1-1-2014

Investigating Town Design and Social Organization at Port Tobacco, Maryland, Through the Use of Archaeology and Geophysics

Peter Craig Quantock
University of Denver

Follow this and additional works at: https://digitalcommons.du.edu/etd

Part of the Archaeological Anthropology Commons

Recommended Citation
Quantock, Peter Craig, "Investigating Town Design and Social Organization at Port Tobacco, Maryland, Through the Use of Archaeology and Geophysics" (2014). Electronic Theses and Dissertations. 530. https://digitalcommons.du.edu/etd/530

This Thesis is brought to you for free and open access by the Graduate Studies at Digital Commons @ DU. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons @ DU. For more information, please contact jennifer.cox@du.edu,dig-commons@du.edu.
Investigating Town Design and Social Organization at Port Tobacco, Maryland Through the Use of Archaeology and Geophysics

A Thesis
Presented to
the Faculty of Social Sciences
University of Denver

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Peter C. Quantock
August 2014
Advisor: Dr. Lawrence B. Conyers
Abstract

This thesis examines the connection between town planning and social organization at the small town site of Port Tobacco in south-central Charles County, Maryland from the beginning of the 18th century through to the end of the 19th century. By employing a methodology of both geophysical techniques and archaeological excavations, I was able to locate and map numerous structures and features associated with town planning and examine how these spaces were used. This data was used to show how social order, power, and wealth transformed the town layout from a linear settlement along the river into a grid-like pattern. Specifically, I was able to show that these changes in town layout were dominated by the power of the local elite landowners and tobacco merchants.
Acknowledgements

This thesis would not have been possible without the support and encouragement of family, friends, colleagues, and professors. I would first like to thank the members of my committee, Dr. Bonnie Clark, Dr. Matthew Taylor, and especially my advisor, Dr. Lawrence B. Conyers. I could never have completed this thesis without his relentless support, patience, and encouragement. I am also indebted to all the professors at the University of Denver for their support, expertise, and guidance along the way.

None of this would have been possible without my mentor, Dr. James Gibb of Gibb Archaeological Consulting. Jim hired me fresh out of field school, trained me in field and laboratory methods, guided me through my early career, and pushed me in every way to be a better archaeologist and scholar.

My friends and family were a constant source of encouragement and support during the good times and the bad. Most importantly, I could not have finished this thesis without the unwavering support of my now wife, Michelle. She endured two years and over fifteen hundred miles apart while I pursued my degree. This thesis is as much hers as it is mine. I can’t thank her and everyone else enough as I made my way on this long journey.
# Table of Contents

Chapter One: Introduction ......................................................... 1

Chapter Two: Environment and History ...................................... 19
  Location and Environment .................................................... 19
  The River and Sedimentation ................................................ 22
  Historical Background ......................................................... 30
  Prehistory ............................................................................... 31
  Beginnings of a Colony ......................................................... 34
  Colonial Town Planning ........................................................ 35
  Town Acts – 1668, 1684, 1706, 1729 ........................................ 39
  Town Historical Background .................................................. 43
  18th Century ......................................................................... 45
  19th Century ......................................................................... 48
  Previous Research .................................................................. 50
  Early Archaeological Excavations .......................................... 51
  PTAP(2006-2010) .................................................................. 57
  Conclusion ............................................................................. 62

Chapter Three: Theory .................................................................. 64
  Introduction ........................................................................... 64
  Early Chesapeake Town Models ............................................. 66
  Space and the Built Environment .......................................... 68
  Functional Approaches ......................................................... 70
  Symbolic Approaches .......................................................... 71
  Social Construction and Social Production of Space ............... 73
  Maintaining Control: The Power of Place ............................... 74

Chapter Four: Archaeological Methods I - Excavations ................. 82
  Introduction ........................................................................... 82
  Shovel Test Survey and Unit Excavation Methods .................... 85
  Shovel Test Survey and Excavation Results ............................. 87
  Area 1 – Compton Field ....................................................... 95
  Area 2 – Behind Courthouse .................................................. 102
  Area 3 – Village Green ......................................................... 105
  Area 4 – Front Courthouse .................................................... 109
  Area 5 – Jamieson West ....................................................... 112
  Area 6 – Jamieson East ......................................................... 114
  Area 7 – Burch House .......................................................... 119
  Area 8 – Stagg Hall/Chimney House ...................................... 122
  Surface Collection .................................................................. 125
  North Field ........................................................................... 126
  Middle Field ......................................................................... 128
List of Figures

Figure 1.1. Map of all legislated towns between the first town act of 1668 to the last in 1751 with Port Tobacco circled in red ................................................................. 2

Figure 1.2. Map of the state of Maryland. The arrow points to the location of Port Tobacco in Charles County, Maryland. Inset of aerial view of town as it looks in 2013. ............................ 6

Figure 1.3. Digital map showing location of shovel test pits and extant buildings around town core during the 2007 and 2008 field seasons ................................................................. 15

Figure 2.1. Map of the Chesapeake Bay Watershed including the tidewater region of Maryland and Virginia. Modified from the DNR website, www.dnr.gov ............................................ 20

Figure 2.2. Aerial map showing location of the town Port Tobacco and the confluence of the Port Tobacco River, Potomac River, and the Chesapeake Bay. Modified from Google Earth ................................................................. 21

Figure 2.3. Erosion and sedimentation in the area east of the courthouse in Port Tobacco from Hurricane Irene in 2011 ................................................................. 23

Figure 2.4. Isometric view of the Port Tobacco valley showing the extent of sedimentation of the river. Red arrows indicate the flow of upland sediments into the valley including the town and river. Modified from Gibb 2010 and Gottschalk 1945 ........................................... 26

Figure 2.5. 1862 US Army map of the Port Tobacco River. The river was only deep enough to measure at one mile south of the town. The courthouse and town is cutoff from the river. ................................................................................................. 27

Figure 2.6. Glass beads used for trade between Europeans and Native Americans. These examples were found during excavations in Port Tobacco ................................................................. 33

Figure 2.7. 17th century town of Calverton, MD showing a linear layout along the river. ................................................................................................................................. 37

Figure 2.8. 1707 plat map of Doncaster (Wye Town) Maryland. This is a typical grid pattern seen in the plats of early 18th century Maryland. Source: Thomas 1994 ................................................................. 39

Figure 2.9. 1697 plat of Moore’s Lodge, the first county seat of Charles County, noting the location of the courthouse and several buildings. Source: King et al. 2008 ................................................................. 46

Figure 2.10. Detail of 1607 John Smith map of Maryland and Virginia showing the location of the Indian village of Potopaco. This is the first visual and written reference to Port Tobacco (Potopaco) ................................................................................................. 52
Figure 2.11. Redrafted image of ca.1819 courthouse foundations, ca. 1968......................54

Figure 2.12. Map of shovel test survey with shovel test pits shown as red dots in a grid pattern across the site.................................................................................................................58

Figure 2.13. Aerial view showing the locations of Port Tobacco and Warehouse Landing one mile apart. The three fields in between were surveyed in 2008.........................60

Figure 3.1. 17th Century plat of Calverton (left) showing a linear layout along Battle Creek. An example of the simple grid plan used in the Chesapeake in Doncaster Maryland (right)................................................................................................................67

Figure 3.2. Baroque plan of St. Mary's Maryland. Symmetrical triangles in red showing a balanced composition of public space with monumental structures as focal points of the triangles. Modified from Leone and Hurry 1998.........................................................76

Figure 3.3. Map of State and Church circles in Annapolis Maryland showing lines of sight and streets converging around the two circles as visual displays of social order and power. Modified from Leone 2005.................................................................................................78

Figure 3.4. Drawing of the William Paca garden in Annapolis, Maryland. Wealthy landowners in Annapolis displayed their social standing and wealth through ordered design of gardens and landscapes during the 18th Century.........................................................79

Figure 3.5. The panoptic design of the Baltimore Jail built by Jeremy Bentham in the late 18th Century. It was designed so that inmates can be watched without knowing. Modified from Leone and Hurry 1998..........................................................80

Figure 4.1. Site map of the town core showing the eight survey areas from Table 1 numbered in black, and extant buildings and roads in red and blue. Shovel test pits are represented by the small black circles in each survey area. Survey Area 9 lies south of survey Area 5 but is not shown on this map.........................................................83

Figure 4.2. Sample shovel test pit showing the plowzone stratum with a mixture of artifacts in the side walls..................................................................................................................86

Figure 4.3. Example of a North Devon earthenware rim found at Port Tobacco..............89

Figure 4.4. The three types of nails found on historical sites in the Chesapeake region. A) handwrought, B) machine-cut, C) wire..........................................................................................91

Figure 4.5. Example of decorated pipestem fragments found during excavations at Port Tobacco..........................................................................................................................92
Figure 4.6. Map of survey Area 1 south of courthouse and Church. Shovel test pits are represented by small black circles in the field. Inset image shows the open mowed field at the time of survey. 96

Figure 4.7. Map of survey Area 1 showing the location of a domestic site. Positive shovel test pits are circled in red. Two 5ft x 5ft excavation units are in blue. 97

Figure 4.8. Map showing location of the two sites in Area 1. Site 2 is approximately 125 ft west of site 1. 99

Figure 4.9. Map of site two within survey Area 1. Excavation units are marked by blue squares. The large brick rubble feature is outlined in red within the units. 100

Figure 4.10. Close up of the brick rubble feature from a demolished chimney encountered in strata 3 of Unit 14. The extent of the brick rubble feature measured roughly 15ft x 6ft through ten of the excavation units. 101

Figure 4.11. Map of survey area two behind the courthouse. Shovel test pits are represented in black and the survey boundary is in red. 103

Figure 4.12. Drawing of intact foundation of late 19th Century jail behind the courthouse. Inset image shows the remnant foundation western wall that was found in excavation units 18, 20, & 23. 105

Figure 4.13. Town map with historic village green area outlined with red box. The modern parking lot and drive up to the courthouse in blue separate four survey areas and cut through the once open space. 106

Figure 4.14. Survey map showing east edge of Village Green circled in red. Corresponding edge of 1888 map circled in red on top. Six buildings are located here on the map. The shovel test pit survey did not reveal evidence of any of these buildings. 107

Figure 4.15. Survey Area 4 outlined in red encompasses the front part of the courthouse bordered by survey Area 1 to the south and the swamp to the north. This area is the western half of the historic village green. 110

Figure 4.16. Location of Test Pit 3 in front of the courthouse. Inset picture is of the west wall of the test pit, showing a single course of foundation running north to south. No further excavation was done here to find the extent of the foundation. 111

Figure 4.17. Survey Area 5 outlined in red, showing borders of the corn field, river, swamp, and hedgerow cutting off the field from the town core. 112
Figure 4.18. Map of survey Area six. Shovel test pits are represented by small black circles and boundary is in red. ................................................................. 115

Figure 4.19. Location map of the ten units excavated in survey Area 6. This section of the survey area is on the south edge of the historic village green.............................. 117

Figure 4.20. Drawing of excavation units showing the extent of the brick foundation, pier, and robbed out trench. Areas of artifacts in unit 74 are on the inside of the foundation ........................................................................................................... 118

Figure 4.21. Tin glazed bowl found in Colonial Period stratum during excavation of Unit 71. While the total sample is small (n=28), these ceramics confirm the shovel test results of this site as a likely tavern................................................................. 118

Figure 4.22. Survey Area 7 showing the Burch and Holt properties with extant homes. A total of 36 shovel test pits were excavated on these two properties within the survey area. The area is on the far south end of the town core. Inset pictures show the Burch House before and after renovation in the 1980s............................................................. 120

Figure 4.23. Map of survey Area 8. Shovel test pits are represented by small circles in the front yards of two extant historic homes. These front yards were within the boundaries of the historic Village Green. Only the west portion of one rear yard was excavated due to landowner permission......................................................... 122

Figure 4.24. Map of survey Area 8 with the locations of three sites within the historic village green. The sites are identified by brick, nails, and ceramics found in shovel test pits. Site locations are represented by the solid red areas on the map.............. 124

Figure 4.25. Three fields south of modern town core that were surface collected in 2008. Five historical sites were identified in the fields. ................................................................. 126

Figure 4.26. Northern field that is an extension of the field west of the courthouse and lies south of the Compton field area of the town core. Artifact clusters representing 18th Century sites are circled in red................................................................. 128

Figure 4.27. Middle field that lies south of north field. Western edge lies closest to the river. Artifact cluster representing one small 18th Century site circled in red......... 129

Figure 4.28. South field survey area showing two distinct 18th Century sites representing the Chandler's Town settlement prior to 1729. Artifact clusters representing the sites are circled in red................................................................. 132

Figure 5.1. Total Station in use on site in Port Tobacco................................................................. 139
Figure 5.2. Map created by data points collected from a total station. Extant buildings are seen in red, modern roads in blue, and vegetation in green. ........................................... 140

Figure 5.3. G-858 MagMapper with dual sensors and cart in use at Port Tobacco...... 144

Figure 5.4. Example of a vertical gradient map. Several strong dipole anomalies are indicated in black within a gray soil background of +/- 0.5nT. Grid units are in meters. ................................................................. 146

Figure 5.5. Combined vertical gradient map of grids A-K in survey Area 1 with location of grids in town on the inset image................................................................. 147

Figure 5.6. Grids A-D with concentrations of strong magnetic dipoles (5-8nT) circled in blue. These represent brick rubble features on the south edge of the village green and the old road leading south from the town core. ........................................... 148

Figure 5.7. Vertical gradient map of grids E-K in Area 1. Metal spikes used as data points are circled in red and medium to high strength dipoles are circled in blue. ........ 149

Figure 5.8. Location map of Area 2 with labeled magnetometer grids A-C on the west side of the courthouse................................................................. 151

Figure 5.9. Vertical gradient map of Grids A and B. A long linear low resolution feature (+/- 2nT) is seen in the middle of the two grids with several strong dipoles in the northwest corner................................................................. 152

Figure 5.10. Vertical gradient map of Grid C in Area 2. Several strong dipoles and many small weak dipoles are seen throughout the grid. These dipoles are caused by the dense large gravel seen during shovel testing............................ 153

Figure 5.11. Location map of Area 3 with labeled magnetometer grids A-D within the historic village green and the east edge of the town core. ........................................... 154

Figure 5.12. Combined vertical gradient map of the four grids (A-D) in survey Area 3 illustrating the several strong magnetic dipoles in the northwest corner of the grids. No linear or rectilinear features indicative of buried foundations or ditches were revealed during the survey................................................................. 155

Figure 5.13. Combined vertical gradient map of grids A & B on the south side of survey Area 4. Magnetic interference from a car in the parking lot to the east is circled in red. Several medium to high resolution dipoles are represented in black................. 158

Figure 5.14. Location map of Area 4 with labeled magnetometer grids A-E in front of the courthouse and in the northwest corner of the village green. The walkway that separates
the grids can be seen in red. Signs, electrical lines, and trees prevented a survey of the area between the walkway and grid C.

Figure 5.15. Vertical gradient map of grids C-E in Area 4. A concentration of strong dipoles and weak rectilinear feature are circled in red along the west side of grids D and E. The strong dipoles clustered in the northwest of these grids likely represent rubble fill within a demolished building.

Figure 5.16. Location map of magnetometer grids with combined vertical gradient maps for grids A-F in survey Area 5 showing several large dipole signatures. Plow furrows are marked by the red arrows.

Figure 5.17. Total station map showing locations of GPR grids within the town core of Port Tobacco. Survey areas and grids are labeled in red.

Figure 5.18. Ground-penetrating radar (GPR) system: GSSI SIR 3000 system with a 400 MHz antenna and survey wheel on site at Port Tobacco.

Figure 5.19. Radar energy from a transmitting antenna is propagated into the ground. Some of the energy will be reflected upward to a receiving antenna when it hits an interface of different physical and chemical properties. Any energy that does not reflect off an interface continues to pass through the subsurface until it attenuates with depth. Modified from Conyers 2004:137.

Figure 5.20. Example of hyperbolic reflections caused by point sources in the subsurface. No distinctive reflections are noticeable below these hyperbolas due to the attenuation of the radar energy as it travels deeper without hitting any interfaces.

Figure 5.21. Four nanosecond amplitude slice maps representing 0-20cm in depth from a test grid of GPR data collected before (Left image) and after (Right image) a heavy rainstorm on an open field in Port Tobacco. Stronger reflections (seen in green, yellow, and red) can be seen in the right image after the rainstorm.

Figure 5.22. 100-150cm amplitude slice map from grid A. Low amplitude reflections in blue and purple represent the rubble fill of the cellar. High amplitude point source reflections in yellow, orange and red represent some of the whole bricks of the eastern foundation wall.

Figure 5.23. Vertical profile in grid A showing the eastern foundation wall and the cellar floor.
Figure 5.24. Slice map from Grid F showing a linear series of high amplitude reflections. The vertical profile shows a corresponding 3.5m long high amplitude planar reflection representing a well used path on the north end of the grid. ........................................... 182

Figure 5.25. Amplitude slice map and corresponding vertical profile showing a group of high amplitude point source reflections between the 5m and 10m mark. These reflections represent the partially excavated rubble fill layer of a post in ground structure on the south edge of the village green. ................................................................. 183

Figure 5.26. Vertical profile and corresponding amplitude slice map showing the high amplitude reflection representing a paling ditch between 0.5m and 0.8m in depth at the north end of Grid A. ...................................................................................... 186

Figure 5.27. Vertical profile from Grid A showing a high amplitude planar reflection circled in red representing the floor of the likely earlier 19th Century jail. Two red arrows point to a series of high amplitude point source reflections above the floor representing the fill from demolition of the structure................................................................. 186

Figure 5.28. Amplitude slice maps of the first 10 nanoseconds showing a series of low to medium amplitude point source reflections................................................................. 188

Figure 5.29. Amplitude slice map from 10-15ns (70cm-105cm) and vertical profiles show various low to medium amplitude point source reflections............................................. 190

Figure 5.30. Amplitude slice map showing several high amplitude reflections and corresponding vertical profile showing the reflections in three dimensions. ......................... 192

Figure 6.1. Survey Areas 1 and 5 south and southwest of town core. No building foundations or evidence of structures was found any farther south or west than the edges of the Village Green. Those now empty Areas were reportedly filled with buildings according to historical accounts................................................................. 202

Figure 6.2. GPR profile of foundation discovered south of the village green and its location on the site map. ................................................................. 203

Figure 6.3. Image and location of "the point" in Port Tobacco. This is the westernmost area of the town core where no building foundations or concentrations of architectural debris were found during shovel testing. Geophysical survey also failed to reveal any significant findings................................................................. 204

Figure 6.4. Location of foundations and concentrations of architectural debris within Village Green. Historic Village Green boundaries denoted by the blue rectangle. ......... 205
Figure 6.5. Foundations uncovered in front of courthouse and to the northeast during shovel testing and magnetometry surveys. ................................................................. 206

Figure 6.6. Map showing locations of early Colonial sites leading from Warehouse Point north into the modern town core of Port Tobacco. Sites are indicated by red circles along the river and modern Chapel Point Road................................................................. 207

Figure 6.7. Location of Burch House (ca. 1722) at south end of town core showing its orientation to the northwest. The rest of the extant buildings face north/south or east/west on an orthogonal grid. ................................................................. 208

Figure 6.8. Partial foundation discovered in TP 3 in front of courthouse. ................. 213
Chapter One: Introduction

The first permanent English settlement in North America began at Jamestown, Virginia in 1607. This colonization of the Chesapeake region set off an almost 200 year long process of town planning in the New World (Figure 1.1). The process of legislating, planning and ultimately realizing the creation of towns is one that has been the center of research by anthropologists, historians, and archaeologists since the early 20th century (Poque 1984, Smolek 1984, Miller 1988, Lukezic 1990, Leone 2005, Lucas 2008, Shomette 2000, Reps 1972, Thomas 1994). This has been a highly studied topic due to the failure of so many towns to thrive after their initial founding, and because early towns were thought to have been developed organically with no sophisticated plan or organization to them. Towns such as Jamestown and Williamsburg (established 1607 and 1632) in Virginia, and St. Mary’s City (established 1634) and Annapolis (established 1649) in Maryland are some of the more famously investigated and provide an important in understanding of early Colonial town planning (Leone and Hurry 1998, Reps 1972, Thomas 1994, Miller 1988). Sophisticated town planning, which is not seen in small towns, has been found at these sites. Archaeologists have uncovered the original fortifications and artifacts related to daily life at Jamestown, while research at Williamsburg has focused on material culture related to urbanization and community development (Horning 2000, Kelso and Straube 2008, Colonial Williamsburg Foundation
At St. Mary’s City, Maryland’s first capital city, and at its current capital city, Annapolis, archaeologists have uncovered sophisticated urban planning in its layout of buildings and roads (Miller 1998, Leone and Hurry 1998, Leone 2005). Those studies are examples of how urban and town planning, social organization, and the power of place can be seen in architecture, design, and material culture.

Figure 0.1. Map of all legislated towns between the first town act of 1668 to the last in 1751 with Port Tobacco circled in red.

Smaller towns and more rural areas are just as interesting as these well studied places because they offer a comparison to larger cities in the study of town planning. These small towns were not capital cities nor major population centers but rather small commercial centers and county judicial centers. They allow for the study of town planning on a much smaller, local scale. But little has been done with them beyond
looking at them as a regional group due to their perceived lack of sophisticated town plans. Town planning is important not just for the study of the physical town but also for the study of people. Settlers relied on towns for justice and as a place to sell and buy goods and services. Local elites used them as a means to obtain and control wealth as tobacco merchants and landowners. Wealth created a social hierarchy where local elites controlled the creation of towns and the tobacco trade that sustained them. The creation of towns centralized wealth in one place where all aspects of society were controlled by it. Wealthy local elites (landowners and successful tobacco merchants) showed this power through not only the creation of towns but in how they were designed and how spaces in town were utilized. When this wealth declined due to the collapse of the tobacco trade, their power was diminished. By studying town planning, we can see how this power was shown by looking at design and how people adapted to changes in the power structure. The changes in the culture of social hierarchy within towns can be seen in how they were planned and how the layouts changed over a 200 year period in Port Tobacco.

This thesis examines town planning and social organization at the small town site of Port Tobacco in south-central Charles County, Maryland (Figure 1.2). Understanding town planning and social organization in Colonial towns requires the use of several theoretical approaches. By doing this study, I will show that local elites in 18th century towns controlled various aspects of the tobacco trade, which allowed them to hold power over the town and its inhabitants. They showed their wealth through the control of town layout. When this wealth was lost so too was their control over design and layout. For
this thesis, I will focus on the concepts of space and power in relation to town planning. Specifically, I focus on how planned towns were used to physically display power. Power in this case is defined as wealth and class status, which allows access to, and control of, the general forms and means of production in society. In Port Tobacco and other Chesapeake towns, these forms come from land ownership and the tobacco trade. This power is derived from the wealth of landowners and their ability to control the tobacco trade. This is important because it is in how spaces in town were used that we can understand social organization. In this town it appears that the layout changed from a linear settlement along the river to a grid pattern because of the local elites desire to impose and maintain authority over the land through design. This is interesting because it shows a new development in the way towns were settled in the 18th century. At Port Tobacco in 1729, lots in town were designated specifically for the Church, courthouse and a town square (MD Archives n.d., Shomette 2000, Gibb and Beisaw 2008). These central design elements served both functional and symbolic. They were functional for the ease of control over commercial and judicial matters and symbolic for showing power through design. In this thesis I will present data and interpretations that suggest that by following a grid plan with core structures at the center, local elites were showing themselves as in control during the 18th Century. This type of formal grid plan has been seen at the above mentioned sites and others. When the local elites lost power due to the decline in the tobacco trade at the end of the 18th Century, the layout changed as well. This loss of production resulted in the loss of land ownership and wealth for many people. At Port Tobacco, deviations or changes in the formal plan that occurred in the
19th century show a change in the social organization and lack of control by those in power. The layout therefore changed because lots in town were being sold, split up, and joined together to create new lots. Residents were now able to own or rent land that previously had not been built upon. The construction of buildings directly around the central features and in the open public square is an example of a change in power through design and therefore important evidence of the change in social hierarchy within town. Port Tobacco, therefore, provides us with an example of not just how Chesapeake towns were planned but more importantly how social organization within these towns were influenced by economic and political changes. Those changes can be seen through architecture and layout design during the 18th and 19th centuries. Specifically I will present data and interpretations that show that in the 19th Century, residents of Port Tobacco utilized land and built structures where there used to be open space and changed streets to avoid swampy land in town that in the 18th Century had been enacted according to the acts of the General Assembly, and planned and instituted by the local elites. This was done because the social structure of the town changed as local elites had lost power due to the decline in the tobacco trade.
Figure 0.2. Map of the state of Maryland. The arrow points to the location of Port Tobacco in Charles County, Maryland. Inset of aerial view of town as it looks in 2013.

