a byre or barn retaining cattle and/or food stores or hay, and (3) a smaller service or storage structure. The main core building block is shown as "L-plan" in the relationship between the dwelling (one main bar of L) house and the barn (a second main bar of L forming an vertex or angle). The author confesses that he doesn't know how important the medieval "farm plan" was in the 17th-century Chesapeake or England for that matter. However, if we use this plan to model changes in the Chesapeake study suite considered in the present study, we can at least predict the impact of Vitruvian planning as it intrudes into this real basic agricultural unit. As a spatial model, this can only be done for sites at Martin's Hundred, the Nansemond Fort, and Clifts where the settlers have chosen to add structures at a rough right angle to the manor in perhaps much the same manner as the original "farm plan" suggested by our British colleagues. (See Figure 105.)

By the 17th century the barn has been shifted to a more spatially subordinate position below the manor, at least in the Chesapeake. In the meantime the L-plan itself often substituted a kitchen/quarter unit in place of the barn. At Clifts, where we have the best temporal sequence, what occurs is the main new changes are two-fold. A quarter is shrewdly plopped into the initial farm plan first in order to acquire enough capital to create an opposite barn which reabsorbs the small storage building. At sites like Yeardley' Fort the plan does not need to accrete through time as it does at

Clifts, since through great wealth or martial law, labor investments allow the process to occur rapidly if not simultaneously. In the tensions between these plans are the seeds of Palladian formalism which replaced the "rustic" Vitruvian plan between about 1700 and 1750 in the Chesapeake. Seventeenth-century Virginia plans which do not seem to be influenced by Vitruvian wisdom in Virginia but which have the "L-plan" are tentatively identified as the Kingsmill Tenement and Pettus Plantation, and possibly Richneck Plantation (Carson et al. 1981:Figure 6, Figure 9, David Muracha pers. comm. 1997). Michael Salter (1985:6–7) notes that the "L-plan" as an integrated masonry block—



Plan of Harlech Castle.

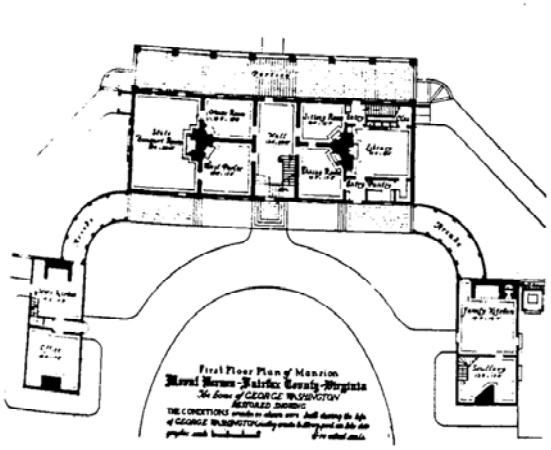


Figure 105
A 14th-century English castle along with Mt. Vernon. Note how fortification helps prejudice social elites for Palladian symmetry. (Top, Toy, 1975) (Bottom, Morrison, 1952).

highly variant from the farm plan except in basic form—was used as a defensive stance in Scotland and perhaps north England.

Beresford and Hurst (1971:Figure 17, 104) and Rowley and Wood (1982:Figure 13, 44–45) also recognize a west English longhouse plan, where an inner room is at one end of the structure, a larger living area or hall occupies the center, and a byre is placed in the other side, so that all of the needs in the "farm plan" noted above are contained in a single linear structure still used in the Welsh marches and other zones in the 17th century (Smith 1975). These have been recognized in New England and Virginia (Deetz 1977:95–98; Hume 1982:187–188, 244–245). In this document we have tried to use the west English longhouse to explain larger plantation landscapes at Yeardley's Fort, Jordans Journey, and the Nansemond Fort where it is indicated that the byre is captured during a period of farm evolution when it is ejected out of the single architectural block of the parent longhouse building form—but in a linear growth pattern out from the main concentrations of buildings. Since such a plan emphasizes linear building arrangements, those sites in our study group that show this pre-disposition also in subordinate buildings orientations at Yeardley's Fort and Jordans Journey, the only two sites with a formal geometric plan, besides Wolstenholme Town.

If we look at this hypothetical explosion of functional space in the west English longhouse plan in more detail and extend it to other aspects of the room use in the parent longhouse form, then we can predict that storage and service areas also exploded out as shown in this chapter. If we apply Carson's (1994) consumer model to this and think about the impact of the tobacco boom on social elites who had more things—especially labor and bulk products than then ever before—then clearly the best explanation besides Vitruvian wisdom for this explosion from rooms or partitions in a single core unit exploding to separate specialized buildings is that they had no other choice except to modify their vernacular building regimen (see Neiman 1993).