The existing literature on other Chesapeake town’s planning includes studies by many archaeologists (Poque 1984, Smolek 1984, Miller 1988, Lukezic 1990, Leone 2005, Lucas 2008), as well as historians (Shomette 2000) and geographers (Reps 1972, Thomas 1994). Pogue (1984) and Smolek (1984) suggest that towns were set up as commercial centers and ports of entry based on location along deep navigable waters during the late 17th century through the mid-18th century. Lukezic (1990) demonstrates that soils suitable for agriculture (specifically tobacco and wheat) were a primary factor in settlement patterning in the Chesapeake Tidewater region. Reps (1972) was the first to study town planning in the Chesapeake, concluding that small towns were platted in an unsophisticated grid pattern, while Thomas (1994) showed the importance of understanding how these towns changed over time by looking at lot conveyance histories.
They concluded that while towns were legislated and laid out in gridded patterns during the 17th and 18th centuries, few materialized on the ground. Those that did survive only did so while serving as the judicial centers and even then only survived if the court was not moved. While their research was done to address where people were living on a broad (the Chesapeake Tidewater region) scale, less research has taken place to study individual towns, how they developed, and their role in town planning and settlement, which is the focus of this research. Miller (1988), and Leone and Hurry (1998) found that the designs of St. Mary’s City and Annapolis, MD were linked to concepts of power through the use of Baroque style urban planning. In St. Mary’s, Miller found this through the layout of buildings and roads in a triangular design. Leone and Hurry found this in Annapolis through the use of circles around the Church and courthouse with streets radiating out from them. Don Shomette’s book Lost Towns of Tidewater Maryland (2000) is the most extensive history written on these small towns of the Chesapeake outlining regional planning through the histories of ten individual towns (2000). He showed the important roles small towns played in telling the history of Maryland through describing the economic and political changes that Chesapeake towns went through over time based on historical records. Mike Lucas’s (2008) study of Mount Calvert in Prince George’s County, Maryland argues that the creation and meaning of small towns can be examined by looking at the lives of people at a local level. He did this through the use of material culture and the construction and use of space. All of these themes were used as a background to the research conducted here and helped to develop ideas of the use of space in the power of town planning.
Regional town planning was focused on the creation of towns for the purposes of centralizing the tobacco trade and for the collection of taxes, and to mete out justice (Reps 1972, Thomas 1994, Shomette 2000). This was done through the legislation of Town Acts to create these towns. Over 130 towns were created by legislation from 1634 to 1751 (Shomette 2000). However, many of these small towns that were initially planned and laid out never developed, or were short lived (Thomas 1994). Those that failed did so due to lack of interest from local landowners in buying up lots in town and because of the removal of the judicial centers to other locales (Reps 1974). Towns that survived did so due to a strong interest by local landowners in keeping control of trade and justice in their towns. One of the Chesapeake’s most successful planned small towns was Port Tobacco, in south-central Charles County, Maryland. This town lies roughly 20ft above sea level near the head of the Port Tobacco River on its east bank. The Port Tobacco River is a tributary of the Potomac River, which flows into the Chesapeake Bay. The town was one of many enacted through legislation that thrived and therefore is a good test area for studying town layout and the power of town planning through the use of space.

The creation of Port Tobacco as a town site was legislated four times, the first being in 1668 (Maryland State Archives n.d., Lee 1994, Shomette 2000, Quantock, Hayward, and Walter 2009). This legislation designated the site as a distribution center for the import and export of goods related to the tobacco trade and as an official tobacco warehouse site. However, it wasn’t until the act of 1729 when the county seat was moved to Port Tobacco that the town started to grow. The land that the town was to be
built upon was sold to the county commissioners in charge of establishing this new town by Job Chandler in 1725. It was on this land that the previous Acts created the inspection warehouse and distribution center. This area was known as Chandler’s Town. This “town” was a loosely arranged settlement along the river. The 1729 Act that established Port Tobacco outlined the creation of a town in a grid-like pattern.

The land that was to be Port Tobacco was to be broken up into 100 one-acre lots, complete with streets and alleys, and a three-acre lot for the courthouse and town square (Maryland State Archives n.d., Shomette 2000, Beisaw 2009, Quantock, Hayward, and Walter 2009, Gibb 2010). This was a typical “grid” plan employed throughout the Chesapeake region (Reps 1972, Thomas 1994, Shomette 2000, Quantock, Walter, and Hayward 2011). Plat maps were to be drawn up by the surveyor who plotted out the town. These plats would then be sent back to the General Assembly and filed in the court records. No plat map for either Chandler’s Town or early 18th century Port Tobacco has survived. The only plats available for Port Tobacco are the 1729 three-acre lot for the courthouse and an 1888 plat of the town, which is far too late to determine how the early town took shape. Plat maps are one of the many historical records that can help in the research of towns and town planning (Reps 1972, Thomas 1994) by providing a visual record of what towns looked like at specific times in history. This is helpful in understanding how layouts have changed over time by allowing me to compare a visual reference against the archaeological data. The research done by archaeologists in the region has established that through the study of archaeological assemblages, historical documents, and detailed mapping, archaeologists can not only address questions
concerning the planning, settling, and use of towns in the Chesapeake region but also further the study of the power of town planning (Miller 1988, Leone and Hurry 1998, Leone 2005, Gibb and Beisaw 2008, Purser and Shaver 2009, Beisaw 2009, Quantock, Hayward, & Walter 2009).

Small towns can be difficult to study in that there is not a rich historical record of traveler accounts, newspapers or news stories, maps, drawings, or (more recently) photographs. Records can hold information about the history of a town, how it might have looked, who lived and did business there, and what types of activities took place there. Instead, the historical records of these places only tell us details such as land sales and business transactions. Some historical records do exist for Port Tobacco. Newspaper accounts, maps and photographs of the 19th and 20th centuries are available to study. There are few records for the early 18th Century in Maryland. They consist only of a few travelers’ accounts, court records detailing criminal cases, business transactions, and records of land transactions. Therefore archaeology can play an important role. The study of artifact assemblages related to household and daily activities and architectural features related to placement of buildings, roads, and fences can provide important information on how spaces in and around town were used and how the layout and social organization of a town changed over time, adding to the current knowledge of Chesapeake town planning. For instance, areas in town where large number of ceramics with small date ranges indicate the area were used for only a short time. Locations of ceramics with a longer date range are evidence of use over time and continued occupation. When we see changes in where these assemblages are found in different
time periods, patterns of occupation and changes in layout emerge. This can be used to show that during times of economic decline in the 19th century, people in town were using and building in areas such as the village green that were earlier left open or unoccupied.

Geophysical methods, such as magnetometry and ground-penetrating radar (GPR), have been used elsewhere along with archaeological excavation data to answer questions about town planning and the use of space in towns (C.F. Gaffney, Gater, Linford, V.L. Gaffney, and White 2000, Kvamme 2003, Conyers 2013, Conyers and Leckebusch 2010, Benech 2010). By allowing archaeologists to “see” underground without disturbing that ground, geophysical methods provide a relatively quick means of documenting subsurface features across large areas. These techniques can be used to find and map buried features of cultural interest such as artifacts and architecture as well as changes in geological strata. Magnetometry is a passive technique that measures, and maps the local changes in the magnetic field of the earth. These changes are affected by changes in subsurface materials and varying soil matrixes. These maps show contrasts between features of interest and the natural background (Kvamme 2006). Ground-penetrating radar is a remote sensing technique that uses the transmission, reflection, and recording of electromagnetic energy to map changes in subsurface features and the surrounding matrix to produce three-dimensional images (Conyers 2013). I used these to map subsurface features as a way to test for the locations of architectural remains related to the use of space. I then compared these maps with excavation data to identify locations of buildings and general use. From this I was able to determine what areas in
town were occupied and used at different times. That data will tell me the function and purpose of areas in town and how those functions changed from the 18th to the 19th century.

Elsewhere others have used similar (Gaffney et al. 2000) geophysical methods to define settlement areas and industrial zones. In the Gaffney et al. study the Roman city of Wroxeter, England was mapped and they were able to learn where people of different status lived and where they worked, providing the opportunity to compare Wroxeter with similar towns. Ken Kvamme shows through a series of case studies in North America how combined archaeological and geophysical surveys can provide information on site organization and spatial patterns including the creation of accurate plan maps showing locations of structures, streets, and open spaces. This information can be used to examine the interrelationships between those site components (Kvamme 2003: 438). Conyers (2013) examined the sites of Petra, Jordan, Las Capas in Arizona, and at Comb Wash, Utah. At these sites, Conyers showed different patterns of site planning and social structure over time through the analysis of GPR and limited excavations. Christophe Benech (2007) showed how the interpretation of geophysical maps can be done through the study of space. In his study of a Roman city, he used magnetometry to locate and interpret spaces within the city of Dura-Europos as ceremonial, judicial or residential areas. While using similar methods, in a very different context, I showed different patterns of land use in town and changes in social structure through the analysis of magnetometer and GPR survey maps, and artifacts recovered from archaeological excavations. By applying archaeological and geophysical methods to the town of Port
Tobacco, I assessed and tested ideas about the town’s organization and layout from its early 18th century beginnings to its abandonment at the end of the 19th Century. Some of those questions I asked, which were formulated into hypotheses that could be tested with the data I gathered are: Can the organization of the town be seen in changes in the material culture, architecture and layout of town? Changes in types of architecture, for example, will show that certain areas in town were being used for either residential or commercial purposes. Sedimentation of the river has been documented historically. Did this sedimentation also occur within the town, and did that impact the town layout? Heavy sedimentation would have caused certain areas in town to be unsuitable for erecting buildings or roads. What can the changes in the layout say about the changes in the social and political dynamics within the town from the early 18th century to the end of the 19th century? For example, the presence of “monumental” architecture around a town square may suggest a change in layout due to economic revival. Were changes in the grid pattern a reflection of changes in the social structure in town? For instance, imposing an organized pattern of building structures around a town square would be a symbolic show of the local elite’s wealth and ability to maintain authority. By building structures in the town square, we would see a loss of social power in the local elite. Does the layout follow the patterns of other 18th century towns? If the layout of Port Tobacco is similar to those of other towns than it would tell us that the planning of small towns in the Chesapeake was more sophisticated than previously thought. From the study of these changes in pattern, both physical and social, we can learn more about the role of people in the development of Chesapeake towns. We can see that wealth was used in the 18th
century to create and control towns and that this created a social hierarchy with those owning land used for the production of wealth at the top. The wealth and power of the local elites diminished with the decline of the tobacco trade in the 19th Century.

To answer questions about changes in town layout and social structure I had to first identify areas of occupation, buildings, and open spaces. I did this through a multi-method approach incorporating digital mapping techniques along with conventional archaeological methods. In 2007 I joined Dr. James Gibb of Gibb Archaeological Consulting and Dr. April Beisaw of Vassar College as a member of The Port Tobacco Archaeological Project (PTAP). PTAP was formed with the goal of collecting information on the internal structure of Port Tobacco. A secondary goal was to investigate the nature of the deposits and test their integrity (Gibb and Beisaw 2008). Starting in the summer of 2007 and again in 2008, we conducted a large-scale shovel test survey over the town core and immediate surrounding fields (Figure 1.3). The potential for collecting information about the nature of the town structure was clearly evident when large amounts of structural, household, and personal artifacts ranging in date from the early 18th Century through to the early 20th Century were recovered all over the site during these surveys. In the spring of 2008, we completed a controlled surface collection of three plowed fields south of the town between the town core and Warehouse Point a mile downriver. This survey revealed five additional historic sites related to the town.
The close interval shovel test survey revealed deep cultural deposits and the locations of as many as 20 different building sites within town (Gibb and Beisaw 2007). As one of the goals of the project was to determine the internal structure of the town, further excavation of these sites was necessary in order to identify and date the deposits. The distribution of Colonial and antebellum ceramics along with brick, handwrought nails, and machine-cut nails suggest a long and continuous occupation from the 18th through the late 19th centuries. Over the next three years, larger excavations took place at several of the sites revealing six 18th and 19th century buildings.

In the summer of 2011, I conducted a limited geophysical survey of different areas around the town core. The geophysical surveys used magnetometer and ground-penetrating radar (GPR) data to test for the presence of subsurface features that did not
appear in shovel testing or were buried deeper than the extent of the shovel testing survey. These included houses and their outbuildings, possible roads, and ditches. These data were converted into maps that showed the presence of subsurface architecture and environmental changes. Several subsurface foundations were identified through the use of these techniques. Identifying subsurface foundations helped in mapping the layout of the town and to examine how spaces in town were used. Using that data I integrated it with the excavation data that was recovered through the Port Tobacco Archaeological Project including architectural debris, and domestic and household artifacts. Mapping the locations of datable domestic and household artifacts such as ceramics and pipe stems will help define when areas in the town were occupied, which in turn will help show the change in town layout over time. With these data sets I was able to test ideas about town planning and social organization related to the use of space and power. Structures built directly in front of the courthouse and in the town square is evidence of modification of the grid plan. Open space in front of the courthouse would have been a symbolic show of power under the ideals of English town planning. This is related to power because it was the wealthy merchants and landowners who created the town, owned land in town, and therefore controlled the layout of town.

As a result of the analysis that will be presented here, I concluded that the people of Port Tobacco changed the layout and organization of the town for both reasons of function and power. I found that the organization of structures, open spaces, and layout changed in town as the economy declined forcing wealthy landowners to sell their land. This change in wealth and power in town is seen through changes in placement of
buildings and roads, and artifacts in certain areas of town. This occurred first after the 1729 legislation creating the town and again in the 19th century due to economic, environmental and political changes associated with the tobacco trade. In a general way I found that it was easier to control trade by centrally organizing places of business and government during the mid-18th century, which is consistent with towns throughout the Chesapeake region. This allowed for the control of tobacco prices and enforcement of taxation, which kept the local elites wealthy and able to use their wealth to control design as a show of power. In terms of power and control, local elites could maintain their authority over the land through design by planning, building, and organizing buildings around the Church and Courthouse in the central town square, which was important in this time because it moved economic and political control of the tobacco trade to a central location.

The research done for this thesis showed how the town layout of Port Tobacco changed between the 18th and 19th centuries and that this was brought about due to a change in the social organization of the town. Specifically, control over design was dominated by the wealthy elite in town and when they lost their wealth, the design of the layout was no longer as important. By employing a methodology of both geophysical techniques and archaeological excavations, I was able to locate and map numerous structures and features associated with town planning and examine how these spaces were used. In one way, this research supports conclusions made by other scholars of Chesapeake town planning of the 18th century. Both John Reps (1972) and Joseph Thomas (1994) developed the ideas of how towns were planned on paper but that they
were created differently on the ground, which is the case with Port Tobacco. However, the research I have done also shows how and why this happened, which has not been as fully investigated by other scholars. The layout of Port Tobacco shifted from a linear settlement along the River to a grid-like pattern after its creation in 1729. This pattern was maintained by the wealthy local elites in town until the early 19th Century when the tobacco trade was in decline. When this decline happened, a change in the social hierarchy occurred as the local elites were no longer in control of land in town, which was what they used to show their wealth and power. This allowed new landowners and residents to abandon the layout designed by the creation of the town, creating a new one where the monumental structures were closely surrounded by new structures. By studying towns on an individual basis rather than as a regional basis, anthropologists can better understand social organization in the Colonial Chesapeake through town planning.
Chapter Two: Environment and History

Location and Environment

The town of Port Tobacco lies in Charles County, Maryland. Charles County is one of three counties, St. Mary’s and Calvert being the others, that make up the Southern Maryland region on the west side of the Chesapeake Bay. This region is part of the larger Chesapeake Bay Tidewater Region (Figure 2.1). The Chesapeake Bay formed 10,000 years ago when rising sea levels flooded the Susquehanna and Potomac River valleys, creating the largest estuary in the United States. The Chesapeake Bay region encompasses over 60,000 square miles through six states and is approximately 200 miles long, 3 miles at its narrowest point and 30 miles at it’s widest.
The Chesapeake Bay and associated rivers reached their current limits around 3,000 years ago. More than 150 rivers and streams run into the Chesapeake Bay and it has over 11,000 miles of shoreline. Port Tobacco is roughly 20 ft above sea level within the floodplain of the Port Tobacco River and is bounded by a swamp on the west and a ridge rising to the east. The town today covers 60 acres of mostly agricultural fields and forest save around the town core and a few homes with manicured lawns. The Port Tobacco River is a tributary of the Potomac River, which flows into the Chesapeake Bay (Figure 2.2). The Potomac River at over 400 miles long and is one of the larger of the
rivers that flow into the bay. The Port Tobacco River is roughly four miles long and less than half a mile wide at its widest point.

Southern Maryland has a humid subtropical climate with average temperatures in the summer around 77 degrees Fahrenheit and annual rainfall of 43 inches a year (http://msa.maryland.gov). Soils in the area are classified by the Soil Conservation Service as gravelly loamy sand and sandy loams (Hall and Matthews 1974). The Chesapeake region is also home to a diverse wildlife full of fish, game animals and birds. With so many wide and navigable rivers, abundant wildlife, moderate climate, and agriculturally suitable soils, the Chesapeake tidewater region has been an ideal location for human settlement for millennia (Roundtree et al. 2008).

Figure 0.2. Aerial map showing location of the town Port Tobacco and the confluence of the Port Tobacco River, Potomac River, and the Chesapeake Bay. Modified from Google Earth.
Native Americans had been settling and living in the region before Europeans arrived, attracted by the rich resources of fish and game provided by a coastal environment (Curry 1999, Stephenson et al 1963, Gibb and Beisaw 2008). It is no wonder that Europeans decided to settle in the same types of environments as prehistoric peoples. John Smith published observations from his 1608 exploration of the New World praising the Chesapeake Bay and the surrounding area,

“There is but one entrance by Sea in this County, and that is at the mouth of a very goodly Bay...large and pleasant navigable Rivers. Heaven and earth never agreed better to frame a place for man's habitation, were it fully manured and inhabited by industrious people” (Smith 1907).

Knowledge of the location and environment of Port Tobacco are important to understanding town planning in the Chesapeake region. Sites near or on navigable water and soils conducive to agriculture were necessities for successful settlement and the creation and growth of towns. Agriculture, particularly tobacco, was the main cash crop for settlers and they needed deep waterways to bring in ocean going vessels to transport their goods throughout the Chesapeake region and back to the Old World. While the environment is suitable for settlement, the area is also vulnerable to large storms including tropical storms and hurricanes, which promote erosion and sedimentation.

The River and Sedimentation

The Port Tobacco River played an integral part in the development of the town (Gottschalk 1945, Shomette 2000, Lee 1994, Gibb and Beisaw 2008). It was the main
transportation route for goods and people, including tobacco, domestic goods, travelers and slaves. Several damaging storms visited the area in the 20th century, with one decimating a nearby elementary school. Another in the first decade of the 21st century obliterated a significant portion of the county seat in La Plata. Storms and hurricanes in the 18th and 19th centuries likely happened, but no written records exist describing where and when they hit. So in order to understand the affects of these storms on the region and on towns such as Port Tobacco, the information must come from more recent records of these events. The path of a 1933 hurricane came directly to the east of town, causing major erosion and sedimentation (Gibb and Beisaw 2009). Pictures from hurricane Irene taken by the principal investigator of PTAP in 2011 reveal the extent of erosion and sedimentation in Port Tobacco (Figure 2.3).

![Figure 0.3. Erosion and sedimentation in the area east of the courthouse in Port Tobacco from Hurricane Irene in 2011.](image)
Examples from more recent storms combined with our research data at Port Tobacco can play an important role in understanding the affects of the interplay of natural forces and human modifications to the land – manifested through erosion and sedimentation – on the town. Large storms were not the only cause of sedimentation in Port Tobacco.

Storms strong enough to cause major damage are short lived and rare, and by themselves cannot cause major and widespread sedimentation issues like we see in Port Tobacco. A secondary and recurring source of this sedimentation comes from centuries of agricultural activity. Charles County has long been a major agricultural area, growing mainly tobacco but also smaller amounts of corn, cotton, and wheat. The production of tobacco was not only the main source of income for settlers in the 18th century; tobacco leaf was the medium of exchange (Carr and Walsh 1991). Goods, services, and land were paid for with tobacco. The county commissioners purchased the land for Port Tobacco for 15,000 pounds of tobacco (MSA 1727). Therefore, it was an extremely important part of life in towns. However, the production of tobacco also has adverse affects on the environment. Growing tobacco is an intensive agricultural production that causes severe erosion and rapidly depletes soil nutrients (Middleton 1984, Carr and Walsh 1991). Settlers planted thousands of acres at a time while leaving thousands more fallow to recuperate from depletion. This required the clearing of forest and undergrowth that in turn caused runoff and erosion during rain storms (Middleton 1984, Carr and Walsh 1991). Port Tobacco was no stranger to this type of heavy agriculture. The fields directly in and around town were cultivated up until the 1980s (Sherwood 1994). The
uplands directly to the east were forested in prehistoric times but have been cultivated for almost four hundred years (Gibb 2006). This cultivation led to erosion of upland soils down deep cut ravines (Figure 2.4). Redeposited sediments blanketed the town and fouled the Port Tobacco River. Sedimentation is important for my study for two reasons. First, sedimentation of the river was one of the causes for the decline in the importance of Port Tobacco as a commercial center as the river was the major transportation route for goods moving in and out of town. Second, sedimentation in town caused areas to be abandoned and/or repurposed due to their instability, which changed the layout of the town. Both of these are evidence of a change in social structure in town since it was the local elites who dominated the wealth created from commerce and who controlled the land use in town.
Initially navigable up to the area behind the courthouse, the river began filling with sediment as early as the 1770s. Traveler Robert Honeyman described the Port Tobacco River, “as only carries small craft now” (Honeyman 1775; cited in Klapthor, 1958: 55). This is important because the ability to bring ocean-going vessels up to the town to load and unload their goods was important in maintaining control over trade. In 1862 the U.S. Army surveyed and mapped the Potomac and Port Tobacco rivers from their confluence up to Warehouse Point, which is one mile south of the town (Figure 2.5).
Figure 0.5. 1862 US Army map of the Port Tobacco River. The river was only deep enough to measure at one mile south of the town. The courthouse and town is cutoff from the river.

This was the limit of the navigable water in the Port Tobacco River at this time, leaving the town inaccessible by boat. By 1894, the River had lost an additional 3ft in depth and 1500 ft in length from Warehouse Point (Hayward 2009) and only “…flat-boat navigation…” was possible (Townsend 1895 cited in Shomette 2000). These traveler’s accounts and maps document the important role the river played in the life of the town.

However, traveler’s accounts as historical documents must be used with caution as they are usually filled with the personal biases and cultural values of the author and not always impartial (Lightfoot 2005). The accounts describing Port Tobacco and the river were written by English travelers in an English colony on the verge of revolution.
However, they are useful when developing archaeological questions. Questions such as:

- How much of the town was covered in sedimentation?
- Can we date these periods of sedimentation?
- What affect did sedimentation have on town layout?

Data gathered from my geophysical survey and archaeological excavations were used as part of this work to look for areas of sedimentation around town to see how expansive they were, confirm the historical accounts, and to examine changes in layout due to sedimentation.

Archaeological excavations can corroborate historical accounts and offer evidence of possible earlier sedimentation events. Artifacts that date to prior to the historical accounts of sedimentation problems that are recovered underneath those layers of sediment offer a terminus post quem, or date after which, for the events. The shovel test survey of 2007 found areas of heavy sedimentation on the west side of town behind the courthouse, in the field directly south of the town core, and around an extant historic house at the south edge of town. A more extensive excavation around the house at the south end of town showed sedimentation of 2.5 ft covering early to mid-18th-century cultural deposits. Those deposits predate the accounts written in the 1770s by as much as 50 years (Gibb 2010), which suggests that the town might have been feeling the effects of sedimentation at the time of its founding in 1727. The ground-penetrating radar survey that I conducted in 2011 found deeply buried cultural strata beneath layers of silt and fill in three of the survey areas, more evidence that the sedimentation was widespread.

While sedimentation and erosion has long been a problem in Port Tobacco, there is no evidence of erosion control or attempts at opening up the river for larger vessels. Instead, the warehouse landing was continuously moved over the years farther and farther
down the river (Defries 1986, Shomette 2000, Gibb and Beisaw 2009). In the 1870s a canal was constructed in the marsh behind the courthouse. This does not appear to be an attempt to again allow for vessels to come up to the town but one to better improve the health of the town or, perhaps, to drain land for development (Maryland Directory 1878, cited on www.newrivernotes.com, accessed 10/13/2007). However, with the river filling with sediment for over a century, the canal would have been too late to re-establish the town as a viable port.

Sedimentation of the river and in the town is important information for establishing one reason for the collapse of the economy, and therefore creating a change in the social hierarchy. The town was a principal port for the import and export of goods and people in the county and fouling the river with sediment greatly reduced the amount of commerce coming into the town (Kihl 1982, Shomette 2000, Gibb and Beisaw 2009). It also demonstrates why part of the town layout was changing. The continuous moving of the warehouse landing down river made the land in town less valuable because the town was no longer the central location for the import and export of goods and people. The sites closest to the river on the west side of town where landings and warehouses would have been located were abandoned or repurposed. Location and environment are important to understanding social hierarchy through town planning. Access to good waterways and soils suitable to agriculture were necessary components to creating towns in the Chesapeake. Control of the land where towns were built was in the hands of the wealthy local elites as well as political merchants. Just as important to this study is the cultural history of the people who created towns and in the history of the area.
Historical Background

The history of Port Tobacco covers over 3000 years of prehistoric and historic occupation. Native Americans inhabited the Chesapeake region, Maryland, and Port Tobacco for millennia before European settlers arrived in the area. Colonists named the town for the river, which, in turn, they named for the Potobac (or Potobaco) Indians. John Smith mapped the Indian village of Potobac during his famous 1607 expedition of the Chesapeake. Europeans routinely settled areas previously inhabited by Native Americans (Potter and Waselkov 1990; Roundtree et al. 2008), and Port Tobacco is no exception. The prehistory and history of Port Tobacco can be organized by time periods. Native American periods include the Early Archaic (7500 BC – 6000 BC), Middle Archaic (6000 BC – 4000 BC), Late Archaic (4000 BC – 1000 BC), Early Woodland (1000 BC – AD 200), Middle Woodland (AD 200 – AD 900), and Late Woodland (AD 800 – AD 1650) (Stephenson and Ferguson 1963). The historic periods include Colonial (AD 1634 - 1789), Post-Colonial (AD 1789 – 1900), and 20th century. The Contact Period (ca. AD 1607 – 1740) bridges the Native American and European eras. This period is defined as a time of overlap and co-occupation of both Native Americans and European settlers. Although this period overlaps with the Colonial Period, for the purpose of this thesis I subsume Contact within Colonial. The time periods are important when discussing changes in social structure in Port Tobacco because of the different economic, environmental, and political factors that were taking place. Those factors include the rapid resurgence of the tobacco trade in the early to mid 18th century, the Revolutionary War at the end of the 18th century, and the subsequent economic decline
and resurgence after the war. These factors among others impacted the town. For example, when the tobacco trade was good, more businesses flourished and more goods were exchanged through the town. This kept the political as well as economic power over the town in the hands of the merchants.

Permanent English settlement in the New World started in Virginia in 1607 with the establishment of Jamestown. Although this town did not have a long history, it was the start of a process to bring English society to the New World. Twenty seven years later, the English colony of Maryland was started armed with knowledge gained from the difficulties and successes of Jamestown. By the end of the 17th century, the proprietor and later the General Assembly were establishing permanency to their colony through the tobacco trade and the creation of towns. Towns grew slowly in the first half of the 18th century, but by mid-century, towns became the lifeblood of the colony by controlling the import and export of goods and people in the colony. To understand the power involved in town planning and the effects of that planning on social organization, it is important to examine the Chesapeake environment, prehistoric occupation, history of the colony, the process of town planning, and the role of the people who were involved at a local level.

Prehistory

The prehistory of the region goes back further than the first European settlements and therefore requires archaeology to tell its story. The Chesapeake Bay area attracted Native Americans because of its rich resources (Roundtree et al. 2008). The earliest known Native Americans in the Chesapeake region are the Paleo-Indian dating to
between 13,000 and 7500 BC (Ebright 1992, Gibb 2004). Evidence of this early occupation in the region, however, is rare. Several projectile points dating to both the Early and Middle Archaic have been found in Port Tobacco. Only recently have investigators recognized single component Middle Archaic sites nearby (Gibb 2009; Walter, Quantock and Hayward 2009) but not those of the Early Archaic. Little is known about these hunter-gatherers other than they were using an increasingly diverse set of tools and they were moving from the coastal regions to the piedmont (Geier 1990, Kavanagh 1982, Walter, Quantock and Hayward 2009). The Late Archaic period saw an increase in settlements along the Bay and its tributaries. Sea-levels and coastal environments were stabilizing and aquatic resources more abundant (Gibb 2008). These rivers and creeks also served as transportation routes. Archaeologists have found evidence of settlement camps, resource collecting sites, and base camps dating to the Late Archaic around the Port Tobacco area (Roundtree 1989, Potter 1993; Gibb and Beisaw 2008).

People in the Early Woodland were making use of food storage, grinding tools, and seasonal camps. Archaeologists have documented numerous sites in Charles County near Port Tobacco and around the Bay, evidence of a population growth at this time (Potter 1993, Wasner 1982). More permanent sites along major waterways with associated resource-collecting sites dominated the Middle Woodland period. Horticulture began in the Late Woodland period with sites occupying similar environments to those of the previous two periods (Custer 1989, Wright 1973). Base camps became more permanent villages with more land for growing crops and protecting food stores (Potter
The Potobac Indians were one of these groups who started to settle in more permanent villages along the river near what would become the town of Port Tobacco. The exact location of their village is still unknown, but archaeologists have found evidence of Contact Period Native artifacts within the town-site and the fields south of town (Gibb and Beisaw 2008, Gibb and Beisaw 2009) and in ossuaries along the river (Curry and Kavanaugh 1993; Curry 1999). The Contact Period was a time of great and tumultuous culture change in the region with the influx of English colonists that ultimately led to the collapse of Native American populations and cultures. The Potobac Indians are briefly mentioned in several historical documents and on historical maps (Roundtree et al. 2008); however, most of what we know about the interaction of Native Americans and European settlers comes from archaeology (King 2008). The archaeological evidence of contact between Europeans and Native Americans usually includes items such as glass trade beads (Figure 2.6).

Triangular projectile points are usually smaller than those found in Late Woodland contexts and they are often serrated. These types of artifacts were recovered
in several of the ossuaries excavated by Graham in the 1930s. During our field sessions in town in 2008 and 2009, we found trade beads and projectile points consistent with the Contact Period mixed among other artifacts in the plow-zone excavations (Gibb and Beisaw 2008, Gibb and Beisaw 2009).

Beginnings of a Colony

Maryland was founded as an English proprietary colony by Cecil Calvert, the second Lord Baltimore, in 1634 (Carr 1974). Tracts of land (from a few acres to several thousand acres) in the new colony were granted for settlement by Lord Baltimore (Gibb 1996) to both individuals and corporations such as the Jesuits. Lord Baltimore appointed his brother Leonard as Governor of the new colony and sent him to start the first settlement. Instructions on this first settlement of the colony were comprehensive with the selection of a place for a plantation and a fort as the top priority along with the selection of land for erecting a town (Shomette 2000). This first town and first capital of the colony was established on the St. Mary’s River in southern Maryland. St. Mary’s City included sites for a fort, chapel and Governor’s house. A plat of the settlement was also to be sent back to the Lord Baltimore. The plat was either not completed or has been lost, and few written descriptions of this first Maryland town survive. This was just the beginning of town development in the colony.

Since the beginning of Maryland as a colony, the lords Baltimore hoped to erect towns throughout the colony to encourage and promote economic growth. More importantly, these central locales would ensure the collection of duties, fines, and other
revenues due to the Proprietors (Gibb 2009, Shomette 2000). However, it wasn’t until the 1660s that the colony embarked on a program of founding and erecting towns throughout the colony. This was the beginning of a long and complicated history of town development in the Chesapeake region (Carr 1974). Archaeologists and historians argue that complications arose due to the lack of large enough populations to sustain towns in the late 17th and very early 18th centuries (Shomette 2000, Lucas 2008, Carr and Walsh 1991, Earle 1975). Up until then, individual plantations and small hamlets had been dotting the landscape since the inception of the colony. These plantations and hamlets were scattered throughout the region, adjacent to or very near deep navigable waters. This selection of appropriate sites to settle towns along waterways continued into the 18th century. It is important to know how towns were created and how they developed individually, and as part of the overall regional pattern because it is in the design and layout of these towns that we see colonist’s ideas of social structure, economic theory, and politics. Town plans manifest these ideas on the ground.

*Colonial Town Planning*

Town planning in Colonial America has its roots in Old World urban concepts (Miller 1988). These concepts are important to understand the formation of towns in Colonial Maryland. The earliest European towns in the New World date to the 1400s in Spanish America. By the mid-16th century these towns took on a uniform design with grid plans consisting of an open space for the Church, governmental center, and market, and major roads leading to these public institutions (Reps 1965, Miller 1988). These
plans were so regular and consistently followed that it became law in 1573 for Spanish colonial towns to follow this design. English town plans were not so strictly legislated, but generally took one of two different shapes; either a grid arrangement or an irregular plan during the 17th century (Reps 1965, Hurry 1988). The early capital cities of St. Mary’s City, and later Annapolis, in Maryland and Williamsburg in Virginia incorporate Baroque designs but it wasn’t until after the first quarter of the 18th century that most towns in the Chesapeake started to take on more grid-like and regular patterns (Reps 1972, Thomas 1994, Shomette 2000).

Between 1668 and 1751, over 130 authorized ports of entry, tobacco inspection stations, and towns were created by legislation in the colony of Maryland (Shomette 2000). Early 17th-century settlers took up land along navigable waterways for the ease of transport of their goods back and forth to England (Shomette 2000). With the first town acts in the mid 17th century, authorized towns were created to facilitate the tobacco trade and planters were required to import and export all goods via these towns. Now, town is a loosely used word to describe what these Colonial Period places looked like and how they functioned. Historians and archaeologists debate what actually constituted a town. A town could be a clustered settlement, but not all clustered settlements are considered towns (Carr 1974). Towns were presumed to have commercial centers where goods could be loaded and unloaded from ships and then bought and sold (Carr 1974, Shomette 2000). They may also have included warehouses. But just like a commercial center, a warehouse does not indicate a town (Carr 1974). The locales of these newly created towns were on land bought from settlers who already had constructed a dwelling and
outbuildings. These settlements did not have designed plans: rather, they were created organically. Only two plats from 17th century Maryland survive, Calverton (also known as Battle Town) in Calvert County, and Moore’s Lodge in Charles County. The Calverton plat is an example of the linear form the earliest towns took (Figure 2.7).

![Figure 0.7. 17th century town of Calverton, MD showing a linear layout along the river.](image)

The establishment of towns in the Chesapeake reflected English ideas of function and power. The development of towns was a priority for the English settling Maryland, showing their desire to establish permanent settlement in the colony. The creation of towns in the early Colonial period of Maryland served two main functional purposes, to hold court for settlers and to promote trade. Towns were also a symbolic way for colonists to bring English society to the New World (Horning 2000, Reps 1972, Thomas
The English were used to a system of living in towns as a representation of their ideals of order and civility. One way settlers showed this type of ideal is through the planning and erecting of towns with orderly designs such as the orthogonal grid with a Church, courthouse and market square as focal points (Horning 2000).

The town acts essentially tried to “create” a planned town such as would be seen in England, with gridded streets and numbered lots (usually 100 equally sized lots) including larger lots for the courthouse, the Church, and market square (Reps 1972, Thomas 1994, Shomette 2000). Lots were to be sold and built upon within 18 months in order to create orderly, dense settlements while increasing the value of very small lots of land. Specific instructions on how these towns were to be erected were part of the Acts as was the drawing of plat maps that were to be recorded in the courts (Hall 1910, Shomette 2000). These plats did not always get drawn or have been lost. Several plats from the early 18th century Maryland have survived and show that this grid pattern was followed (Miller 1988) (Figure 2.8). Examples survive for St. Leonard, Upper Marlborough, Doncaster, and Oxford; however, these are just a few from the hundreds of towns created during the colony’s town planning program. The continued passing of legislation for over one hundred years to erect new towns proves that the previous legislation was not wholly successful.
Figure 0.8. 1707 plat map of Doncaster (Wye Town) Maryland. This is a typical grid pattern seen in the plats of early 18th century Maryland. Source: Thomas 1994.

Town Acts – 1668, 1684, 1706, 1729

Individual plantations and small hamlets dotted the landscape since Maryland’s inception as a colony in 1634. Acts of the General Assembly creating towns started shortly thereafter and were numerous during the 17th and 18th centuries (Reps 1972, Thomas 1994, Shomette 2000). For the purpose of this thesis, I am focus on four acts that concern the beginning of town planning of Maryland and the creation of Port Tobacco. In 1668, the General Assembly passed an act to establish ports in Maryland with the "Ordinances Edict and Declaracon" (Reps 1972, Shomette 2000). It offered little direction on how to erect these ports; rather it simply stated that they should be placed in areas with the ability to expediently load and unload goods (Shomette 2000). Although
unsuccessful, historians consider it to be the beginning of a program of town planning in Maryland (Shomette 2000). In 1683 the assembly passed "An Act for Advancement of Trade" to establish ports and towns. This act stated that the town should be,

“…marcked staked out and devided into Convenient streets, Laines & allies, with Open Space places to be left on which may be Erected Church or Chappell, & Marckett house, or other public buildings, & the remaining part of the said One hundred acres of Land as neare as may be into One hundred equall Lotts…” (Reps 1972, Shomette 2000).

This is important both for what it does say and what it does not say. While the act does not explicitly mention a “grid”, it is assumed as such by the mentioning of “convenient streets, open space and equall lotts”. This suggests that towns were to be laid out in such a way. No example of this type of layout from the 17th century in the Chesapeake exists either in the historical or archaeological record. The General assembly passed another act "for the advancement of trade and erecting ports and towns in the Province of Maryland" in 1706, creating some new towns and reestablishing others (Reps 1972, Shomette 2000). As with the first town act of 1668, this act gave no new instructions on how these towns should be planned and laid out. It simply tried to make happen what the previous two acts failed to do, create towns.

Reauthorization of the 1683 and 1706 acts passed in 1727 after those plans failed to achieve their purpose (Reps 1972, Shomette 2000). This act was more specific in how a town was to be laid out. Port Tobacco was one of the towns legislated by all four of these acts (Table 1.1). The act of 1727 essentially created the town by selecting the site as the new location of the county courthouse and prison "at a place on the east side of the head of Portobacco Creek in Chandler Town" (Shomette 2000). Two years later in 1729,
the County laid out the new town of 60 acres in addition to the three-acre courthouse lot. The 60 acres was divided into 100 equal lots for sale and a one acre lot for the marketplace. This was the most specific of the towns acts. While still not very specific, the details are telling. Using a simple grid pattern would be the easiest and most logical way to divide the land into the maximum number of vendible lots. The town, however, already had a church and several buildings from a former survey of what was called Chandler’s Town. The new town was surveyed in 1729 and lots were arranged along a grid of streets, lanes and alleys. The new layout incorporated a number of already improved lots from the earlier Chandler Town. The layout was not a new concept, rather one that follows the earlier 1684 legislation of a grid pattern.

**Table 1.1 Enactments creating Port Tobacco with descriptions noting the location for the new town.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1668</td>
<td>&quot;att Portobacco&quot;</td>
<td>Chandlerstown</td>
<td>At the head of the Port Tobacco River</td>
</tr>
<tr>
<td>1684</td>
<td>&quot;Att the head of Portabacco Creeke neare the Church There&quot;</td>
<td>Chandlerstown</td>
<td>At the head of the Port Tobacco River</td>
</tr>
<tr>
<td>1706</td>
<td>&quot;at Port Tobacco…where Towns were formerly laid out&quot;</td>
<td>Port Tobacco</td>
<td>At the head of the Port Tobacco River</td>
</tr>
<tr>
<td>1729</td>
<td>&quot;at the Head of Port-Tobacco Creek&quot;</td>
<td>Port Tobacco</td>
<td>At the head of the Port Tobacco River</td>
</tr>
</tbody>
</table>
The study of historic settlement patterning by archaeologists in the Chesapeake region has long concerned itself with examining the locations of early Colonial towns (Pogue 1984, Smolek 1984). Pogue (1984) and Smolek (1984) suggest that towns were set up as commercial centers and ports of entry based on location near deep navigable waterways. Lukezic (1990) demonstrates that soils suitable for agriculture (specifically tobacco and wheat) were a primary factor in settlement patterning in the Chesapeake Tidewater region. These settlements were all on navigable, deep waters in protected inlets where vessels carrying tobacco and other goods could anchor safely. These were the logical locales for settlers coming to the colony looking to set up tobacco plantations and reap the riches of the trade. John Reps (1972) and later Joseph Thomas (1994) have paved the way for research on town planning in the Chesapeake region. They concluded that while towns were legislated and laid out in gridded patterns, few materialized that way on the ground. Some towns failed because of a lack of interest in buying lots in the town and so plans were abandoned (Reps 1972, Thomas 1994). Others were planned as courthouse towns; when the court was moved to a new location the purpose of the town was gone and the towns did not serve any other function and they died (Reps 1972, Thomas 1994). While this research was done to address where people were living on a broad scale (the Chesapeake Tidewater region), less research has taken place to study how these small towns were settled and developed compared to their legislative design. Those studies that do, limit themselves to single time periods. Thomas’ study of Oxford on the lower eastern shore of Maryland is one example. He used a combination of lot
histories and a plat map of the town to detail its development over 40 years at the end of the 17\textsuperscript{th} century (Thomas 1994).

Legislative acts creating towns had little detail and, some scholars think, little sophistication (Reps 1972, Lucas 2008), with Colonial capitals such as Williamsburg, St. Mary’s City, and Annapolis being the exceptions (Lucas 2008). Thomas (1994) discussed the Chesapeake “town models” as simple grid-like designs with equal sized lots, a place for the courthouse (if it was the county’s seat of government), church and usually a marketplace. He used examples from the late 17\textsuperscript{th} and the early 18\textsuperscript{th} centuries on the eastern shore of Maryland such as Doncaster, Maryland. The plan from Doncaster, however, is not a typical design; in fact there was no typical design. The only thing these early towns had in common were they had equal sized lots, alleys and streets, and a marketplace. While Thomas’ work covers a period slightly earlier than the founding of Port Tobacco, it is a good basis for a comparison on the planning and development of towns in Colonial Maryland because early Port Tobacco went through this same type of development.

\textit{Town Historical Background}

first part of Job Chandler’s plantation called Chandler’s Hope, a large tract of land patented in 1639. Prior to the patent of this land grant, the area had been home to the Potobac Indians. By the time Job settled the land, however, the Indians had abandoned the site. A portion of this land was divided in the early 1720s into a series of lots for sale to merchants, prospective tavern keepers, and trades people and became known as Chandler’s Town.

Chandler’s Town never grew to anything more than a small hamlet before it became part of Port Tobacco in 1727. However, it was a town and when Job Chandler divided and sold his land around 1722, he did so in lots. This was common practice: lots were numbered serially. Land records show that lots in Chandler’s Town were divided, numbered, and sold. Many remained unsold. When Port Tobacco was laid out in 1727 and surveyed for 100 lots, it included lots already part of Chandler’s Town. It is unclear if the lot numbers from Chandler’s Town carried over to Port Tobacco or if a new numbering system subsumed the old. Some deeds of the era reference lots in Chandler’s Town, Charles Town, and Port Tobacco. The lot system is important in trying to establish ownership of land in town and thus the layout of the town. Lots were described by number in deeds along with metes and bounds descriptions. Unfortunately, without a plat map or starting point for placing lots on the ground, reestablishing how it was originally platted is extremely difficult. Lots were divided and/or joined over and over. Eventually the lot numbers disappeared altogether. A few lot numbers in town can be placed on the ground but we do not know how the numbering system worked and can only guess as to what lot numbers were assigned to neighboring lots.
Using the lot system alone to define Chandler’s Town (ca. 1720) and early Port Tobacco (post-1727) is nearly impossible. Only a few of the lots today can be traced back to those early days. Like many towns, lots were divided and combined with few continuous title chains dating back to the early 1700s. The Port Tobacco Archaeological Project compiled a large database of lot numbers, owners, and descriptions of the lots in town over a period of five years in an attempt to reestablish the layout of early Port Tobacco. Placing the lots on the ground is made more difficult since so many of them have changed size since the initial lot number designations. Exact locations of lots in town are not important to my study but the changes in lot ownership are relevant. The changes in lot ownership shown in the land records of Maryland and again in Cowherd’s (2011) paper support my hypothesis that layout changed from linear to orthogonal grid because so many of the lots were never improved and, therefore, the purchased forfeited possession and the lot offered for resale. This was a requirement of taking up lots in the early towns: they had to be built upon within 18 months or the land would revert to the original landowner. Those landowners who could afford to buy and improved land were the local elites… mainly merchants…who controlled wealth within the town.

18\textsuperscript{th} Century

Eventually, the first settlement would be named Port Tobacco after having been called first chandler’s Town, then Charles Town. Maryland’s General Assembly renamed it Charles Town after the county purchased Chandler’s land for the new county seat in 1727, although Marylanders commonly called it Port Tobacco, naming it for the
creek, which in turn was named for the Potobac Indians (Lee 1994, Shomette 2000). This new county seat encompassed lots from Chandler’s Town in addition to new ones. The land was purchased as a new location for the county courthouse and jail. They wanted a more convenient location than the previous one several miles away at Moore’s Lodge (King 2008). Moore’s Lodge was a small settlement that served as the county seat from 1674 to 1727. It followed the similar linear pattern of other 17th century towns with no clear plan to its layout (Figure 2.9). The new location of Port Tobacco was already an official port of the colony, making it an obvious choice as the new judicial center.

Figure 0.9. 1697 plat of Moore’s Lodge, the first county seat of Charles County, noting the location of the courthouse and several buildings. Source: King et al. 2008.
The new courthouse opened in 1729 and the first session was held in 1731 (Shomette 2000). Although it was small, it quickly became the most important town in the county as it held not only the county seat but was the busiest port in the region. Life in the town centered on commerce related to the tobacco trade and the regular sessions of the court (Shomette 2000). Tobacco was the principal cash crop in southern Maryland, even serving as payment for services and purchases for most of the Colonial Period (Carr and Walsh 1991, Lee 1994, Shomette 2000). This agricultural and economic cycle of tobacco was the biggest factor in determining daily life (Carr and Walsh 1991, Lee 1994).