The west English longhouse model actually blends into a larger study group, with the Clifts site and the Nansemond Fort also sharing attributes. Hence, at places like Yeardley's Fort, the Nansemond Fort, or Clifts, a model of these needs resulted in a west byre, a west quarter or hall, a central cross passage, and east-placed barn or warehouse with a manor superimposed—as the Vitruvian head—over all at the end of the central passage. Since at both the Nansemond Fort and the Clifts site the manor was built first, this means that you have to plan to achieve such an exploded west English longhouse motif in your architectural statement (Luccketti 1992; Neiman 1978, 1980). In a strange sort of way, this compliments the expanded Renaissance time perspective Rowe (1997) and Shackel (1993) variously speak of. Elite Chesapeake planters are clearly not living for the moment—they knew what

they wanted. Admittedly, through martial law or extreme relative wealth, the gratification at Yeardley's Fort and Jordans Journey and the Nansemond Fort was fairly rapid.

If we then turn to look at Carson's (1969) relationship between the West English house plan with a central cross passage which he has suggested evolved into the 18th-century "Virginia house" with a central hall and two opposite rooms and then extend this as a simple spatial model by analog extension using whole plantations, one suspects some worthwhile insights might emerge. If you look at the spatial pattern between Yeardley's Fort and Shirley, we can get a fairly good idea of vernacular changes more of degree than form which simply require a Vitruvian head. The analog turns the central passage in the West English longhouse or the West English house into a parallel pattern seen in the central passage between two subordinate outbuildings in a forecourt, which becomes a street in the Romano/Medieval town plan. It is not difficult to understand how, even as a vernacular model, a tripartite plan might emerge from a rational expansion of a cross passage running outside a West English style manor which would be useful to approach subordinate buildings. Throw in Vitruvian and Palladian ordinal ideals and rationalism and thus perhaps is created a very simple architectural statement of "new classical" humanities. This would be right out of the heart of a more traditional vernacular building regimen which begs for a formalized status definition in a labor-intensive agricultural economy in

daily face-to-face contact. Most Chesapeake planters preferred farm convenience unlike our study group (see Carson et al. 1981; Kelso 1984). New England farmers and some other areas continued to be happy with Beresford's basic farm plan right into the 19th century (Thomas Hubka 1984).

Carson's (1986:55–56) west English-influenced relatively open Virginia and Maryland farmyard probably reflected wider spaces needed in southern colonies, as there were larger and more complicated social groups all interacting within and among these dooryards, including sergeants acting as overseers, lieutenants, and captains, as well as tenants, servants, and local visitors. Also, there were bulk agricultural products such as corn and tobacco, requiring large amounts of space to process them (Neiman 1993).

So far the evidence of influence of the west English longhouse has had appeal as an explanatory spatial/functional model which—because of unique Chesapeake conditions—lent itself toward a Vitruvian manipulation especially during war. Of our study sites, Yeardley's Fort and Jordans Journey perhaps show the strongest influence of exploded west English longhouse plans (see Figure 106). Beresford and Hurst (1971:Figure 17) humble us here, for their analysis of "Medieval Peasant House Types" indicates that beyond the addition of a quarter for farm labor, there is nothing in our core tripartite plan that is not present in some form in the most pretentious medieval "peasant" farm. What does this buy us? It is