By the middle of the 18th century, Port Tobacco had grown in population, size, and wealth. With this growth came improved communications with a new postal route from the capital in Annapolis, roughly 60 miles away. The second half of the 18th century saw a rise in the tobacco trade and therefore the growth of towns along with it (Kulikoff 1979). This was also a time of great political upheaval in the colony with the threat of war with England on the horizon. Port Tobacco was a hot bed of political activity before the Revolutionary War (Lee 1994). With the onset of war, voting for representatives to the Continental Congress took place in a meeting at the Port Tobacco courthouse. Prominent men in the history of the United States took part in the meeting. Men like Daniel of St. Thomas Jenifer, a signer of the Constitution, and John Hanson, the first president of the United States in Congress Assembled under the articles of Confederation. The war caused a disruption in trade followed by postwar British exclusion of America from the West Indies trade along with a demand for payment of pre-war debts. These had a damaging affect on the economic growth of America and it was felt at the local
level in towns such as Port Tobacco. How did the impending war help/hurt economic
growth and wealth in town? Despite the loss of navigable water, Port Tobacco continued
to flourish as the commercial and judicial center of the county. The end of the 18th
century, Port Tobacco was no longer the prosperous town it was prior to the war. Issac
Weld describes a town in decline during his travels of 1795-7 (1807). He comments on
how the once prominent church is in disrepair, most of the buildings in town are falling
down, and even one of the roads now goes directly through the old graveyard (Weld
1807).

19th Century

Economic recession during and immediately after the Revolutionary War
curtailed development, but the town began to fluoresce again starting in the second
decade of the 19th century with the construction of a new jail and courthouse. The 1820
state law requiring resurvey of the town and its lots, and the anticipated public posting of
the new plat, suggests renewed interest in lot purchases and, presumably, expansion. By
the time the town successfully incorporated in 1860, the town boasted a newspaper,
several hotels and between 60 and 70 dwellings. Although Maryland was considered a
border state by many, and was in the Union during the Civil War, Union troops were
stationed in town and some of the residents played a role in the assassination of President
Abraham Lincoln. The railroad came through Charles County in 1873 with a station built
at nearby La Plata, bypassing Port Tobacco (Shomette 2000, Gibb 2006). Although the
accumulating sediments in the river had started the decline of the town as an important
commercial center many years earlier, the railroad bypassing the town altogether hastened its demise. A mysterious fire destroyed the main building of the ca.1815 courthouse in 1892 leaving only the wings of the courthouse standing. Courthouse documents were spared when someone whisked them away before the courthouse burst into flames, leading many to believe that the fire was arson in an attempt to move the county seat to La Plata (Shomette 2000, Wearmouth 2008). The town was in decline and finally in 1895 they lost a long battle to remove the county courthouse to La Plata. The south wing of the courthouse was converted into a Baptist church in the 1940s and the north wing was dismantled, its bricks used elsewhere as building materials. Today, only five dwellings, several barns, and the reconstructed courthouse survive.

The history of Port Tobacco is long, complicated, and incomplete. The area was home to Native American groups for several millennia before the arrival of English colonists. The town came into existence during the program of town planning of the late 17\textsuperscript{th} and early 18\textsuperscript{th} centuries. The town was home to many prominent lawyers, merchants, slaves, and farmers for much of its existence. The second half of the 18\textsuperscript{th} and the first half of the 19\textsuperscript{th} centuries saw the town in the middle of two important wars, both of which impacted the economic stability of the town and the wealth of its citizens. By the end of the 19\textsuperscript{th} century, Port Tobacco was the victim of a new group of wealthy citizens from a neighboring town, an indication that the power held by the local elite had vanished.
Previous Research

Port Tobacco has been the focus of research by historians and archaeologists for its long history of human occupation and its role in the history of Maryland and the United States. The focus of historians writing about Port Tobacco is centered on major historical events such as the American Revolution, and the Civil War and the assassination of President Abraham Lincoln (Lee 1994, Kauffman 2005). Jean Lee chronicles the role of Charles County in the American Revolution including Port Tobacco’s role as a meeting place for patriots to respond to the crisis (1994). In Kauffman’s *American Brutus*, Port Tobacco is again a meeting place but this time for conspirators in the assassination of President Lincoln (2005). Less has been written about the history of Native Americans in the area, but it is not completely absent (Graham 1935, Stephenson et al. 1963). Local historians have summarized the town’s long history in several books (Kihl 1982, Shomette 2000, Wearmouth and Wearmouth 2008). Historical records are usually written by a small group of the larger population of a place and tend to reflect the biases and cultural values of those few (Wilkie 2006). Therefore, archaeology is needed to accompany them in order to gain a better understanding of that larger population and the past as a whole. Archaeology can fill in the gaps left by an incomplete historical record by studying the material culture left behind by people. At Port Tobacco, archaeology has played a key role in understanding the history of the town and its inhabitants.

The many agricultural fields that make up the majority of the 60 acres of Port Tobacco outside the town core have been walked over for decades by local enthusiasts
looking for arrowheads, coins and other valuable artifacts (Gibb and Lawrence 2006). Excavations of Native American sites in and around Port Tobacco started in the 1930s, while the historic components of Port Tobacco did not receive any archaeological attention until the 1970s. Without surviving plat maps of Colonial Port Tobacco and only sparse historical records available, archaeological research, informed by archival research is the only way to understand the town’s development, how it changed, and why.

*Early Archaeological Excavations*

Although the prehistoric component of Port Tobacco is not the focus of this thesis, it is necessary to understand some of the early archaeological excavations of the area. Before the arrival of European settlers, Native Americans occupied the area for millennia. Their occupation of the area around what today is the historic town of Port Tobacco was first documented by John Smith during his 1608 voyage through Virginia and Maryland (Figure 2.10).
He reported a village with 20 warriors near the head of what would later be named the Port Tobacco River (Rountree et al. 2008). Archaeologists have found evidence of this occupation and earlier ones dating back to the Late Archaic around Port Tobacco (Graham 1935, Stephenson et al. 1963, Gibb and Lawrence 2006). Graham (1935), and later summarized by Curry (1999), did some of the first prehistoric archaeological investigations when investigating Native American ossuaries one mile south of the town site along the Port Tobacco River. Ossuaries are communal graves containing reburied skeletal remains of multiple individuals. Artifacts dating to between 1584 and 1642 were found in the ossuaries. These studies revealed social, political, and
status ideas of Native Americans at the end of the Late Woodland Period (AD 800 – AD 1600) and the early Contact Period (AD 1634 – AD 1740) in Maryland (Curry 1999). Alice Ferguson (in Stephenson et al. 1963) excavated the Accokeek site in nearby Piscataway in the 1930s. Ceramics from the site have served as the basis for Native occupation chronology in Maryland. Archaeologists have found many similar sites revealing Native American’s propensity for occupying sites along waterways all throughout the Chesapeake region (Steponaitis 1983, Ebright 1992, Rountree et al. 2008, Gibb and Beisaw 2008). While these early excavations of Native American sites around the region serve as a timeline of occupation for the region, it is the location of these sites along navigable waterways that is important to this thesis. The importance of the location of these settlements cannot be underestimated as Europeans routinely settled and built upon areas previously inhabited by Native Americans (Rountree et al. 2008; Potter and Waselkov 1994). Scientific archaeological excavations of prehistoric sites within the town limits of Port Tobacco did not happen until the 2000s. Prior to that, what we know about the prehistoric occupation of the town-site comes from artifacts recovered by local residents who walked the fields in town, and from a small amount of historical records regarding the Portobaco Indians dating to the mid-17th century. Projectile points and pottery sherds recovered by locals date from the Late Archaic up to the Contact Period (Gibb and Beisaw 2008). Historical accounts from the Contact Period show Native Americans were still occupying the area as late as the 1650s, but had left the area prior to the creation of Chandler’s Town in the 1680s (Shomette 2000, Gibb and Beisaw 2008). Again, the importance of these excavations to this study lies in the locations of the sites...
found by archaeologists. These sites, including Port Tobacco, lie along deep navigable waterways with soils conducive to agriculture. These were important factors for creating towns where commercial and judicial centers could be built.

The first archaeological excavations of the historic component at Port Tobacco may have occurred in the 1930s when Alice Ferguson bought and renovated the 18th century house, commonly known as “Chimney House,” in Port Tobacco in 1930 but it is unknown if she did archaeology on the site (Gibb and Lawrence 2006). The earliest known archaeological investigations of the historic component of Port Tobacco took place in 1967/8 ahead of the reconstruction of the ca. 1819 courthouse that stood in the center of town until the building burned in 1895 (Figure 2.11).

Figure 0.11. Redrafted image of ca.1819 courthouse foundations, ca. 1968.
The reconstruction of the courthouse was an attempt by the Society for the Restoration of Port Tobacco (SRPT), in concert with the State of Maryland, to promote tourism in the county by creating a historical museum. The Society formed in 1948 to increase public interest in the heritage of Port Tobacco and Southern Maryland through the collection and preservation of historical documents and artifacts (SRPT Website). Excavations also took place caddy-corner to the northeast of the courthouse at the site of the old St. Charles Hotel and also in the middle of the “village green” east of the courthouse. No reports for either of these excavations were prepared. Boxes of artifacts supposedly from the courthouse excavations are stored in the attic of the reconstructed courthouse, but so far no accompanying documentation has been found to identify them.

The excavations of the courthouse site were overseen by US Army Captain John Mathay (1968), followed by his wife Sally after he was transferred out of state, and then by local historian John Wearmouth (1970). The crew of volunteers led by Mathay excavated 17 excavation units within a grid overlaying the courthouse foundation (Mathay 1968, Gibb 2009). A brief, incomplete draft report (Mathay 1968) of the courthouse excavation does exist, but only describes excavation locations and techniques; nothing about what was found or anything about research questions. Artifact logs and provenience information have not been found, although they are mentioned in the draft report (Gibb 2009). Conversations with local residents before excavations undertaken by the Port Tobacco Archaeological Project in 2007 reveal other archaeological investigations took place in the 1970’s around town (Gibb and Beisaw 2008). However, no written documentation regarding the excavations has been found to corroborate this account, only photographs.
These early archaeological excavations focused on the courthouse site and the immediate surrounding area. However, any research questions that they addressed and the results of these early excavations have been lost. Indeed, formal research questions probably never were developed and analyses were never undertaken. These excavations however, do confirm the location of at least two buildings. The location of these buildings is important as they identify what spaces in town were used and when, both basic concerns of this thesis. Artifacts and reports for the courthouse excavations could prove invaluable in understanding more about the early history of the town and the town layout. Local lore has it that the church and courthouse lots were swapped around the time of the construction of the “new” church in 1821 where the church was built on the courthouse lot and the courthouse on the church lot (Sheila Smith, docent, pers. comm., 2007). This happened at a time of economic resurgence in town and could be evidence of a change in the power structure and social organization of the town. The early landowners by this time sold off or rented most of their property in town; therefore, a swap in the location of the two buildings, which were the two focal points in town, would be seen as a physical manifestation of this change in power structure and social organization. The village green on which they fronted is important for understanding design and use of open spaces during Colonial and post-Colonial towns.

In 1988 and 1989, the Archaeological Society of Maryland (ASM), led by state archaeologists Dennis Curry and Maureen Kavanagh, held their annual field session in archaeology at the Chapel Point site, a shell midden site several miles south of Port Tobacco. The results from this excavation remain unreported. Preliminary findings
regarding radiocarbon dates of in situ Native American pottery dating to the late Early Woodland period were published in *Maryland Archaeology* (Curry and Kavanagh 1993). This helps establish the long occupation of the land along the river. Chapel Point is also the site where Father Andrew White founded a Catholic mission in 1641. Finding archaeological evidence of this first mission would greatly contribute to establishing a timeline of historic occupation of early Port Tobacco.

*PTAP*(2006-2010)

In December of 2006, Dr. James Gibb of Gibb Archaeological Consulting, while conducting compliance archaeology around one of the extant historic homes in town, encountered strikingly deep cultural deposits spanning over 3000 years of occupation. A year later in 2007, Dr. Gibb and Dr. April Beisaw (Vassar College) created the Port Tobacco Archaeological Project (PTAP) as a public and research driven archaeology project with the goal of involving the public in collecting information on the internal structure of Port Tobacco (Gibb and Beisaw 2008). The project was intended as a long-term research project that would expand in scope beyond the initial goals set in 2007. Eventually, the project grew to include topics such as African American studies, environmental history, and social, political, and economic interactions within town and with outside communities. Deep and varied cultural deposits in a fairly protected and undeveloped town with such a long history makes it particularly interesting for studying town design over time as most small, early Colonial towns in the Chesapeake were short
lived or lived only on paper as legislative decrees never realized (Reps 1972 & Thomas 1994).

Starting in the summer of 2007 and again in 2008, members of PTAP including myself, and a group of volunteers conducted a large-scale shovel test pit survey over the town core and immediate surrounding fields (Figure 2.12).

![Map of shovel test survey with shovel test pits shown as red dots in a grid pattern across the site.](figure)

**Figure 0.12.** Map of shovel test survey with shovel test pits shown as red dots in a grid pattern across the site.

The potential for collecting information about the nature of the town structure was clearly evident when we recovered large amounts of structural, household, and personal artifacts ranging in date from the late 17\textsuperscript{th} Century through the early 20\textsuperscript{th} Century. The close interval shovel test survey revealed deep cultural deposits and the locations of as many as 20 different building sites within town ranging in date from the very end of the
17th century through the early 20th century (Gibb and Beisaw 2007). The distribution of Colonial and antebellum ceramics along with brick, glass, and nails suggest a long and continuous historic occupation. In the spring of 2008, we completed a controlled surface collection of three plowed fields south along the river between the town core and Warehouse Point, about a mile to the south (Figure 2.13). As one of the goals of the project was to determine the internal structure of the town, further excavation of these sites was necessary in order to identify and date the deposits. Between 2008 and 2010, larger excavations took place at several of the sites located in town by the 2007 shovel test survey. These sites were chosen to precisely locate and possibly identify structures.
Figure 0.13. Aerial view showing the locations of Port Tobacco and Warehouse Landing one mile apart. The three fields in between were surveyed in 2008.

The controlled surface collection south of town was done on three separate fields, the north, middle, and south fields. The team recovered hundreds of prehistoric and historic artifacts in each of the three fields. We designated clusters of dense artifacts in each field as separate archaeological sites. The north field revealed two 18th century sites and one late 19th century site. One late 18th – early 19th century site was found in the
middle field, and the south field surface collection located two early 18\textsuperscript{th} century sites. No further archaeological work has been done beyond the initial surface collection.

The 2008 excavations in town tested four locations identified by the 2007 shovel test survey. Since PTAP is a public archaeology project, the sites chosen also had to be accessible to the volunteers and the many visitors to the site. The excavations revealed the locations of two mid to late 19\textsuperscript{th} century buildings and two possible 18\textsuperscript{th} century buildings. The latter two would undergo further testing the following year to positively date and identify them. The following year, 2009, excavations continued at two of the locations and at three additional loci. Expanded excavations revealed two 18\textsuperscript{th} century sites, both with structural features. The first of the three new sites was an unsuccessful attempt at locating a late 18\textsuperscript{th} – late 19\textsuperscript{th} century building seen on historic maps. The other two sites revealed evidence of prehistoric occupation and a possible 18\textsuperscript{th} century dwelling, but did not identify buildings. The 2010 field session focused on excavations around a late 18\textsuperscript{th} century house at the south end of the town. These excavations were done in preparation for the construction of a bathroom addition on the west side of the house. These excavations revealed a previous building next to the one standing that dates to the early 18\textsuperscript{th} century and possibly earlier along with a late 19\textsuperscript{th} century addition to the extant building. Also in 2010, we identified and excavated locations in town associated with the plot to assassinate President Abraham Lincoln as part of a Preserve America grant, managed through the National Park Service. While the goal of that grant did not directly relate to the overall goal of identifying the internal town structure, it did reveal the locations of three buildings known from historic maps and documents plus the
possible location of a fourth. Two of the three building locations date to the 18th century, the third to the late 19th century. The fourth excavation area also revealed late 19th-century deposits. The results of this archaeological research produced a wealth of information about the timeline of historic occupation, town planning and social organization, and economic and environmental impacts on the town, which I used as the basis for my thesis work. The methods and results of PTAP’s research will be discussed in greater detail in subsequent chapters.

Conclusion

Archaeologists in the 20th century focused on two specific themes, prehistoric occupation around the town and the reconstruction of one building representing one period of historic occupation. It wasn’t until 2007 that the town underwent intensive testing of the entire town and surrounding fields in order to learn more about the whole history of Port Tobacco. Based on analysis of the geophysical data I collected in 2011 and archaeological excavations between 2007 and 2010 by me as part of the Port Tobacco Archaeological Project, there is evidence of many more structures and features related to the layout of the town than were previously known. The town underwent alternating periods of rapid and slow building that historical records and previous archaeological investigations had not shown. My research addresses the changes in social hierarchy that occurred between the mid 18th century and the late 19th century in Port Tobacco and how this is seen in the changes in layout of architecture, the use of
space, and overall town design by using a combination of geophysical surveys and archaeological excavations.
Chapter Three: Theory

Introduction

To understand the reasons behind town planning and layout, social organization, and how power is manifested through design, it is necessary to use a multi-theoretical approach including the functional and symbolic use of space, the built environment, landscape studies, and the social production of space. The layout of Port Tobacco and the spaces within it are important to the understanding of social structure and how both changed in the 18th and 19th centuries. In order to understand the design and layout of Colonial port towns, we must look at why these towns were built. The reasoning behind the layout of these towns not only has a direct reflection on the physical layout but on how they were perceived and then actually used by residents and visitors. Towns were not just the places where people lived, worked, and socially interacted, but they were also symbols of power (Leone and Hurry 1998, Leone 2005). An examination of the transformation of the site layout in Port Tobacco, Maryland reveals how the layout of a town can be seen as a symbol of power. The approach here will focus on concepts of space and the built environment, the social construction of space, and the power of place. An important idea to this thesis is the idea that architecture within a town layout, and the layout itself, is used to legitimate power. Specifically, this thesis asks how the move from a linear layout to an orthogonal grid pattern with centralized judicial, commercial, and religious architecture, and then the modification of that grid was used to represent
changing economic and political control of the town of Port Tobacco during a 250 year period.

My thesis combines historical research, geophysical surveys, surface collection, shovel test survey, and limited excavations. This multiple method approach provides a larger amount of detailed information obtained over a five year period. To understand Port Tobacco, it is necessary to look at the town as a whole. It is essential also to look at Port Tobacco as a town within a system of town planning, where the physical transformation of the built environment was a manifestation of the cultural meaning of that built environment.

*Traditional Approaches to Town Planning in the Chesapeake*

Traditional theoretical approaches to town planning in the Chesapeake have generally come from geographers (Thomas 1994), urban planners (Reps 1972), and archaeologists (Leone and Hurry 1998, Miller 1988). Geographers and urban planners have put their focus on the functional side of regional town planning more than on individual towns. Thomas (1994) and Reps (1972) both look at town planning as a function of the tobacco trade and the colonization of the New World. This is a historical approach that treats layout as a simple plan grid plan as it was the easiest layout to build. It does not reflect the power structure of the people who lived and worked in these towns.

Archaeologists have looked at the symbolism behind town design. Miller (1988), and Leone and Hurry (1998) found that the designs of St. Mary’s City and Annapolis, MD were linked to concepts of power through the use of sophisticated urban planning. In
St. Mary’s, Miller found this through the same Baroque style layout of buildings and roads in a triangular design with the state house and church as the focal points of political and social authority. In Annapolis, Leone and Hurry discovered the use of a sophisticated series of ellipses around the State House and church with streets radiating out from them and “line of sight” symbolism in the height of these monumental structures. This symbolism is described as the ability of the state to show power by building these structures at heights at the highest points overlooking the city. This was done as a way to constantly remind city inhabitants who held the power in the city, the state and the church.

*Early Chesapeake Town Models*

Historians (Shomette 2000), geographers (Reps 1972; Thomas 1994), and archaeologists (Miller 1998; Pogue 1989, Leone and Hurry 1998) have considered town plans and layouts to be simple, unplanned designs other than the major capital cities of Williamsburg in Virginia and Annapolis in Maryland. Both of these cities represent a major change in town planning of the Chesapeake, and a stark contrast from port towns in the Chesapeake. They were created by Frances Nicholson, former Governor to both colonies, with a sophisticated geometric arrangement. Annapolis was designed with monumental architecture as focal points with roads leading away from them. In Williamsburg, Nicholson used an axial plan with the church and capital building as focal points along the axis and all other streets in a grid pattern around them (Miller 1988).
The smaller port towns used much simpler and unplanned grid patterns than these major cities.

Grid plans were used by the English, Portuguese, Dutch, and Spanish during the colonization of the Americas (Miller 1988). The Spanish rapidly standardized layouts using a grid pattern with a central plaza (or open space) with the church as the focal point and major roads leading in and out of the plaza (Miller 1988; Horning 2000). This was an important process for the Spanish to maintain control over indigenous people to bring order to the New World. While the English preferred the grid plan, they were not standardized in the New World and irregular plans were not absent. A plat from Calverton in Maryland shows a linear settlement along the Patuxent River in the late 17th Century and one from Doncaster in Maryland depicts a typical grid pattern of the early 18th Century (Figure 3.1).

Figure 0.1. 17th Century plat of Calverton (left) showing a linear layout along Battle Creek. An example of the simple grid plan used in the Chesapeake in Doncaster Maryland (right).
Legislation enacted by Maryland during the 17th and 18th centuries to create port towns suggests that port towns follow the grid pattern as it is easy to survey and to divide lots equitably. Although they were not all the same, these grid plans had similar elements to them including lots for a church (and a courthouse in some) and an open space for a village green or market (Shomette 2000, Reps 1972, Thomas 1994). This understanding of the history of town planning in the Chesapeake is important to my examination of the orthogonal grid pattern in Port Tobacco. It is the layout of the town that holds valuable information in how space was used and modified to convey power and social order.

**Space and the Built Environment**

In anthropology, space is considered the way people interact within a physical area (Low 2000). It is the context where actions and interactions take place whether in a naturally or culturally created environment. The use of space has been approached by anthropologists to address social organization and power in different ways. Many have focused the theory of space on the built environment. The built environment is defined as any physical transformation of the natural environment by humans through construction. Examples of this construction include cities, open spaces, and streets (Lawrence and Low 1990).

The early evolutionary and functional theories of Morgan (1965) and Durkheim (1965) were the first to form the ideas that built forms express and reinforce human behavior (Lawrence and Low 1990:456), seeing the built environment as integral aspects of social life. The built environment is regarded as an expression of social and political
structures. Site plans, such as town layouts, act to express or reaffirm social relations or social status within a cultural framework through symbolic associations (Lawrence and Low 1990). Examining the built environment offers a way to explore social and political forces behind their creation and design. This project focuses on the built environment of Port Tobacco, specifically the change in layout and modifications to the village green and how these spaces were used and affected by political, economic, and social forces. The design and layout of town architecture in the Chesapeake are a good medium for this type of examination as they often reflect the power structure of the community. The power of a built environment over a community has been examined by Foucault (1975), where he argues that the power of one group over another can be seen in architecture. Relationships between people and the built environment are not static, people design and are influenced by it (Lawrence and Low 1990). It is the relationship, between those who control the design and layout and those who live and work within it, that allows me to better understand the way Port Tobacco was planned and modified over time.

Built forms and the environments they inhabit have been approached by anthropologists in both functional and symbolic ways to understand their purpose and how they express social organization and structure. Examining the built environment offers a look into the social, political, and economic forces that created it. Spatial forms including town plans are products of conflicting sociopolitical and economic forces (Low 2000: 49).
Functional Approaches

Functional theory as developed by Emile Durkheim explains the built forms in terms of practicality and also as an expression of social structure and order (Lawrence and Low 1990). While this theory is important for understanding built forms such as houses, it can be useful for other built forms as well. Where a house can be explained functionally by how its organization and form expresses social order, so too can open spaces be explained in the same way (LL 1990).

Climate and the natural environment, and how humans adapt to it, are also a factor of functional theory in understanding built environments. Towns sitting along rivers in the Chesapeake face their own environmental challenges, including hurricanes and tropical storms, and sedimentation from erosion of soils. These affected towns through flooding and silting in of the river and the landscape. The Port Tobacco River was silting in early in its existence causing a change in the location of wharfs for loading and unloading merchandise from ships (Shomette 2000). Modifications of town plans were necessary to cope with the nature of the land they were situated, and in many cases to incorporate existing settlements or individual dwellings. This was especially true in the Chesapeake and Port Tobacco where individual settlers were often bought out, or sold built upon land, to create towns. Early Colonial towns were necessary to maintain English society in the New World, including living in an urban setting. These new towns were small and only wealthy landowners and tobacco merchants could afford to purchase lots in these towns. It was not uncommon to have multiple lots in one or more towns to be owned by the same few households. These built environments were important places
to maintain the cultural standards of English society as well as centralize trade and justice. Towns were interactive spaces where farmers, merchants and others could socialize and do business. The spaces became central to controlling the wealth from the tobacco trade, which was done through the use of architecture and planned layouts. As towns grew and cultural standards changed, the continuation of English society was no longer a factor in planned towns. Modification of layouts started to occur as the power and control of land in the hands of wealthy landowners was weakened by economic decline.

Symbolic Approaches

Beyond the functional approaches of Durkheim et al., anthropologists have also approached the use of space through symbolic ones as well. These approaches emphasize the meaning behind the structures, not just the buildings themselves but where they were built and how they were placed in an area (Lawrence and Low 1990, Low 2000). The urban form of a town expresses the social structure and ideology of a culture (Miller 1988). The most obvious urban form is the town or city. Towns and cities are built environments which display the cultural ideas and needs of its inhabitants through the purposeful arrangement of architectural elements (Rappaport 1984; Miller 1988), and the structures within towns are tangible expressions of meaning (Amerlinck 2001). In this way, towns can indicate social order and power through architecture and design. This discussion of town planning here is not complete without recognizing the importance of
the built environment and the social order displayed in the architecture and layouts of
towns.

In the Colonial Chesapeake, the implementation of the town grid pattern can be
seen as a symbolic approach to town planning. Symbolic approaches to space and
architecture interpret it as instilling a group’s cultural standard and ideals. This suggests
that Colonial towns were constructed for reasons beyond the functions of ordered living
to symbolic control over the inhabitants. The orthogonal grid pattern at Port Tobacco
conveys this ideological thought process. This is seen in the construction of the church
and courthouse on one end of the village green at a slightly higher elevation than the rest
of the town. This type of monumental architecture was placed in a location where it was
the focal point of the town and was an overt attempt at conveying power and social order.
The village green is another example of showing control through centralizing the location
where goods were to be bought and sold. This was further seen by the way buildings on
the edges of the village green were facing in towards the open space. It created a central
market square where the daily activities of the towns inhabitants could be on display.

The grid pattern in the Chesapeake had two clear functional goals, control over
tobacco income and power over settlers. This was accomplished through the towns by
legislation. Towns were built around wharfs for inspection warehouses and courthouses
that legislated the tobacco trade and land acquisition. Symbolically, towns were a
manifestation of the social order in the Colonial Chesapeake. This social order was on
display through the construction of monumental architecture such as churches and courts,
and open spaces within a grid pattern. This symbolic approach mirrors the functional approaches already discussed.

**Social Construction and Social Production of Space**

Setha Low (2000) looks at understanding the meaning behind the relationship of society and space through theories of social production and social construction. Social production of space is the physical creation of space through social, political, and economic forces that produce the built environment, and the impact of it on society. Social construction is the transformation of that space through use and interaction within that space (Low 2000: 128). It is the social production of space that is important to this study because it is the changing social, political, and economic forces that created, and caused the modifications of, the town.

Lawrence and Low (1990) theorize that it is the social processes that create the built form. What social processes give rise to built form? (Lawrence and Low 1990:482) – There are several processes that gave rise to the built form at Port Tobacco. Mainly, economic and political processes formed the backbone for the creation of the town and the modifications it went through during a 250 year period. Prior to its official establishment in 1729, Port Tobacco was a commercial town like many others in the Chesapeake. It was situated along a large body of navigable water with the ability to bring in large ships capable of carrying the large amounts of tobacco and other cargo being shipped in and out of the county. The act of 1729 established the town as the county seat with room for a courthouse and jail. By the mid 18th Century, the town was
the commercial and judicial center of the county. The grid layout of the town was part of the 1729 establishment of the town. The village green, courthouse, and church were the three main features of the town. The lots for these three features were purchased by the county for their construction. The rest of the lots in town were purchased by those that could afford it, the wealthy tobacco farmers, merchants, lawyers, and politicians. These were the high status men whose wealth enabled them to purchase multiple lots and therefore control the land in town. They also were the men who were running for political offices. Lot ownership was an important socioeconomic force behind the creation of the built environment and the modifications to it.

*Maintaining Control: The Power of Place*

The geographer Yi-Fu Tuan (1979) suggests that any space gives status to its occupant and makes social order visible. This idea is appropriate for this discussion because social order is seen in the visible monumental architecture and layout of Port Tobacco. Monumental architecture such as the courthouse and church are symbols that convey power and control (Jackson 1997). Historical accounts of these two structures in the late 19th Century paint them as excessive in size and stature (Townsend 1865). Social order is kept through the continual use of these monumental structures as functions of power and control. When these structures are left in disrepair as they were at different times throughout the town’s history, it is a signal of a changing social order and a loss of power. However, it is not just the monumental architecture that maintains social order in
towns. Town squares (and plazas such as seen in Spanish Colonial towns) hold their own symbolic power over the social order.

Setha Low argues that the design of public space was used as a way of controlling spatial meaning of a place (2000: 100). In her examples, plazas in the Spanish New World were constructed in a way that conveyed power and social order. This was done through the erection of a centrally located plaza with the Church in the middle as a focal point. The purpose of the location of the plaza and the Church was to maintain the symbolic show of power through visual displays of monumental architecture and ordered design.

When discussing town planning and design, anthropological theories of power come from different aspects of control theorized by Bentham (1780s), Foucault (1979), and Leone and Hurry (1998). Bentham and Foucault approach architecture as a symbolic show of power through the use of the panopticon as a way towards social reform. Archaeologists Leone and Hurry use this theory to study and understand the cities of Annapolis, Baltimore, and St. Mary’s in Maryland. They assert that “seeing” is a show of power in the ways that Chesapeake towns were planned. Line of sight through Baroque urban planning was used in Annapolis and St. Mary’s to display social order through the placement of architecture in relation to each other and the overall layout of the cities. Miller (1988) proposed the idea that the buildings in St. Mary’s were linked using two symmetrical triangles that meet at the town center, which created a balanced composition of urban space (Figure 3.2).
Figure 0.2. Baroque plan of St. Mary's Maryland. Symmetrical triangles in red showing a balanced composition of public space with monumental structures as focal points of the triangles. Modified from Leone and Hurry 1998.

This type of design is typical of Baroque urban planning that used monumental architecture and an emphasis on placement of them to impress and was widely used throughout Europe during the 18th Century. European concepts of Baroque design rely on the individual as a unit of society that can own things and have rights (Leone and Hurry 1998). The “vistas” created by the Baroque planning was created for these people. In the Colonial Chesapeake, these people were considered those people who could change their social standing through hard work and the opportunities given to them in the New World. It then can be suggested that these same people created a built environment
for themselves that would display and affirm their political and social hierarchy. The presence and placement of monumental architecture in prominent locations ensured that anyone residing in or visiting saw the power of the local ruling elite.

Annapolis and St. Mary’s were both designed by Governor Francis Nicholson. Leone (2005) argues that Annapolis used the same Baroque principles as St. Mary’s. It was designed in 1710 using a baroque plan with two circles around the State House and Church with a series of streets radiating from them and a large open square (Figure 3.3).

This style creates visual illusions around planned vistas with lines of sight converging on monumental architecture. This was done as a means to display visual power over a space. In Annapolis, the Church and State circles were joined by a single road. This along with a series of vistas made by lines of sight leading away from the two circles was a creation of symbolic social order (Leone and Hurry 1998). This was another clear display of power and social order in the new capital city of the Maryland colony. Lines of sight were built to focus attention on the monumental architecture representing the state’s and church’s authority.
The city plan was not the only place that shows social order and power through design in Annapolis. It is also seen in more than a dozen gardens in Annapolis, with the William Paca garden being the most famous and most studied (Leone 2005). Archaeology conducted by the Archaeology in Annapolis project run by Dr. Mark Leone revealed during the 1980s and 1990s that it was built as a show of power and control through the use of optical illusion in its design (2005). The gardens were built by wealthy landowners, although not the most wealthy or elite, to show off their wealth through organized design (Figure 3.4).
Wealthy landowners in Annapolis displayed their social standing and wealth through ordered design of gardens and landscapes during the 18th Century.

In the Federal Era (c. 1780-1830) Baltimore, Maryland had followed St. Mary’s and Annapolis as a leading city of the Chesapeake. Architects built several churches, theaters, monuments, and a jailhouse as a celebration of democracy (Leone 1995). They were built in an attempt to follow what Foucault called “the obligation to watch and also feel watched, to monitor and be monitored, to safeguard and be safeguarded, to care and be cared for” (Leone 1995). Foucault (1975) believed it was this type of surveillance that was embodied in architecture that he based off of Jeremy Bentham’s panopticon. The design of institutional buildings as a panopticon allows for inmates of an institution to be observed without knowing it. Baltimore’s central jail was built in this fashion (Figure 3.5).
Baltimore, St. Mary’s, and Annapolis all had design elements, or modifications to their design, that were structural symbols of power and social order. These capital cities represent the clear intent behind the power in design. While the small town of Port Tobacco does not share the same elements of Baroque planning or panoptic structures, it does have some of the same design elements as these major cities. The monumental architecture, open village green, and orthogonal grid pattern are all elements used in other cities throughout the Chesapeake and the New World used as displays of power and social order. Modifications to this layout during changing economic times of the 18th and
19th centuries show how the social order was changing and that these displays were not as powerful. This includes the change of the initial linear town layout from the late 17th century, the establishment of the orthogonal grid plan, the construction of buildings within the open space of the village green, and the eventual removal of the courthouse and Church at the end of the 19th Century. These changes are due to the changing social order within town that is based on wealth.

Historical records show very little about the design of Port Tobacco or any changes it went through during its 350 year period. An 1888 plat is the only surviving map of the town. However, this is only one moment in time less than a decade before its final demise. It does not represent the original design or any other period in time afterwards. Therefore, by determining if and when modifications to the design of Port Tobacco took place, it would be possible to show that the power structure and social order was also changing.
Chapter Four: Archaeological Methods I - Excavations

Introduction

The existing historical record documenting the layout of the town is incomplete. Historical maps of Port Tobacco are relatively recent (ca.1888) in comparison to the long historical occupation of the town (over 350 years). The identification of architecture, roads, and open spaces in the colonial town requires the use of archaeological excavation and digital mapping to address questions about layout and its relationship to the inhabitants that used the town. It is the analysis of excavated artifacts, features, and architecture that can be used to address how townspeople modified the layout based on the economic changes taking place in the 18th and 19th centuries. For example, as the judicial center of the county, the town saw increased activity during the height of the town’s prosperity in the 18th Century. This increased business saw an increase in the number of buildings built directly around the courthouse to accommodate it. Features such as postholes and foundations identify the locations of structures while the ceramics and pipestems recovered through excavations are tools for dating them. These locations offer more than just the time of occupation, they offer evidence of why these spaces were occupied and decisions by local people as to how these spaces were used when trade and the economy were near their height and during times of economic decline. During the late 18th Century, Port Tobacco was a busy place as the commercial and judicial center of the county. The economic decline of the 19th Century saw a change in the use of open
spaces such as the village green. This is shown through the construction of dwellings and outbuildings within the village green and the abandonment of structures closer to the courthouse. The decisions to make changes to the village green and the layout in general during these times shows that modification of the town layout was in the hands of the people in town and was based on the economic circumstances of the time periods.

In the spring of 2007, members of the Port Tobacco Archaeological Project (PTAP) and myself, under the direction of Dr. James G. Gibb and Dr. April Biesaw, co-directors of PTAP, started an extensive archaeological study of the town of Port Tobacco, which included the town core surrounding the courthouse, the village green and adjacent lots with extant homes, and the fields south of town along the Port Tobacco River (Figure 4.1).

---

![Site map of the town core showing the eight survey areas from Table 1 numbered in black, and extant buildings and roads in red and blue.](image)

Figure 0.1. Site map of the town core showing the eight survey areas from Table 1 numbered in black, and extant buildings and roads in red and blue.
Shovel test pits are represented by the small black circles in each survey area. Survey Area 9 lies south of survey Area 5 but is not shown on this map.

This study was conducted in order to collect information on the internal structure of Port Tobacco including structures, roads, open spaces, and geological strata. Three types of archaeological investigation were used for collecting data at the site, shovel testing, surface collection, and unit excavations. An initial shovel test pit survey was conducted in 2007 and 2008 within the town core. This was followed by unit excavations in 2008-2010 at several locations based on recovered artifacts from the shovel test survey and historical records. In May 2008, a controlled surface survey was conducted on roughly thirty acres over three fields south of the town core. Port Tobacco is a large site and for the purpose of this thesis, I broke down the site into 9 different survey areas for analysis of artifacts and architecture that was recovered during the four years of archaeological investigations (Figure 4.1). Due to limitations on excavation permission and time, not all areas of town received more than one type of archaeological investigation. However, one or more type of investigation took place in each area (Table 4.1).
Table 4.1. Survey areas in Port Tobacco used for artifact analysis.

<table>
<thead>
<tr>
<th>Area Number</th>
<th>Area Name</th>
<th>Archaeology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compton</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>2</td>
<td>Behind Courthouse</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>3</td>
<td>Village Green</td>
<td>Shovel Test</td>
</tr>
<tr>
<td>4</td>
<td>Front Courthouse</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>5</td>
<td>Jamieson West</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>6</td>
<td>Jamieson East</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>7</td>
<td>Burch</td>
<td>Shovel Test and Unit Excavation</td>
</tr>
<tr>
<td>8</td>
<td>Stagg/Chimney</td>
<td>Shovel Test</td>
</tr>
<tr>
<td>9</td>
<td>Edelen Fields</td>
<td>Surface Collection</td>
</tr>
</tbody>
</table>

Shovel Test Survey and Unit Excavation Methods

During the field seasons of 2007 and 2008 we conducted a large-scale shovel test pit (STP) survey in eight areas in town directly around the courthouse, the village green and extant homes, and the fields directly south and west of the courthouse and village green (Figure 4.1). Although the town extends north and east of this town core, we did not have permission to survey or excavate those areas. We established a grid over the whole site, placing shovel test pits at 25ft intervals and numbered sequentially with pin flags. A total of 579 shovel test pits were stratigraphically excavated across the site. Close interval testing at 25ft apart allows for maximum coverage and collection of a large
amount of data. All shovel test pits were excavated by shovel at an average diameter of 1.5ft and reached depths of 0.5 to 3.5 ft below grade (Figure 4.2).

![Sample shovel test pit showing the plowzone stratum with a mixture of artifacts in the side walls.](image)

**Figure 0.2.** Sample shovel test pit showing the plowzone stratum with a mixture of artifacts in the side walls.

All historical plats and building measurements in Maryland are done in the English measurement system so we used the same for all of our excavation measurements. Dense gravelly sediments in some areas made penetration with a shovel difficult and those pits were abandoned at that depth. All soils and sediments were screened through ¼ inch mesh screens and the artifacts bagged by STP without regard to stratum. Bags were labeled with the shovel test number (assigned in sequence) and other pertinent site information such as site number, date, and initials of excavators. Soils were meticulously described by color using Munsell values and by texture. Pin flags with STP numbers were put back in place after each was excavated, recorded, and backfilled. We
then used a total station to record the precise location and elevation of each shovel test pit. All artifacts were washed and catalogued, with brick, oyster, and coal weighed, counted, and discarded. Unit excavations followed the same protocol as the shovel test survey with labeling, mapping, and collection. Each unit was excavated stratigraphically using the natural stratigraphy to separate each stratum.

*Shovel Test Survey and Excavation Results*

All survey areas followed the same protocol for excavation and collection of artifacts. Part of the process is recording soil information from each STP and excavation unit. We recorded the depths of each encountered stratum and a description of the soil color, texture, and any inclusions. The soils and stratigraphy on this site is complex. Soil colors in each test pit were similar but textures and the presence of gravel varied across the site. These variations are due to the heavy sedimentation of the site from erosion of the surrounding hills, continuous plowing, and the active floodplain the site lies in. Extensive plowing of the site has turned already small artifacts into even smaller ones, creating a large amount of recovered material. This plowing moves artifacts from their original vertical deposition layer, but not horizontally across the site (Dunnell and Simek 1995). Even with the variability across the site, some commonalities in the test pits did occur. The plowzone across the site consists of the top two strata of silt and silt loam with an average depth of 1ft to 1.2ft before encountering a layer of gravelly silt or clay subsoil (Table 4.2). The gravel layer in some survey areas was dense enough to halt excavation but did not cover the entire site. The thickest and most dense gravel layer occurred mostly in survey Areas 2 and 5, the areas west and southwest of the courthouse.
respectively. Sporadic gravel was encountered on the south end of the town core in Areas 6 and 7, and along the east edge of Area 6.

**Table 4.2. Sample soil profile of the average shovel test pits**

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Soil Color</th>
<th>Soil Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10YR 3/2</td>
<td>Silt Loam</td>
</tr>
<tr>
<td>2</td>
<td>10YR 4/2</td>
<td>Gravelly Silt Loam</td>
</tr>
<tr>
<td>3</td>
<td>10YR 3/2</td>
<td>Silt Loam</td>
</tr>
<tr>
<td>4</td>
<td>10YR 4/4</td>
<td>Clay</td>
</tr>
</tbody>
</table>

The team recovered over 25,000 artifacts including ceramics, glass, pipestems, metal, bone, architectural debris, and other miscellaneous cultural material from the shovel test pits. Unit excavations produced another 150,000 artifacts. The amount and variety of artifacts recovered is evidence of a very long and complex occupation. The large number of artifacts is also due to their fragmentary nature. The site has been plowed for several centuries and most of the artifacts have been broken into small pieces over time so they are usually very small in size. Artifacts dating from prehistoric pottery and projectile points to 20th Century plastic were found all over the site. Temporally diagnostic artifacts recovered include nails, ceramics, and pipe stems. These classes of cultural material are the main focus of this thesis as they are the most useful in dating deposits, identifying site locations and occupation length, which are important in establishing a timeline of historic occupation in and around town (Deetz 1996, Noel Hume 1969, South 2002). Length of occupation is an important part of the artifact

88
analysis for this project. In order to establish if the town layout did change from a linear to a grid like pattern, temporally diagnostic artifacts are one tool used to do so. The presence and absence of pipe stems, certain types of ceramics and nails indicate length of occupation as certain types were only used during certain time periods. For example, North Devon earthenware type pottery (a common 17th Century pottery type) has a manufacture date range from ca. 1650-1725 with a mean date of 1688 (Figure 4.3).

![Figure 0.3. Example of a North Devon earthenware rim found at Port Tobacco.](image)

If no other artifacts dating prior to 1650 are found on the site than we can say that the site was not occupied prior to that date. This is known as the *terminus post quem* (TPQ) or date after which, meaning that all other artifacts on the site date to after 1650. The presence or absence of architectural debris tells us about the use of a space for a structure, domestic or otherwise. The absence of these ceramics does not preclude the possibility of presence on the site prior to 1650 but they have been an indicator used by archaeologists for dating 17th Century sites in the Chesapeake (Gibb 2007, Noel Hume 1969). The artifacts left behind, domestic and architectural, are evidence of location of structures and length of occupation. For example, the presence of outbuildings and
dwellings within the village green in the 19th Century shows that the planning of town layout had been altered as this space was designed for use as an open market square. Domestic artifacts such as ceramic pottery and marbles are evidence of socio-economic status, as discussed below, and the presence and activities of children. Ceramic marbles were popular in the mid to late 19th Century (Baumann 2004). There are three types of nails found on historic sites in Maryland, handwrought, machine-cut, and wire (Figure 4.4). Each nail type has a beginning and end use date and is often used as a dating tool for historic structures and sites (Noel Hume 1969, Deetz 1996). Handwrought nails for example were in use from the 1700s to 1790. Absence of this type of nail but presence of machine cut nails (ca. 1790 to 1900) indicates that a structure was built after 1790.
Figure 0.4. The three types of nails found on historical sites in the Chesapeake region. A) handwrought, B) machine-cut, C) wire

It does not give any indication as to the type of structure, the nature of the site, or anything about the people who occupied the site. The same type of analysis is used with ceramics as well but in a much more detailed way. Architectural debris besides nails is another class of artifacts that we used to identify locations of structures in town. Debris such as brick, daub, and mortar was found in different locations representing 20 potential structures. This type of architectural debris, however, only is representative of structures with brick foundations or those with brick chimneys. However, most structures in the early 1700s and into the 1800s were post in ground wooden structures and would only have brick chimneys. Identifying those wooden structures required unit excavations and geophysical methods to locate them. Brick, mortar, and nails were used to determine locations of structures.

Ceramics are the most common artifact found on historic sites and tell much more about people than just the locations of their dwellings and other structures. They offer information on the socioeconomic status of these people (Deetz 1996, Noel Hume 1969). For example, creamware was the most common and affordable type used for dishware used during the end of the 18th Century, which was a European ceramic that was trying to be more like the Chinese porcelain that was more highly fired and a more expensive import ceramic. Finding the latter on a site indicates occupation by wealthier or higher status individuals. Ivor Noel Hume’s “A Guide to the Artifacts of Colonial America” (1969) is the seminal work for the identification of ceramics recovered at Anglo-
American sites and has been widely cited by archaeologists in the Chesapeake region for over 30 years (Deetz 1996). Identification of ceramics is key to using them to date archaeological deposits. English ceramic manufacturers kept meticulous records of ceramic production as early as the 16th Century and therefore beginning and end dates of production are known for most types (Noel Hume 1969, South, 2002, Deetz 1996).

Many of the ceramics recovered are indeterminate due to the highly fragmented nature and size of the sherds. This is due to the continuous plowing that churns up and damages these artifacts. Due to this, these indeterminate types are not included in the analysis for this project. Only those ceramics that were definite in their classification and temporally diagnostic were used for analysis.

Pipestems are one more class of artifact that is important to identification of occupation periods and is widely used in the Chesapeake region (Noel Hume 1969, Deetz 1996). Whole pipes are extremely rare to find on archaeological sites but the stems and bowl pieces are quite common, especially on Colonial Period sites (Figure 4.5).

![Figure 0.5. Example of decorated pipestem fragments found during excavations at Port Tobacco.](image_url)
While working at Jamestown, archaeologist Jean Harrington (1954) identified a relationship between the age of the pipe as a whole and the diameter of the borehole (1954). Harrington found that the older the pipe, the larger the bore diameter of the stem. He used a set of drill bits of differing sizes to measure the diameters and then assigned date ranges based on the contexts they were found in. He noticed that the stem bore slowly became smaller at a uniform rate over time allowing a new and precise dating technique for historic sites of the 17th and 18th centuries (Binford 1962, Deetz 1996, Harrington 1954, Hanson 1969). After 1800 the bore holes had become standardized so this technique cannot be used for dating sites of that time period. Lewis Binford (1962) later refined the method to acquire a single, reliable date for the occupation of the site by using a simple mathematical formula (Deetz 1996). The Binford formula (and Hanson formula are the most commonly used formula. Binford calculated a straight-line regression formula based on chronology and mean bore-diameter size \( D = 1931.85 - 38.26x \), where \( x \) = the average bore diameter of the sample) (1969). Hanson (1969) posited a nonlinear relationship between time period and bore diameter with the following formulas (Table 4.3).
Table 4.3. Hanson formula for pipestem dating.