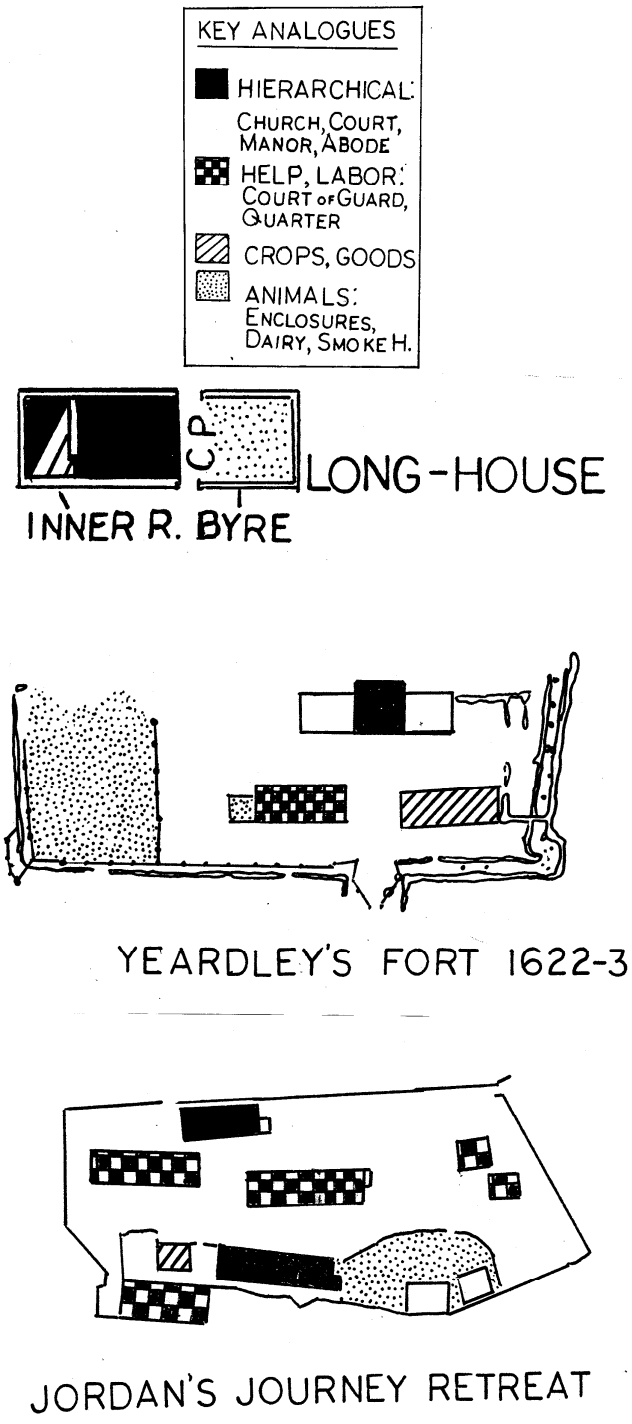


Figure 106
Sites that seem to have the strongest debt to a west English exploded long house with a hierarchical manor or headquarters building.

thought that the one aspect all our 17th-century study group and the 18th-century sites have in common is that there is a need expressed in this architecture to underscore the predominance of the planters or militia leaders in authority. Thus, this is an inherent hierarchal action perhaps defining the insecurity of the scale economy given the insular nature of the various plantations. In addition to this, perhaps the tripartite plan provided a sort of mystified sense among planters that they were one cut above peasants and therefore, in the wild frontier, had "arrived" somewhere even as Chieftains of earth-and-timber forts, or as "Lords of the flies" on isolated private plantations. In any case, it is with this same sense of humility that this document ends, with a feeling that what we don't know still outweighs what we do and that the road this discourse has taken is more valuable than any solutions it has potentially offered to a very complex and continuing behavioral puzzle.

We end here with Figure 107, which shows a town plan from a French edition of Vitruvius printed in 1547, which shows a town plan with staggered subordinate town lots below rows of hierarchical structures that look like a Roman fort from our introduction.

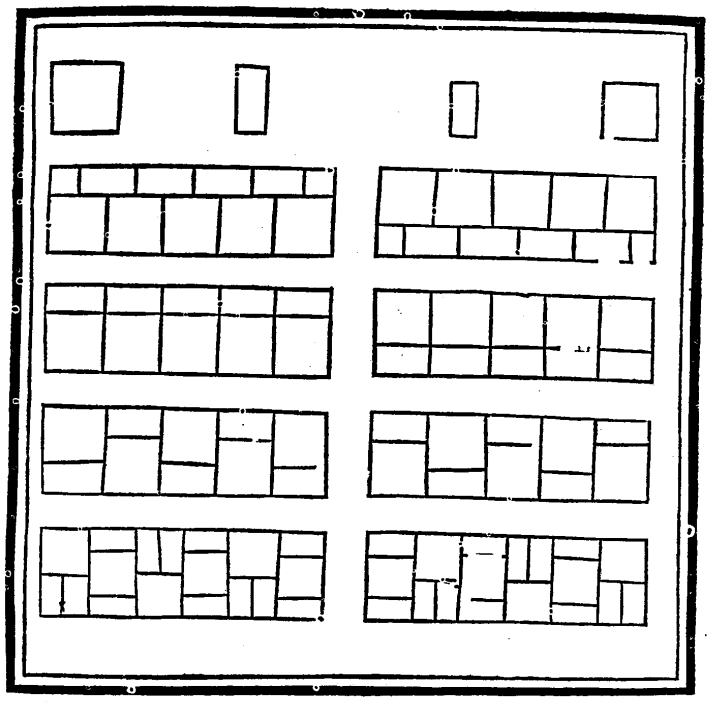


Figure 107
A plan showing staggered alternating town lots looking like a Roman fort (from a French edition of Vetruvius 1547) Jan Martin Translator.