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>1620-1680</td>
<td>$Y = 1891.64 - 39.09X$</td>
</tr>
<tr>
<td>1620-1710</td>
<td>$Y = 1880.92 - 30.70X$</td>
</tr>
<tr>
<td>1650-1710</td>
<td>$Y = 1869.31 - 28.88X$</td>
</tr>
<tr>
<td>1620-1750</td>
<td>$Y = 1887.99 - 31.66X$</td>
</tr>
<tr>
<td>1650-1750</td>
<td>$Y = 1888.06 - 31.67X$</td>
</tr>
<tr>
<td>1680-1750</td>
<td>$Y = 1894.88 - 32.98X$</td>
</tr>
<tr>
<td>1620-1800</td>
<td>$Y = 1919.10 - 36.06X$</td>
</tr>
<tr>
<td>1650-1800</td>
<td>$Y = 1930.24 - 38.23X$</td>
</tr>
<tr>
<td>1680-1800</td>
<td>$Y = 1959.66 - 44.32X$</td>
</tr>
<tr>
<td>1710-1800</td>
<td>$Y = 2026.12 - 58.97X$</td>
</tr>
</tbody>
</table>

Since pipestem data is limited to dating sites before 1800, I used them sparingly in my analysis. The pipestem dates can be broken down in a much shorter time spans than ceramics and nails and therefore give a much narrower date range for a site. I used them to determine if certain areas in and around town were used or not used before and after the establishment of the town in 1729. This will help in reestablishing the layout of the town and to see if the linear layout of Chandler’s Town was incorporated into the Port Tobacco layout.

Each of the above mentioned artifact classes are, by themselves, good temporal markers used by archaeologists to date and analyze a site. However, using all of them together allows for better analysis of the site. The eight survey areas produced varying amounts and types of ceramics, nails, architectural debris, metal, plastics, and countless other types of cultural material. While we recovered many different artifact types across the site, I focused on analyzing the pipestems, ceramics, nails, and other architectural
debris for this thesis as markers for the location of structures, and areas of occupation of town inhabitants spanning the 18th and 19th centuries in each survey area independently rather than as a whole. By studying each area independently, I can better understand how spaces in town were used and modified over time.

Area 1 – Compton Field

This area, known as Compton field, is an open and regularly mowed field and is the largest of the eight survey areas. It lies directly south of the remnant foundation of the Episcopal Church and is bordered on the west and south by a hedgerow and woods, and on the east by a gravel drive (Figure 4.6). The 1888 plat map shows the southern edge of the historic village green with two buildings on it lies on the north end of the survey area and one on the east edge along the gravel drive. No other structures are located on the map for this area. The map, however, is just a glimpse at what the town once looked like and any architectural features would be below the ground surface. We excavated 175 shovel test pits and forty two 5ft x 5ft excavation units in this area. We identified three historic domestic sites in this survey area based on concentrations of cultural material and architectural debris found during shovel testing. All three of these sites were chosen for further exploration through unit excavations. These sites were chosen for excavation for several reasons. This survey area was one of three of the sites where we had permission to do excavations. These sites also revealed the only possible cellar to excavate, the largest concentrations of historic and prehistoric materials, and soil anomalies suggesting a possible structural posthole.
The first site lies along the gravel road that leads south away from the parking lot. The 1888 plat shows the road, with several buildings along it, leading south out of town and leading toward Warehouse Landing one mile south from the town core. The site was identified through the concentration of heavy rubble fill of brick, mortar, and nails along with 134 domestic artifacts including ceramics, glass, metal, and bone in shovel test pits 96, 97, 260, and 261. Among the ceramics, we recovered a small amount of pre-1750 ceramics (Westerwald 3, British Brown 3, and Rhenish Gray 3) and a small amount of post-1850 ceramics (Whiteware 9, American Blue & Gray 1, and Rockingham 2). The majority of the ceramics (65%) came from the 1750-1850 time periods. The rubble fill continued deeper than we were able to excavate during shovel testing causing us to
abandon the test pits before hitting sterile soil. We used those STPs as a preliminary outline for defining the limits of the feature. We hypothesized that this was a possible cellar feature but no intact walls or floor was discovered during the shovel testing. Cellars of residential structures were commonly used in 18th and 19th Century towns as storage for goods for commercial use. Based on the STP finds, we opened two excavation units here (Units 6 & 10) to find the extent of the feature and to expose any foundation walls (Figure 4.7).

Figure 0.7. Map of survey Area 1 showing the location of a domestic site. Positive shovel test pits are circled in red. Two 5ft x 5ft excavation units are in blue.

It was immediately apparent that we were in the middle of a filled in cellar after clearing away the sod. The first stratum directly below the sod in both units was a mixture of dark brown silt loam, yellowish brown sand, and yellow brown clay filled with whole bricks and mortar, and a variety of glass, ceramics and metal. Due to the
nature of the fill and time constraints in the field season, we abandoned these units before we could fully excavate them. No intact foundation walls or floors were found in these two units. Shovel testing and unit excavation proved that this was a domestic site but failed to outline the precise location of any structure.

The presence of ceramics spanning the town’s long history in the same location is evidence of prolonged occupation of the site and continuity in the layout of that section after the establishment of the town in 1729. This is important to note because the modification of the layout and in particular the village green is one of the focuses of this thesis. The domestic site was also part of the earlier Chandler’s Town settlement based on the presence of the early 18th Century ceramics and pipestems. A Binford date of 1730 from the fifteen pipestems found in the STPs and excavation units put the initial occupation of the site at the very beginning of the new town, and a date range for six of the pipestems is 1710-1750. This is evidence that the site was part of the old town that was incorporated into the new town.

The second site lies roughly 125 ft west of the first domestic site in survey Area 1 (Figure 4.8). Shovel test pit 265 revealed a large concentration of Aboriginal pottery mixed in with historic ceramics, glass, and architectural debris. We placed a total of eleven excavation units (5, 7, 11, 14, 21, 24, 26, 51, 52, 54, and 60) around this shovel test pit to test for features associated with the large amount of aboriginal material.
Due to the mixed nature of the site with aboriginal and historic period materials, we knew that there was a possibility for finding them mixed together. Soils from units were uniform in color and texture. The first two layers of each unit were comprised of soils plowed during the first three quarters of the 20th Century and had a total thickness between 0.9 ft and 1.3 ft. In Stratum 1 of all seven units the soils were consistently dark brown silt loam. Stratum 2 varied from a dark brown to dark yellowish brown and was comprised of gravelly silt loam and gravelly silty clay loam. Both Stratum 1 and Stratum 2 included small flecks of brick and mortar that increased in density as depth increased. Although this area was investigated for potential aboriginal features, the excavation units revealed a brick rubble feature underneath the first two strata of plowzone (Figure 4.9).
Figure 0.9. Map of site two within survey Area 1. Excavation units are marked by blue squares. The large brick rubble feature is outlined in red within the units.

The rubble fill encountered here was just as dense as the first site to the east but it had fewer artifacts. This makes the brick fill that we encountered here more likely from a collapsed or demolished chimney than from a foundation. Any intact cultural deposits are likely underneath the brick rubble. Once the entire brick rubble feature was exposed, excavation continued into the feature in Unit 14, the only unit entirely covered with the brick rubble feature. The purpose of this excavation was to remove the feature fill to determine its origin and investigate what, if anything, was present beneath it. The feature fill removed from Unit 14 was a mixed composition of soil colors and textures with heavy concentrations of brick, mortar and gravel inclusions. However, due to time
limitations and the complexity of the unit, the rubble feature was not further excavated.

A single posthole was found at the top of stratum 3 in Unit 7, which corresponds with the brick rubble feature. Unit 7 and the posthole lie outside of the brick rubble feature suggesting an additional structure or addition to the one associated with the feature. Interpretation of the rubble is that it is the remnants of a demolished chimney. The rubble now fills in the cellar of the building (Figure 4.10).

![Figure 4.10. Close up of the brick rubble feature from a demolished chimney encountered in strata 3 of Unit 14. The extent of the brick rubble feature measured roughly 15ft x 6ft through ten of the excavation units.](image)

The artifacts recovered from these excavation units are numerous with over 8000 ceramic sherds dating from the 17th through the 19th centuries indicating a long and continuous occupation. A small number of late 17th Century to early 18th Century ceramics were found in each unit, which is evidence that the site is likely associated with the early Chandler’s Town settlement. The site lies on the west edge of what is
considered the south side of the village green. The long occupation of the site points to
the structure of the layout here as having been in place since the early days of the town’s
existence. Multiple buildings likely replaced each other during the town’s history based
on the amount of artifacts and the 300 year date range of the recovered ceramics.

Area 2 – Behind Courthouse

Survey Area 2 is in the northwest section of the town, bordered by a hedgerow to
the south, the swamp to the west and north, and the courthouse and remnant church to the
east (Figure 4.11). It is part of the courthouse lot that was established in 1729 for the use
as the county courthouse and jail. Today it is a regularly mowed field with a group of
small trees in the southeast corner and an outbuilding in the northeast. The east edge was
graded during the reconstruction of the courthouse in 1970. We excavated 80 shovel test
pits behind the courthouse and recovered 16 pipestems and 278 temporally diagnostic
ceramics. Most of the test pits encountered heavy deposits of gravel and excavation was
halted before hitting subsoil because we could not get through the gravel with a shovel.
This was a much heavier and thicker stratum of gravel than we encountered elsewhere in
town. We attributed the high concentration of gravel to the old riverbank due to its
proximity to the river. Only two pre-1750 ceramics were found behind the courthouse
and the mean ceramic date for the area is 1808. A large amount of brick rubble was
spotted during the survey on the west edge of the survey area that extends into the woods
and swamp and the surrounding STPs. Historical maps and land deeds indicate that in
the southwest section of survey this survey area was the location of at least one of the
town’s jails, most recently the ca.1860-1896 jail. Descriptions from the Port Tobacco Times newspaper during the construction of this latter jail state that the earlier jail was still standing as construction began on the new one (PT Times September 5, 1861, Vol. XVIII, Num. 19). While we didn’t find any large concentrations of domestic or architectural debris in the shovel test pits, the ceramics, pipestems, and historical records all point to this area being continuously used from the mid-18th Century through the end of the 19th Century.

Figure 0.11. Map of survey area two behind the courthouse. Shovel test pits are represented in black and the survey boundary is in red.

The rubble pile and undergrowth of bushes and shrubs in the woods was cleared out and we placed six 5ft x 5ft excavation units and one 2.5ft x 10ft unit here in an attempt to find the jail. Even before excavating, we saw parts of a wrought iron fence among the surface debris in the woods and a large pile of brick and mortar rubble. A
second article from the Port Tobacco Times newspaper gives a description of the new jail, “building is two stories high- walls ‘….hard brick…’ strong and substantially built.”(May 24, 1860, Vol. XVII, Num. 4). This piece of information was important because it told us that we were looking for a substantial foundation. The long trench unit was excavated first based on the large amount of surface debris to the west of it. This unit produced no intact foundation but the south half was filled with architectural rubble suggesting we were inside of the foundation. Additional units were excavated to the west and southwest in an effort to find the intact foundation. These four units each had a thick (0.8ft) humus stratum before encountering intact foundation walls running north to south. Units 18 and 23 had lesser amounts of architectural debris on the west sides of the units with the intact walls on the eastern side suggesting that the building was extending to the east. We used a tile probe to test for brick under the surface from the southwest corner of the foundation to the east. This was done to find the southeast corner of the building. Units 27 and 28 were then opened after the probe failed to continue to hit brick under the surface. These two units revealed the same soils and rubble fill as the previous units along with the end of the southern foundation wall (Figure 4.12).
Figure 0.12. Drawing of intact foundation of late 19th Century jail behind the courthouse. Inset image shows the remnant foundation western wall that was found in excavation units 18, 20.

The discovery of the jail confirmed the accounts from the newspapers and the 1888 plat that showed a building in the general area of where we were excavating. However, no evidence of the previous jail was found during the unit excavations of shovel test survey. The two pieces of pre-1750 ceramics were found in STPs north of this foundation. No other evidence of that earlier jail was found and time constraints did not allow for continued excavations in this survey area.

Area 3 – Village Green

The village green is just the name given to this survey area for the purposes of this thesis. The historical village green is a larger area that encompasses this survey area and parts of survey Areas 1, 4, and 8. An 1888 survey map of the area shows a “snapshot in time” of the extent of the village green. However, this map is only evidence of what the village green looked like at one brief period in the town’s history and does not reflect all
of the modifications to the layout of the town. Today these areas are separated by the parking lot and driveway leading to the courthouse (Figure 4.13).

Figure 0.13. Town map with historic village green area outlined with red box. The modern parking lot and drive up to the courthouse in blue separate four survey areas and cut through the once open space.

We excavated 35 STPs in survey Area 3, recovering over 2700 artifacts. Of the artifacts recovered, we found 669 diagnostic ceramics and 8 pipestems. The majority of the ceramics (75%) date to between the end of the 18th Century and the first half of the 19th Century. Two pieces of North Devon earthenware and 7 pieces of Rhenish Gray stoneware point to possible use of this section of the village green prior to the 1729 town act. It is very interesting that so few pre-1750 and post-1850 artifacts were recovered in this area. The village green was designed as an open space for a market square and the lack of concentrated brick and mortar debris is evidence that the town’s inhabitants were using it that way and not modifying the layout or building in this area. The small amount
of ceramics dating to the last half of the 19th Century show that people were no longer using the space as much and were treating it more like an open space, not a market square. This is likely why the artifacts dropped off in the second half of the Century. There was also no concentration of architectural debris as we saw in survey Area 1 and 2. The 1888 plat shows six buildings aligned north to south along the east edge of the Village Green facing west into the green (Figure 4.14). Therefore we expected to find similar evidence of structures as we did in survey Area 1.

![Figure 0.14. Survey map showing east edge of Village Green circled in red. Corresponding edge of 1888 map circled in red on top. Six buildings are located here on the map. The shovel test pit survey did not reveal evidence of any of these buildings.](image)

None of the materials we found show evidence of these buildings. Instead they show that this section of town was more open space and not the edge of the village green.
as we had expected to find based on the historical maps. At the east end of the survey area is a hedgerow with large trees where we found a partial above ground foundation. This wooded area is part of a different property, which we did not have permission to excavate in. We did map in the location of the hedgerow and the remnant foundation. This foundation marks the east edge of the village green and the entrance would have been facing west into the village green. Village greens (or market squares) were designed and used as open spaces, so we did not expect to find evidence of dwellings or outbuildings within the historic village green but we did expect to find remnants of the buildings on the east edge of the green. The almost complete lack of pre-1750 ceramics (n=9) and structural remains, shows that this area was an open space prior to the establishment of the town in 1729. This part of the historical village green seems to have remained free of buildings for much of the town’s history. The size of the village green, however, is one of the aspects I was questioning when starting this research by asking if areas around the courthouse were being built upon and used more after the establishment of the orthogonal layout of the early 18th Century and again in the second half of the 19th Century, during the town’s economic decline. The shovel testing here did not reveal any evidence of physical development or building episodes in this part of the village green, but did reveal more heavy use for the 100 year span of the town’s history.

The lack of evidence for structures is interesting. The 1888 plat shows several buildings on a north south line making up the eastern edge of the village green. This plat map has been fairly accurate in the recording of buildings in their general location so the findings, or lack thereof, were unexpected. This lack of evidence supports my hypothesis
of the modification of the planned layout of the town. The village green was designed to be surrounded with buildings facing into the green. We were limited to only shovel testing in this area so no further excavation was done. However, the areas directly in front of the courthouse and extant historical homes may reveal more about the use of the historical village green. The lack of structural debris and foundations suggests that this area was used as an open space and that any east edge of the village green lies further east underneath the modern Chapel Point road.

Area 4 – Front Courthouse

This survey area encompasses the areas directly east, north, and northeast of the reconstructed courthouse (Figure 4.15). This area is also part of the historical village green but is now cut off from that area by the parking lot. Part of the survey area also encompasses the land directly south of the reconstructed courthouse that contains the outline of the old Episcopal Church. This section is privately owned and we did not have permission to do any type of excavation here. Before we tested this area around the courthouse, we thought that it might have been disturbed by the reconstruction of the courthouse in 1970. During shovel testing we found that this was the case for much of it. The shovel test pits directly east and north of the courthouse showed evidence of grading through the inclusion of clay fill in the plowzone and shallower depths (0.7ft average) of the test pits than in areas farther away from the courthouse. We excavated 54 shovel tests here and one single 3ft x 3ft test unit. Diagnostic artifacts were few (164 ceramics and 10 pipestems) considering the number of shovel test pits but we did find intact deposits in
the single test unit. The paucity of artifacts in this survey area is not surprising. The area around the courthouse was graded during reconstruction and earlier excavations during the 1960s and 1970s likely removed many of the artifacts.

![Figure 0.15. Survey Area 4 outlined in red encompasses the front part of the courthouse bordered by survey Area 1 to the south and the swamp to the north. This area is the western half of the historic village green.](image)

The test unit was excavated after a partial intact foundation was found in STP 326. The test unit then showed that these bricks were articulated and part of an in situ foundation (Figure 4.16).
Figure 0.16. Location of Test Pit 3 in front of the courthouse. Inset picture is of the west wall of the test pit, showing a single course of foundation running north to south. No further excavation was done here to find the extent of the foundation.

Local lore indicated that this was a shack put up by a local man in the early 20th Century but the artifacts recovered do not support that theory. Ceramics (n=17) recovered in the same strata of the foundation have a mean ceramic date of 1785 with no pre-1750 ceramics. A single late 19th Century ceramic was found in the upper strata. While there is no evidence as to the purpose of this building, it is likely that it was used as a lawyer's office, which was common practice to place offices and other buildings close to the courthouse in the Chesapeake region (Olmert 2009). This discovery, however, puts into question the integrity of the village green and the uses of open space in town. The presence of an office in front of the courthouse suggests that this part of the village green was being used during the late 18th Century while the town was at its economic height. It also appears that this was short lived and the structure was abandoned by the first quarter of the 19th Century, which is the same time that the town
was seeing an economic decline due to the War of 1812. These data tells me that the village green was not a “fixed” space; it was a changing one dependent on the needs of the inhabitants and the fluctuations of the economy based on the timing of these changes.

Area 5 – Jamieson West

Survey Area 5 is an overgrown and irregularly plowed field that until a decade ago was still under cultivation. It is bordered by an active corn field to the south, the Port Tobacco River to the west, swamp to the north, and a large hedgerow separating it from survey Area 1 to the east (Figure 4.17). It is the farthest survey area from the town core and the closest to the river. Land deeds refer to this area as “The Point” because the west edge of it juts out toward the river. The land deeds and the 1888 plat indicate that there was a structure here in the second half of the 19th Century.

Figure 0.17. Survey Area 5 outlined in red, showing borders of the corn field, river, swamp, and hedgerow cutting off the field from the town core.
The excavation here was undertaken as part of the overall site survey looking for structures as part of the town, even though it is not part of the orthogonal layout like the areas around the town core. We excavated 68 shovel test pits here with 7 pipestems and 189 ceramics recovered during survey. The pipestems have a Binford date of 1786, and a mean ceramic date of 1794. This particular survey area had very deep deposits where some test pits were excavated past 3ft deep, which is deeper than most other areas in town. The plowzone here was over a foot thick and was a fine silt and silty loam. We attributed this to the closeness of the area to the river and the silting in of the town. Since this is the farthest away from the hills and erosion, this area would be where the lightest material would settle from erosion as it made its way to the river (Waters 1992). While the mean dates of the diagnostic materials put the occupation of this area squarely near the end of the 18th Century, the majority (%) of the material was from the mid to late 19th Century and no pre-1750 cultural material. However, there were no concentrations of artifacts in the field. The material was spread out over the entire field making it hard to identify any particular section as a location for structures or long occupation. We encountered a few brick fragments in some STPs but no concentrations of architectural debris, also making it difficult to identify the location of any structure. This area was not likely occupied earlier than the second half of the 18th Century and is not part of the linear settlement that predated Port Tobacco based on the recovered artifacts. Due to the lack of concentrated artifacts and very little architectural debris, it is unlikely that this area had any permanent structures. There is no indication that this section of town was part of any formal planning during or after the establishment of Port Tobacco in 1729.
There are also no roads or paths indicated in the historical record or on the ground that formally connect it to the town core. Since there is no indication of this, it is more likely that this area was utilized as a temporary landing area for boats coming up to town as it sits at the northern most point in town where the river was still deep enough to carry small boats during the late 18th Century. This time period was the height of occupation and commerce for the town, making it necessary to have a landing. Landings were made of wood and were closest to the water. Therefore, any remains of such a structure are either buried in the swamp, demolished for the lumber, or rotted away after disuse.

*Area 6 – Jamieson East*

This survey area lies just west of Chapel Point Road and is bordered by a gravel drive on the south and southwest, survey Area 3 on the north, and the Barbour property in the northwest (Figure 4.18). The Barbour property is a reconstruction of a late 19th Century store. We did not have permission to survey or excavate on this property.
We excavated 75 shovel test pits in this field, recovering 779 diagnostic ceramics and 14 pipestems, a much larger amount of artifacts in this field compared to the 189 found in 68 STPs in survey Area five. Most of the ceramics were concentrated in one area just east of the Barbour house along with a large amount of architectural debris. The ceramics that we recovered were more varied in style and type compared to other survey areas. We found a large amount of Westerwald type (n=24), and tin-glazed earthenware (n=67) ceramic sherds from mugs and drinking vessels with a mcd of 1750. These types of ceramics are typical 18th Century tavern wares (Noel Hume 1969, Deetz 1996). Historical records place a hotel in this general area and the amount and types of ceramics confirm that description. The location of this site suggests it is one of the building locations along the east edge of the village green. No North Devon or Buckley type ceramics were found here, which suggests that it was not occupied during the early Chandler’s Town settlement but was built after the establishment of the orthogonal layout from the 1729 town act. There is a considerable drop off in the number and types of ceramics dating to after 1850 (from 70% to 30% of total ceramics). This suggests that like much of the town, this site was abandoned late in the second half of the 19th Century.

Based on the information from the shovel test survey, we placed ten 5ft x 5ft excavation units in the area with the highest concentration of architectural debris and historic ceramics. These units were placed with the purpose of locating any remnant foundations and identifying the dates of cultural deposits. We recovered over 7500
additional diagnostic ceramics and 173 pipestems. The Binford date of the pipestems (1748) is consistent with the mid-18th Century timeframe of mean occupation from the shovel test survey. The ceramics include 18th- through mid-19th Century ware-types, with 18th-Century tin-glazed earthenware (n=2262) and early to mid 19th-Century whitewares (n=1503) dominating, and significant numbers of late 18th through early 19th-Century (1770-1840) creamwares (n=729) and pearlwares (n=548) revealing continuity in occupation. The drop off of ceramics post-1850 is the same as what we saw during the shovel test survey. Similar to units in survey Area 1, the first stratum of plowzone in this area was between 1.0 and 1.5ft deep. The second stratum was a thin sandy silt loam (0.23ft thick) with no cultural material. This sandy layer is likely due to redeposition of local material subsequently plow-truncated and covered by flows of finer grained materials mixed through plowing. Below the sand lens we encountered brick and mortar rubble throughout the plowzone. This third stratum revealed a brick foundation in three units (70, 71, & 72), a brick pier in two units (71 & 75), and robber trenches filled with brick rubble and 18th Century ceramics in units 71 & 75 (Figure 4.19 & 4.20). This third stratum also revealed a Colonial Period deposit of ceramics and wine glass. Hollowwares (drinking vessels) dominate this assemblage of ceramics and tin-glazed vessels make up over half of the total assemblage (Figure 4.21).
Figure 0.19. Location map of the ten units excavated in survey Area 6. This section of the survey area is on the south edge of the historic village green.
Figure 0.20. Drawing of excavation units showing the extent of the brick foundation, pier, and robbed out trench. Areas of artifacts in unit 74 are on the inside of the foundation.

Figure 0.21. Tin glazed bowl found in Colonial Period stratum during excavation of Unit 71. While the total sample is small (n=28), these ceramics confirm the shovel test results of this site as a likely tavern.

Based on the recovered cultural materials and architectural debris, this site was likely the location of two separate buildings, an 18th Century tavern and a later 19th Century dwelling. The successive buildings in the same location mark evidence of the continuity of this part of the town and the village green during the mid-18th through late-19th centuries. No evidence of pre-1729 settlement was found during excavations. Use of the site as a tavern serving the town during its height of commercial success is seen in the ceramic drinking vessels. Taverns were an important part of everyday life in the 18th Century, serving multiple purposes. Besides a drinking and eating establishment, they
were daily meeting places, boarding houses, and storehouses. A later 19<sup>th</sup> Century dwelling, possibly the hotel recorded in historical documents, replaced the tavern. This can be interpreted as the continuity in the use of this space in town as a commercial area. Taverns and hotels were both places of social interaction as well as places to eat, drink, and sleep.

Area 7 – Burch House

The area of the Burch house also encompasses the property adjacent to the west and was the beginning point of the shovel test survey. It is bordered by Chapel Point Road to the south and east, a gravel drive and survey Area 6 to the north, and a hedgerow and corn field to the west (Figure 4.22). The Burch house is one of three late 18<sup>th</sup> Century dwellings in town. All of the extant historical buildings in town have gone through considerable reconstruction and rehabilitation since the 1960s with the Burch House having twice been restored since 1980. The date of construction for the extant building is disputed by archaeologists as it has gone through several additions along with the restoration work. A chain of title for the lot does however put the purchase of the lot at 1730, making it one of the lots bought up after the establishment of the town in 1729. A chain of title is the sequence of historical owners of a property from the latest back to the earliest. The reestablishment of the town structure was the main focus of our survey and we knew that this house was one of the earliest built. What we didn’t know was what kind of additions or renovations had it gone under in the 18<sup>th</sup> and 19<sup>th</sup> centuries and whether there was a previous post in ground structure on the property that predates the
extant home. The lot for this house was taken up by one of the landowners from the original Chandler’s Town. Many of the landowners in that earlier town simply had to reapply for their lot with paperwork, which would in a sense “annex” their lots into the new town lot system (Cowherd 2011, Quantock et al., 2009). This means that the lot would have been part of the both the early town and the new Port Tobacco. A secondary goal of the shovel testing in this lot was to look for any evidence of any pre-1729 structure and evidence of modifications or additions to the existing one.

![Figure 0.22. Survey Area 7 showing the Burch and Holt properties with extant homes. A total of 36 shovel test pits were excavated on these two properties within the survey area. The area is on the far south end of the town core. Inset pictures show the Burch House before and after renovation in the 1980s.](image)

The lot is small and only 20 shovel test pits were excavated here, mostly in the back and side yards of the house. The test pits directly around the house and in the east yard averaged over 3ft in depth, while the south yard STPs only averaged 1.5-2.0ft in depth. Cultural deposits were found at the bottom of these test pits. The soils were a
dark silt loam (1.0-1.5ft thick) overlaying a 0.2-0.5ft sandy layer and clay subsoil. The thick silt layers are due to the heavy sedimentation that covers most of the town. Over 1300 artifacts were recovered, which is very interesting given there were only 20 STPs. The majority (70%) of the artifacts, however, were architectural debris, oyster and bone. The ceramics span from the early 18th Century through the late 19th Century with the presence of British Brown stoneware (n=1) and American Gray (n=2) representing the ends of the date ranges. The large and varied amount of ceramics is interesting because it suggests a long and continuous occupation of the site. While the sample is small, the British Brown stoneware is evidence of a pre-1729 occupation, corresponding to the Chandler’s Town settlement. The Burch House itself is interesting based on its location in town. The house sits at the far south end of town and is not part of the orthogonal grid pattern of the town core. It also does not sit along any of the three roads leading to the village green. Its location is at the intersection of the old Warehouse Landing road that leads to the south fields, and Cheapside Street. This is interesting because it makes it more likely that this house was part of the earlier Chandler’s Town settlement due to its location. The house also does not sit at a right angle like we see from the orthogonal pattern in town. The location away from the town core and along the road leading south is evidence of the linear style settlement that predated Port Tobacco. It is also evidence of how the town incorporated some of the lots from the early town after the 1729 town act. This is important because it shows the influence of the early landowners in the design and layouts of town by having their lots become part of the new town without having to buy up new lands.
Area 8 – Stagg Hall/Chimney House

Survey Area 8 consists of the Stag Hall and Chimney House properties. These are two of the three extant historical dwellings in town, dating to the first half of the 18th Century. The two lots that these houses occupy are part of the original lots taken up after the 1729 town act and were two of the lots that were part of the earlier Chandler’s Town lot system. The area surveyed was the front of the properties and the west side of the rear yard of the Chimney House. No archaeological survey was conducted in the rear of Stag Hall. A fence-line separates the survey area on the west from Area 4, the village green lies to the south, and an empty lot to the east (Figure 4.23).

Figure 0.23. Map of survey Area 8. Shovel test pits are represented by small circles in the front yards of two extant historic homes. These front yards were within the boundaries of the historic Village Green. Only the west portion of one rear yard was excavated due to landowner permission.
We excavated 43 shovel test pits in this area and recovered 1847 artifacts, including over 700 pieces of indeterminate vessel glass, and over 500 pieces of indeterminate metal. We discovered during the survey that the area behind the Chimney House was almost completely void of artifacts and the soils were saturated and swampy making that area unlikely to have been occupied by any substantial structures. This is interesting because it shows that the swamp northwest of this survey area probably extended farther east than it does today. The pipestem data confirms the status of these dwellings as early 18\textsuperscript{th} Century with a Binford date of 1714 from the 13 recovered during survey. However, during analysis of the artifacts we found that the types and dates of the ceramics found in front of both houses were different than what we were expecting. Considering the age of the extant houses, we expected to find ceramics dating to the early Colonial period such as Buckley, Westerwald, and Rhenish wares to match the dates from the pipestems. Instead we found more American Blue and Gray stoneware, whitewares, and yellowwares dating to the second half of the 19\textsuperscript{th} Century and only four (1\%) dating to pre-1750. The later ceramics make up the largest percentage of the total artifacts (151 of 353; 43\%). We found a large quantity of machine-cut nails (n=164) in the front yards. Machine-cut nails were in use from 1800-1880 in the Chesapeake region (Deetz 1996). Brick and mortar rubble was found in STPs on the south edge of the Stag Hall property and in two spots along the west edge of the Chimney House property (Figure 4.24).
Figure 0.24. Map of survey Area 8 with the locations of three sites within the historic village green. The sites are identified by brick, nails, and ceramics found in shovel test pits. Site locations are represented by the solid red areas on the map.

The ceramics and nails point to at least three additional buildings on the properties during the latter half of the 19th Century in the same location as the brick rubble. Using mean ceramic dates from these sites put occupation between ca. 1850 and 1888. The end date is taken from Page map of the same date that does not show any structures in these areas. Additional excavations would likely uncover the foundations to these structures but we were limited to shovel testing in this area. The presence of structures dating to the late 19th Century that do not appear on the 1888 Page map is evidence of the changing landscape of the village green and the town layout. In this part of town, the orthogonal, grid-like pattern that was established with the 1729 town act was not something permanent. The shape of the village green in this area went through
physical changes towards the end of the town’s history as a commercial and judicial center. The village green was no longer the bustling market square that it once was but instead was being filled with small domestic structures and outbuildings. Short lived structures like this, and the modification of the planned layout, are evidence of an economy in decline.

Surface Collection

A controlled surface collection survey was conducted in May 2008 on approximately thirty acres of plowed corn fields along the Port Tobacco River directly south of the town core in search of archaeological sites associated with the early Colonial Period of Port Tobacco. We did not have permission to do any excavations in the fields due to their continual use as agricultural fields. The survey area was divided into three separate fields, the north (5.5 acres), middle (5 acres) and south (18 acres) fields, with each field surveyed separately (Figure 4.25). A controlled surface collection involves the documentation, mapping, and collecting of artifacts on the ground surface (Stewart 2002). For this survey, the fields were first plowed by the landowner. The team then started on one side of the field and walked side by side 5ft apart back and forth across the field looking for artifacts lying on the surface. Each identified artifact was flagged with colored pin flags. After the entire field was surveyed, each artifact was then mapped with a total station and collected in artifact bags. Oyster, brick, and coal were mapped but not collected. The surface survey identified five historical sites.
Three fields south of modern town core that were surface collected in 2008. Five historical sites were identified in the fields.

North Field

The north field lies directly adjacent to the west side of the town core up against survey Area 5. Surface collecting in this field revealed extensive cultural materials representing two distinct historic sites (Figure 4.26). The North field’s historic occupation dates from the early 18th Century through the late 19th Century with the evidence of occupation during the 18th Century being strongest. This is based off of the recovery and analysis of ceramics recovered during the surface survey. Eighteenth Century ceramics, 94 sherds, dominate the assemblage, with smaller amounts of mid to late 19th Century artifacts. The two sites are on the very north and south end of the field
and represent two distinct occupations. While only a small amount of material (n=19) were recovered at the south site, the mean ceramic date is 1753. The absence of late 17\textsuperscript{th} Century and early 18\textsuperscript{th} Century ceramics is evidence that the site was not occupied during the earliest settlement of Chandler’s Town. This site is void of architectural debris (brick, nails, and window glass). The small amount of historic material and lack of structural artifacts points to this site being very shortly occupied and any structure that may have stood here was most likely a post-in-ground structure serving as an outbuilding rather than a dwelling. Dwellings, even post in ground ones, would have a chimney built of either brick or daub (Noel Hume 1997). The site on the northern extent of the field dates to the late 18\textsuperscript{th} to early 19\textsuperscript{th} Century based on ceramic analysis with a mean ceramic date of 1719. Here the white salt-glazed stoneware was accompanied by tin-glazed earthenware and small amounts of Rhenish Grey stoneware and British Brown stoneware, all of which date to the early 18\textsuperscript{th} Century (Noel Hume 1969). The early ceramics recovered at this northern site put its occupation prior to the establishment of Port Tobacco. The presence of scattered brick and window glass associated with the cultural material found here is evidence that this was most likely a post-in-ground domestic structure with a chimney made of brick.

The north field shows evidence of a single domestic structure and a possible outbuilding. The early occupation of this site near the river and away from the town core is evidence of the pre Port Tobacco establishment of Chandler’s Town. Based on the number of artifacts recovered during collection, this field was only occupied for a short time and was abandoned sometime in the second half of the 18\textsuperscript{th} Century.
Figure 0.26. Northern field that is an extension of the field west of the courthouse and lies south of the Compton field area of the town core. Artifact clusters representing 18th Century sites are circled in red.

*Middle Field*

The middle field is the smallest of the three fields. One small historic domestic site was revealed through surface collection in the northeast corner of the field (Figure
4.27). Very few artifacts were recovered at the site (n = 6), with a mean ceramic date of 1752. This indicates a very short or temporary occupation of the site most likely after the establishment of Port Tobacco in 1729. However, this is based solely on the six pieces of ceramics found at the site. There was also a scattering of brick fragments in the same area, which indicates a domestic structure likely with a chimney. Based on its proximity to the adjoining woods to the east, any other remnants of a structure, or additional domestic material related to this site may lie in those woods. Small sites like this are common in the Chesapeake (James Gibb personal communication, 2011). These ephemeral sites usually represent short occupation and the related structures used as outbuildings, which is why the domestic material is so scarce. No direct evidence relating the site to the Chandler’s Town settlement was found at the site.

![Figure 0.27](image.png)

**Figure 0.27.** Middle field that lies south of north field. Western edge lies closest to the river. Artifact cluster representing one small 18th Century site circled in red.
South Field

The south field lies directly south of and is connected to the middle field and is the farthest from the town core. It is the closest survey area to Warehouse Landing, which was the entry/exit point for cargo going in and out of the town for most of the 18th Century. Two related sites were found at the southern end of this field (Figure 4.28). The larger of the two sites is closer to the middle of the south end on a slight rise and the second site is on the west edge closest to the woods and the river beyond it. Ceramic analysis puts the date of these sites to the last quarter of the 17th Century and first quarter of the 18th Century. Large amounts of Buckley Earthenware and scattered amounts of Rhenish Brown, Westerwald, and Staffordshire Combed Slipware represent the later dated material with a mean date of 1731, while the presence of North Devon Sand-Tempered ware (1688) clearly puts the site into the last quarter of the 17th Century. Additional temporal diagnostics also place the date of the sites to the early 18th Century.

Three interesting pieces of information came from analyzing the data from this field, the almost complete absence of 19th Century material, the large percentage of North Devon and Buckley ceramics, and the handle of a ceramic pipkin. A pipkin is an earthenware cooking pot used directly over heat from a fire. The shovel test survey in the town core revealed artifacts spanning the late 17th through the late 19th centuries and we expected to find the same in the fields south of town. The much smaller amount of material and the timeframe from whence they came was the first clue to pointing to this area as part of the earlier Chandler’s Town. The manufacturing dates of North Devon and Buckley
ceramics span from the end of the 17th Century to the first half of the 18th Century. This alone puts the date of the site contemporaneous with Chandler’s Town. The final and most significant find was the handle to a ceramic pipkin. It is well-established that pipkins are a clear marker of late 17th Century Colonial sites in the Chesapeake (Noel Hume 1969, Beaudry et al. 1983, Deetz 1996). Pipestem bore data (n = 37) support an early date based on the Binford and Hanson dating systems. The median dates on these models brought dates of 1731 and 1718, respectively, matching the dates from the ceramic assemblage. Architectural debris from the sites is limited to 4 pieces of window glass and one indeterminate nail. The lack of brick found in the field strongly suggests that the structures would have been earthfast post-in-ground structures. Limited access to the site did not allow for further excavation but the recovered ceramics and pipestems are enough to identify it as a domestic site with a dwelling and possible outbuilding as part of the Chandler’s Town settlement dating prior to the establishment of Port Tobacco in 1729. The town act of 1706 describes placing the new town of Port Tobacco “adjacent to the already existing Chandler’s Town”, which would put the earlier settlement somewhere away from the town core as we know it today (Shomette 2000). The fields south of town show evidence of two closely related and shortly occupied sites dating to the late 17th to early 18th Century, making that area the most likely part of the defunct Chandler’s Town. The mean pipestem dates of 1731 and 1718 and the presence of North Devon ware (ca.1688) for the south site suggest it is contemporaneous with the Chandler’s Town settlement. I compared the pipestems from the south site with those from the town core and found that there was a very highly significant difference.
(X^2=53.6, alpha=.001, critical value=16.26, df=3) in the pipestem borehole sizes in the south field over those found in the whole of the town core. This tells me that the south site was occupied prior to the establishment of the town act of 1729.

Figure 0.28. South field survey area showing two distinct 18th Century sites representing the Chandler’s Town settlement prior to 1729. Artifact clusters representing the sites are circled in red.

The data collected in the three fields south of town revealed five historical sites ranging in dates from the late 17th Century through the early 19th Century leading from a mile south of town up to the edge of the town core. The mean ceramic dates and pipestem dates of each site clearly show that they are part of the early Chandler’s Town that was a linear settlement along the River. After the establishment of Port Tobacco, occupation of those sites was abandoned for sites within the town core.
The archaeological investigations of the town core and fields south of town revealed interesting results. Evidence of the linear settlement associated with the early Chandler’s Town occupation of Port Tobacco was discovered during the surface collection in the fields south of town and within the town core. The shovel test pit survey indicated the locations of building sites within the town core. Three of these sites are within the historic village green and date to the second half of the 19th Century, well after the establishment of the orthogonal grid-like pattern. This is an indication that the village green and town layout were modified during difficult economic times. One site crowding the courthouse is dated to the height of the commercial success of the town (late 18th to early 19th centuries). Further unit excavations revealed an additional four sites with varying occupation date ranges.

Historical maps place a village green at the center of the town core with domestic and commercial buildings on three sides, and the monumental governmental and religious structures on the fourth. Unit excavations in survey Area 1 and 6 revealed several buildings on the edges of the village green. However, the east edge of the village green that we surveyed in Area 3 did not show evidence of any structures. Date ranges of ceramics found in each area show varying time periods of occupation but not always continuous.

The open space created after the establishment of the town in 1729 of the village green was modified during two different time periods. The west side shows evidence of at least one building crowding the front of the courthouse. The north side shows evidence of three structures directly in front of two houses facing the courthouse. The
building of these structures is evidence that the grid-like layout of the town was not always followed and was under constant change.

The archaeological surveys and excavations in the town core and fields south of Port Tobacco provide important evidence to the structure of the town layout and how it was modified from its earliest existence as Chandler’s Town up through the end of the 19th Century. The recovered artifacts in the south field and in several survey areas in town dating to the late 17th and early 18 centuries show that the original town design was of a linear pattern. This was a typical use of space before the program of town planning that took place in the 18th Century. Survey and excavations confirmed the locations of several buildings on the edges of the village green as seen in a late 19th Century plat. They also revealed the absence of buildings on one edge of the village green, and at least three buildings within the village green.

It is the change of the town layout from a linear settlement to an orthogonal grid-like pattern and the modifications to that pattern during the 18th and 19th centuries that are the main themes of this thesis. Towns were created for the centralization and control of the tobacco trade and for the collection of taxes, which was established during the program of town planning in the 18th Century. The modifications of the layout show how a place can be seen as a display of power. Power here is indicated by wealth and the control of it. The visual display of that wealth is seen in the large dwellings with cellars built in town, a new courthouse and jail with the arrival of the county seat to town, and the creation of a village green for market activities. The archaeological excavations have found evidence of some of this. By the middle of the 19th Century, however, the
commercial business side of the town had declined and buildings in town were in
disrepair and some abandoned entirely. The village green was no longer an open market
square. The shovel test survey showed preliminary evidence of structures built during
this time within the village green. This was a new modification to the old pattern.

While the shovel test survey was followed by excavations in some areas to
confirm the presence of structures, not all were tested due to landowner permission. And
no roads or paths were discovered during these excavations. A second type of
investigation was needed in order to confirm some of the findings and to attempt to look
for additional features related to town layout. A two-part geophysical survey was
therefore conducted, which will be discussed in the following chapter.
Chapter Five: Archaeological Methods II - Digital

Introduction

Advances in technology have led archaeologists to incorporate and utilize newer techniques in fieldwork. New digital methods such as computer-based mapping and imaging are now being used along with traditional excavation methods on archaeological projects all around the world (Gaffney and Gater 2003; Johnson 2006). Reasons for this emergence in newer technologies are that they are faster, cheaper and less destructive than conventional approaches to archaeology (Gaffney and Gater 2003; Johnson 2006; Kvamme 2006). In most geophysical investigations using multiple techniques to provide complementary data will increase the accuracy of interpretations and depth of information. While the first geophysical approach to archaeology took place in the 1890s (Clark 1996), there is a wide variety of instruments available to archaeologists today. They include conductivity, susceptibility, resistivity, magnetometry, and ground-penetrating radar (GPR). These techniques are non-invasive, allowing information from large survey areas to be collected while still allowing for the preservation of the site for future study (Gaffney and Gater 2003; Johnson 2006). These digital methods have emerged as great aids to interpretation of archaeological sites along with conventional techniques such as shovel testing, surface collection and unit excavations. Total stations map what is above ground while ground-penetrating radar and magnetometry detect and map changes in the subsurface. More specifically, ground-penetrating radar can map the
subsurface in three dimensions by recording reflected changes in the composition of the soil matrix and any buried features. Magnetometry detects variations in the earth’s magnetic field that occur either naturally or manmade, such as the presence of foundation walls. Therefore when used together with conventional methods, these techniques are the most efficient way to identify architectural remains, small subsurface features, and reconstruct the spatial layout of the town. This information can then be analyzed and used to understand the modifications to the physical layout and the social and economic causes of those modifications.

Geophysics has been successfully used in the Chesapeake before. Bruce Bevan (1995) located brick walls associated with a possible brewery using magnetometry on Jamestown Island, Virginia, and used a multiple tool approach to reveal a road by the St. George Tucker House in Williamsburg, Virginia. Sarah Lowry (2009) used GPR to locate graves at the Fort Ward site in Alexandria, Virginia. William Johnson used a multiple tool approach with magnetometry, resistivity and GPR to identify burials ahead of the reconstruction of the chapel at St. Mary’s MD. Since the town of Port Tobacco spans close to 60 acres, using noninvasive techniques such as these allowed me to survey much more of the town than using conventional archaeological techniques. As part of the work done by the Port Tobacco Archaeological Project from 2007-2010, we used a total station to map architecture, topography, vegetation, and site boundaries. In July of 2011, I conducted magnetometer and ground-penetrating radar surveys in six survey areas within the town core in an attempt to locate archaeological features including residential
and commercial structures, associated outbuildings, roads and other features related to
town layout.

*Total Station and AutoCAD*

A total station is a digital transit used by archaeologists to accurately map points
including artifacts, site boundaries, architecture, and many other natural and manmade
features on a site. This is done with a laser and prism to locate points within an
established grid and datum. The total station is a computer-aided mapping tool that
triangulates points using X, Y, and Z coordinates. The X and Y positions are the
horizontal position of any point within a grid with the Z the vertical elevation of the
point. A direct line of sight must be established in order for points to be mapped. A total
station holds advantages over a traditional transit including high precision and accurate
mapping and the ability of digital downloading of data into a computer (Bernatchez and
Marean 2011). The ease of setup and use and makes the total station a widely used
instrument of archaeologists. The use of the total station has long been part of the tool-
kit of archaeologists in the area and is on its way to becoming part of the Maryland
Archaeology’s “best practices” Guide (Jim Gibb, personal communication).

Since a line of sight is necessary to use the total station, it may be necessary to
move and re-setup the machine multiple times across the site. This was the case at the
site of Port Tobacco due to the many large oak trees and hedgerows that grow throughout
the site. For this project, the total station was used to map above ground features
including extant buildings, fence-lines, hedgerows and other natural features and
gеophysical survey and excavation grids (Figure 5.1).
By mapping the geophysical grids they can be tied into the existing site map in order to locate any features found during survey, making it easier to go back and locate them for excavation, if necessary. All survey data was then mapped using a total station and added to the previously created sitewide grid (Figure 5.2).

Once the X, Y, and Z coordinates were collected using the total station, the data is then downloaded into an easily accessible format such as Microsoft Excel. The coordinates were then plotted into AutoCAD, a computer-aided drafting program to create a detailed map of the spatial representation of the data. AutoCAD uses the X, Y, and Z coordinates to place points in space. In the case of this project, those points are the horizontal and vertical (elevation) position of the mapped feature. Proper note-taking while in the field is an absolute necessary when using a total station. Each point, its X,
Y, and Z value, must be accurately recorded by hand with a corresponding note as to what is being mapped and where in order to identify the features when put into AutoCAD. The resulting map identifies locations of extant buildings and structures, landscape features, archaeological test pits and excavation units (Figure 5.2).

![Map created by data points collected from a total station. Extant buildings are seen in red, modern roads in blue, and vegetation in green.](image)

**Figure 0.2.** Map created by data points collected from a total station. Extant buildings are seen in red, modern roads in blue, and vegetation in green.

**Magnetometry: Background**

The magnetometer technique involves the principle of detecting variations in the earth’s magnetic field at or near the ground surface. The strength of the variation is a function of the distance from the source to the sensor. The localized magnetic fields are a result of two different types of magnetism, remnant or induced (Bevan 1995, Aspinall, Gaffney, and Schmidt 2008, Gaffney and Gater 2003). Remnant magnetism is the permanent magnetization of objects based on the mineral composition. Induced
magnetism is the magnetization of an object as a result of an external influence or its susceptibility to being magnetized. Fired clays, igneous rocks, and thermally-altered stones are examples of remnant magnetism, while ferrous objects are a common form of induced magnetism (Silliman, Farnsworth, and Lightfoot 2000). Sediments also contain magnetic properties that vary in susceptibility based on the presence or absence of iron. These allow localized features such as trenches and foundation walls to be distinguishable from the surrounding soil because of the magnetic contrast between the anthropogenic disturbance and the undisturbed soil. Therefore it can show that the subsurface has been disturbed by human interaction and show the placement of buried materials. For instance, a cluster of magnetic high signatures surrounded by low resolution signatures can indicate the location of buried metal. A magnetometer allows for high resolution data acquisition in short periods of time, making it one of the most productive types of geophysical surveying methods for archeology (Kvamme 2006). It is best used over large areas to be able to relate cultural features with the surrounding environment. An example of this would be that a difference may be noticed between the deposits of archaeological features such as a stone foundation and those of the soil matrix surrounding it. The contrasts between the natural environment and those of buried features are based on the physical and chemical properties of the soil matrix and how magnetic it is. For example, a brick kiln, due to its highly fired bricks, would give off a stronger magnetic signature than the soil that surrounds it, making it easier for the magnetometer to identify it.
In archaeological surveys, the cesium vapor magnetometer is the most widely used machine due to its ability to gather the most information over a large area in a short amount of time (Aspinall et al. 2008; Silliman et al. 2000). For this survey a cesium vapor magnetometer in gradiometer mode was used but I will refer to it as a magnetometer during discussion of methodology and processing. This type of magnetometer, in gradiometer mode, utilizes two vertically separated sensors one meter apart allowing for the simultaneous measurements from two sensors to eliminate the diurnal or daily variations in the earth’s magnetic field so that only one instrument and one operator is needed for survey (Aspinall et al 2008). In gradiometer mode, the instrument measures the difference between the two sensors.

Causes of Magnetic Variation in the Archaeological Record

Different materials and soils have varying magnetic susceptibilities that affect the magnetic field. Topsoil can become magnetically enriched through both physical and chemical processes such as weathering. A thermoremanent effect from firing can increase the magnetism of soil (Gaffney and Gater 2003; Jackson 2006; Kvamme 2006). The way people interact with the earth also causes magnetic variations that are important to a magnetometer survey (Kvamme 2006). As natural firing of the earth can cause variations in the local magnetic field, so too can the fires created by people such as those in hearths and the fired materials found in artifacts like ceramics. Human occupation can change the magnetic enrichment of soils because of concentrations that fill storage pits or rubble-filled cellars. The introduction of foreign stone for building purposes and
manmade iron artifacts also can lead to magnetic variations in the soil that a magnetometer may pick up during collection.

Surface Conditions and Obstructions

There are a number of issues to consider when conducting a magnetometer survey. The nature of the soils, presence of iron artifacts, magnetic igneous rock, site location, vegetation and topography, the presence of automobiles and people all can cause problems in the collection of a magnetometer survey (Kvamme 2006). Soils with even small amounts of organic material are magnetic and will show up in a survey. Igneous rock outcrops can create large dipolar anomalies resulting in magnetic variations that obscure data. Site locations such as those in urban settings are filled with metal objects that will interfere with collection. Heavy vegetation can make instrument use difficult and can significantly add to the time it takes to complete a survey. People, the operator in particular, can cause the most interference during a survey. To reduce the amount of magnetic interference, it is important that the operator and anyone standing around the magnetometer be free of any and all magnetic materials, which includes belt buckles, glasses, even shoes with rivet holes for the laces as all of these things can cause magnetic interference (Aspinall et al 2008).

Data Collection and Processing

The first part of the geophysical investigations was a magnetometer survey of the lands in town. A G-858 MagMapper cesium vapor magnetometer with dual sensors in
gradiometer mode with a high speed data logger was used to complete the survey. Two sensors were mounted one meter vertically apart on a two-wheel cart that was pushed by the operator along the transect lines (Figure 5.3).

![G-858 MagMapper with dual sensors and cart in use at Port Tobacco.](image)

The top sensor measures the local magnetic intensity along with any diurnal variations. The bottom sensor measures the magnetic signature. The bottom sensor is more sensitive to any near surface (or subsurface) anomalies because it is closer to the ground. The magnetic gradient ($M_{\text{grad}}$) is calculated by subtracting the data number of the bottom sensor ($m_{\text{bottom}}$) from the top sensor data ($m_{\text{top}}$) and dividing by the distance ($L$) of the two sensors (Aspinall et al. 2008). This number is expressed in units of nanoTeslas/meter (nT/m) and can be a positive or negative number. A high magnetic signature is expressed as a high positive nT value, while a low magnetic signature is measured by a lower positive nT value. All surveys were conducted on a north–south
orientation with transects separated 0.5m apart with a sampling rate of 10 readings per second, which resulted in a measurement interval of approximately 10 centimeters. To avoid collection errors, survey grids were no larger than 20m x 30m. By pushing the machine along transects, the longer they are, the more likely the operator is to deviate from the transect and parts of the survey area will be missed in data collection (Bill Johnson, personal communication). To reduce the amount of magnetic interference, it is important that the operator and anyone standing around the magnetometer be free of any and all magnetic materials, which includes belt buckles, glasses, even shoes with rivet holes for the laces as all of these things can cause magnetic interference (Aspinall, Gaffney, and Schmidt 2008). Eleven grids (A – K) were surveyed in Area 1, three (A – C) in Area 2, four (A – D) in Area 3, and five (A – H) in Area 4, and six (A – F) in Area 5. The magnetometer survey was complicated in some survey areas by the existence of standing structures, heavy vegetation, and the modern roads and parking lot. Cars in the parking lot also proved to be sources of noise that will distort the magnetic field.

All magnetometer data were collected as a vertical gradient, which produce higher resolution results. Using vertical gradient data instead of total field data also gives the advantage of enhancing features of archaeological interest at shallow depths. All collected data was downloaded from the magnetometer using the Geometrics MAGMAP 2000 program (Geometrics manual2001). This data was then converted into usable information in Excel showing the X, Y, and Z values. The resulting data was then turned into shaded relief maps using Surfer allowing for a visual interpretation of the magnetic data. Surfer provides the necessary spreadsheet functions, statistical computations, and
mathematical operations to process and analyze the large datasets produced from the magnetometer. Surfer uses statistical algorithms to turn the X, Y, and Z data values into a grid-based map. Grid files are used to produce several different types of grid-based maps by taking irregularly spaced data and producing a grid file that contains regularly spaced data (Golden Software 2002). These grid files are then used to create vertical gradient maps (Figure 5.4).

![Figure 5.4. Example of a vertical gradient map. Several strong dipole anomalies are indicated in black within a gray soil background of +/- 0.5nT. Grid units are in meters.](image)

**Results and Interpretation: Survey Area 1**

The largest survey area in the town core is the Compton field (Area 1), which contains part of the south edge of the village green, the west side of the road leading south out of town, and an open field in between them. I collected eleven grids of magnetometer data in this field (A – K), each of which were 20m x 30m (Figure 5.5).
The large area was chosen for survey to locate and identify two possible building foundations found during survey and excavations, and to identify other possible architectural features and possible roads. The northern end of the survey area (grids A – D) revealed the most positive results, specifically on the east edge of grids A and B, and in the northwest corner of grid C. These grids were placed to cover the south edge of the village green and the west side of the gravel drive running south. According to historical documents, the south edge of the village green and the road leading south out of town were lined with buildings. Those high resolution magnetic features in grids B and C align directly with the placement of the excavation units from the previous field seasons. Those excavations revealed the partial location of several structures but did not fully delineate them. The features in these areas are representing the buried cellar fill of brick
and mortar surrounded by a mixed soil matrix that was found during excavation. The features from the magnetic survey in these grids confirm the presence of, and outline, two structures on the north edge of the survey area and a possible third structure on the east edge of the area (Figure 5.6). Multiple low and medium resolution dipoles indicative of buried metal objects (1-2nT) also show up throughout the survey area but do not appear to be of any cultural interest.

Figure 0.6. Grids A-D with concentrations of strong magnetic dipoles (5-8nT) circled in blue. These represent brick rubble features on the south edge of the village green and the old road leading south from the town core.

The other seven grids (E – K) were placed to the south and west of the first four grids to address questions as to whether this area was also built upon or was left open. Historical maps from the late 19th Century do not show any structures in this open area. Since no historical maps exist for earlier time periods, geophysical and archaeological
methods are important in answering that question. The data from these seven other grids proved to be less positive for both concentrations of high dipole signatures, rectilinear or linear features. Three strong magnetic dipoles represent metal spikes used as data points from the total station survey (Figure 5.7). Several other strong dipoles (3-5nT) can be seen in the north and west of these grids, indicative of other buried metal objects.

Figure 0.7. Vertical gradient map of grids E-K in Area 1. Metal spikes used as data points are circled in red and medium to high strength dipoles are circled in blue.

The lack of features suggesting structural remains is interesting and important because it may indicate several things. First, any permanent structures that may have been there were cannibalized of their brick and stone for use in other structures. Multiple
cases of this were documented in the Port Tobacco Times during the 19th Century (Gibb and Beisaw 2007, Shomette, 2000). This absence of features also indicates that any remains may lie farther beneath the surface than the magnetometer can detect. Documented sedimentation covering the town may be the cause. A third possibility is that this part of town may have been built on early with post in ground structures with no brick or stone, leaving only postholes as remnant features, which do not show up well in magnetic surveys (Gaffney et al., 2008, Johnson 2006).

Overall, the magnetic survey in Area 1 confirmed the presence of brick rubble cellar fill in two locations and a possible third location along the north and east edges of the survey area. Most of the survey area is an open space with no evidence of structural remains or other features related to town layout. This may be for several reasons including sedimentation burying the features lower than the magnetic survey can produce. Plow furrows may also obscure ditch and fence features that were once present and buried small metal objects are scattered throughout the survey area. If any post in ground structure remains are in the area, they will likely not show up in the magnetic survey as the holes and molds left by their construction are usually very ephemeral and not that different from the surrounding soil matrix. Discovery of these types of buildings, typical of the late 17th and early 18th centuries, are likely to only be found during excavation such as the one found on the far west side of the survey area (Figure 5.8). Two of the three areas of concentrations of high resolution magnetic features were selected for the ground-penetrating radar survey.
Survey Area 2

Two 15m x 30m grids (grids A and B), and one 20m x 15m grid (grid C) of magnetometer data were collected in this survey area to the west of the reconstructed courthouse (Figure 5.9). Grid C was smaller on the eastern end due to a grove of trees and is separated from grids A and B by vegetation. The grids were placed north of the excavation units from the previous year to avoid additional interference during survey. Much of the eastern side of the survey area was not surveyed as it was heavily graded during reconstruction of the courthouse.

![Figure 0.8. Location map of Area 2 with labeled magnetometer grids A-C on the west side of the courthouse.](image)

The areas revealed high concentrations of gravel and deep layers of sedimentation during shovel testing. The vertical magnetic gradient map shows numerous small
magnetic highs throughout each grid. This was initially attributed to the high level of heavy gravel found during the shovel test survey. A one meter wide low resolution linear feature was revealed on the south edge of Grid B running east-west to around the 25m mark and then turns north-northeast and extends beyond the survey grid (Figure 5.10).

![Figure 0.9. Vertical gradient map of Grids A and B. A long linear low resolution feature (+/- 2nT) is seen in the middle of the two grids with several strong dipoles in the northwest corner.](image)

My preliminary interpretation was that this linear feature was a possible paling fence line, which is constructed using a ditch to set in closely set pales (or pickets) and then fill in the ditch. These ditches are usually not very deep, less than half a meter in depth. As the depth of this feature was not attainable through magnetometry and it was not encountered (or was missed) during the shovel test survey this area was also chosen
for a GPR survey to confirm my initial interpretation. The smaller Grid C produced a concentration of high resolution dipole signatures on the north end of the grid (Figure 5.11).

Figure 0.10. Vertical gradient map of Grid C in Area 2. Several strong dipoles and many small weak dipoles are seen throughout the grid. These dipoles are caused by the dense large gravel seen during shovel testing.

These were larger and more concentrated than those seen in the first two grids. However, it did not appear to be similar to the cellar fill found in Area 1 and I therefore did not interpret it as such. This cluster of anomalies was more dispersed and is likely caused by the dense large gravel layer found during shovel testing. Due to the results of this survey, a GPR survey was also conducted here for several reasons. First, to confirm the depth of the linear feature found in Grid B that I suspected was a paling ditch. And
secondly to test the depth of possible gravel that appeared in both the shovel test survey and the magnetometer survey. Lastly, I wanted to test if there was anything below the gravel layers.

Survey Area 3

I collected four grids of magnetometer data in Area 3, which is part of the historic village green on the east side of the town core. The village green was historically designed as an open space and a place for a market. This would not require any permanent structures to be built here. In Port Tobacco, this village green was fronted by dwellings, shops, taverns, and inns on the north and south edges, and by the church and courthouse to the west. The eastern edge, however, seems to not exist as it does on the historical maps. These four grids (A – D) measuring 15m x 30m were placed within the open grass area south of the main driveway into the village (Figure 5.12).

Figure 0.11. Location map of Area 3 with labeled magnetometer grids A-D within the historic village green and the east edge of the town core.
The purpose for testing this location was to look for structural foundations under the ground surface. The previous shovel test surveys here did not reveal any structural foundations associated with buildings that were supposed to be part of the east edge of the village green according to historical documents. The four grids of data showed several single high resolution dipole signatures that were likely caused by buried metal (Figure 5.13).

![Combined vertical gradient map of the four grids (A-D) in survey Area 3 illustrating the several strong magnetic dipoles in the northwest corner of the grids. No linear or rectilinear features indicative of buried foundations or ditches were revealed during the survey.](image)

The northwest corner of the survey area shows several strong magnetic dipoles. This was within a large depression in the field created by a previous archaeological survey in the 1960s where the ground was not filled in all the way and equipment was
purported to be buried (Jim Gibb, personal communication). The survey did not reveal any rectilinear features or concentrations of high resolution anomalies similar to those found in Area 1 that represent rubble fill. This is likely due to the absence of foundations that the shovel testing suggests. Both the magnetometer and shovel test survey show no evidence of the buildings on the east edge of the village green that the historic documents say are in this area. It is possible that any buildings that may have been here at that time were completely cannibalized. However, as seen in other survey areas, evidence of partial and whole cellars, and brick rubble have shown up in other survey areas where there are no intact foundations. Since this is an important section of town to investigate, a ground-penetrating radar survey was conducted over the same area to further test for structural features. It is the introduction of buildings within the village green and absence of them on the edge that are important to reconstructing the layout of the town. If the east edge of the village green does not show evidence of structures, then it shows that the historic maps are not completely accurate and that modifications of the layout were taking place late into the 19th Century.

Survey Area 4

I collected five grids of varying sizes in this area on the east of the courthouse that is part of the historical village green. This area proved difficult to survey due to the many obstructions including large trees, a brick walkway, fences, and cars in the parking lot. Automobiles put off magnetic interference and can obstruct a magnetometer survey (Johnson 2006). At the time of survey, there was one car in the parking lot that caused a
small amount of interference on the east edge of grids A and B. A subtle variation in the strength of the magnetic interference compared to the low resolution background can be seen on the gradient maps (Figure 5.14). The location of the test unit in front of the courthouse from the previous survey was surrounded by the walkway, an electrical pole, and a large tree, making it impossible to test with the magnetometer survey. Two grids (Grids A and B; 12m x 22m and 14m x 12m) were placed on the south side of the walkway. Three grids (C, 10m x 16m; D, 13m x 20m; and E, 15m x 24m) were placed on the north side of the walkway (Figure 5.15). Besides the magnetic interference from the car in the parking lot, the grids on the south side of the survey area produced several large high resolution dipole signatures and many small low resolution dipole signatures that are consistent with buried metal objects. No concentrations or rectilinear features were produced during this survey, making it unlikely that there are any buried foundations here.
Figure 0.13. Combined vertical gradient map of grids A & B on the south side of survey Area 4. Magnetic interference from a car in the parking lot to the east is circled in red. Several medium to high resolution dipoles are represented in black.

Figure 0.14. Location map of Area 4 with labeled magnetometer grids A-E in front of the courthouse and in the northwest corner of the village green. The walkway that separates the grids can be seen in red. Signs, electrical lines, and trees prevented a survey of the area between the walkway and grid C.
The three grids north of the walkway produced some interesting results. The southernmost grid, Grid C, was similar to the two grids south of the walkway in that it only produced several large single high resolution dipole signatures and nothing else of interest. This was interesting because it confirms what the shovel test survey concluded, that there are no subsurface structural features here. Grids D and E revealed a high resolution feature along the west side of the grids similar to what was found in survey Area 1 in Grid B (Figure 5.16), which likely represents a brick rubble demolition fill. More of the feature is likely farther to the west but was not tested due to a large downed tree directly to the west of the grids. Shovel testing revealed a concentration of brick and mortar rubble in this same location along with 18th Century ceramics and pipestems.
The monumental architecture represented by the church and courthouse make up the west edge of the village green. Structural remains were discovered during excavations prior to the geophysical survey in front of the courthouse. The magnetometer survey revealed another possible structure directly to the northeast of it. These were unexpected but interesting results. Structures built within the village green represent a deviation from the town layout of 1729, and that modifications took place several times during the town’s history.

**Survey Area 5**

This survey area is on the far west side of the town bounded by the river on the west and is separated from survey Area 1 by a large hedgerow. This was the last area surveyed and due to time constraints, it was only partially surveyed. I collected six grids of magnetometer data here (Grids A, B, C, D, E, and F). In the vertical gradient maps created from the magnetometer data several strong magnetic dipole signatures were detected, two in the far north of the field, and one in the far south. In addition to these dipole signatures, plow furrows running north-south are clearly visible throughout the gridded area (Figure 5.17).
The plow furrows were not unexpected as this field was still in production until the beginning of the 21st century. Apart from the plow furrows and a few strong dipole signatures, there is no evidence for linear features that would indicate structural features in the survey area. This was also not unexpected as very little architectural debris was recovered from the shovel test survey. As no other excavations were allowed in this survey area and the lack of features in the magnetometer survey, no GPR survey was conducted here.

The magnetometer survey in twenty nine grids over the town core produced evidence of plow furrows along the west side of the town near the river, rubble filled cellars and paling ditches, single strong dipoles representing buried metal objects, and open spaces with few magnetic features. The many grids allowed me to survey a large
majority of the areas shovel tested and excavated in my previous years on the site.

Besides just confirming the presence of sites of cultural interest such as the rubble filled cellar in Area 1, the survey also allowed me to narrow down my choices for survey with the ground-penetrating radar. The combination of the mapping with a total station and the magnetometer has produced a complex map of subsurface structural features, extant buildings and roads, and the natural landscape.

*Ground-Penetrating Radar*

Ground-penetrating radar was used in this project to locate and potentially identify subsurface remains of some of the many structures that once covered the town. Eight GPR survey grids were placed in the town (Figure 5.18) in areas that appeared from historical documents, shovel testing, and the magnetometer survey to be structures and old ground surfaces. Testing in these areas where structures might be was important in defining their presence and attempt to define how they were used; buildings with deep cellars were often used to store goods for import and export in the port town. These ground-penetrating radar surveys were essential in finding cellar floors, stone and brick walls, and old ground surfaces covered by sedimentation. This data was used to compare specific sites with the artifacts recovered during previous excavations to answer questions about spatial layout, the use of space in town and the relationship between people and their physical surroundings. Applying GPR to targeted areas was a way to test for the presence of buried features in the town, such as buried foundations and open spaces, that could help reveal how that space was used.
Figure 0.17. Total station map showing locations of GPR grids within the town core of Port Tobacco. Survey areas and grids are labeled in red.

As with magnetometry, the use of ground-penetrating radar in the study of historic sites has increased among archaeologists. These active techniques measure the changes in the physical and chemical properties under the ground, which may be related to features of cultural interest by showing their presence or absence (Conyers 2013). The strength of GPR over other geophysical techniques lies in its ability to accurately measure depth. It is the only geophysical tool that can produce three-dimensional images of the subsurface (Conyers 2013). The use of GPR on historical sites of varying environmental settings is gaining popularity, as its effectiveness for identifying and interpreting cultural features such as foundation walls, cellar floors, and open spaces on these sites (Goodman et al 1994; Conyers 2013).
An important factor in a successful ground-penetrating radar survey is selecting the proper antenna with an appropriate operating frequency in order to find subsurface features of interest (Conyers 2013). The frequency of the antenna determines how deep radar wavelengths will penetrate and therefore determines how deep, and how large, features of interest might be found. Frequencies are measured in megahertz (MHz) and those used for archaeology range from 10 MHz to 1000 MHz. Lower frequency antennas produce longer wavelengths allowing for deeper penetration than higher frequency antennas. While higher frequency antennas can produce reflections of much smaller features, they cannot penetrate very deep into the ground. Lower frequency antennas with longer wavelengths, less of the energy will reflect off of small features while high frequency antennas with shorter wavelengths are going to better reflect off of smaller point source reflections. The selection of the proper antenna will partially depend on the types and size of features which you wish to find. However, the frequency of the antenna is just the middle range of the actual frequencies the antenna uses. For example, a 400 MHz antenna has the ability to produce wavelengths between 200 – 800 MHz allowing for benefits of both high and low frequency antennas to be utilized. For my thesis research, I used a Geophysical Survey Ststems, Inc. (GSSI) Subsurface Interface Radar (SIR) 3000 system with 400 MHz dipole antennas (Figure 5.19). Generally, ground-penetrating radar consists of two antennas, a transmitting and receiving, housed inside a single fiberglass box. The transmitting antenna produces the energy waves going into the ground, while the receiving antenna records the subsurface reflections as traces.
The received waves also records the amplitude of the energy. The amplitude of the waveform of the radar energy indicates the strength of the recorded reflection.

Figure 0.18. Ground-penetrating radar (GPR) system: GSSI SIR 3000 system with a 400 MHz antenna and survey wheel on site at Port Tobacco.

As with any technological techniques, the GPR method is constantly tested and refined during its use on archaeological sites. Environmental conditions of a site is just as important as selecting the right equipment for a survey. The Chesapeake region has its own unique set of environmental conditions that can affect a GPR survey. And there have been no published GPR reports of historical sites in the region, making it difficult to anticipate localized problems I might encounter during survey. The condition of soils in the Chesapeake region is complex. They can fluctuate from very dry during times of drought, to saturated after a heavy summer storm. There is also a high concentration of
clay in the soils, which can impede the propagation of radar energy. The lack of published GPR surveys to compare soils and sediment conditions to Port Tobacco made it difficult for me to hypothesize the effectiveness of a ground-penetrating radar survey here.

I used GPR in the research of Port Tobacco in two different ways. I first used it to locate and identify subsurface architectural features related to town layout based off of the findings from the shovel test surveys, excavation, and magnetometer survey. I also used it to look at the geological stratigraphy of spaces in town to better understand the extent of sedimentation in town and its impact on the use of spaces in town. To understand how spaces in town were modified and used throughout the history of town, it was important to test for the presence of features related to the layout. Finding foundation features in front of the courthouse is one example to the modification of the town layout because this area was part of the historic village green used as an open space. The discovery of an intact foundation shows a permanent modification to this open space. These areas have the potential to finding important artifacts to help date when the structure was used and possibly its function. In other areas, foundations were not discovered during excavations but recovered artifacts suggested there might be one under the ground. With the three-dimensional mapping capabilities of GPR, the data from these surveys became a complement to the excavation data.
Method and Theory

Ground-penetrating radar involves the transmission of electromagnetic energy into the ground, its reflection off of materials in the ground, and the recording of this energy once received back at the surface (Conyers 2013). The reflection of this electromagnetic (radar) energy occurs in the ground when there are changes in the chemical and physical materials that it encounters. These changes cause some of the energy to reflect back to the receiving antenna while the remaining energy travels deeper into the ground until it hits other differences or until it dissipates completely (Figure 5.20).

Figure 0.19. Radar energy from a transmitting antenna is propagated into the ground. Some of the energy will be reflected upward to a receiving antenna when it hits an interface of different physical and chemical properties. Any energy that does not reflect off an interface continues to pass through the subsurface until it attenuates with depth. Modified from Conyers 2013.
The reflected waves, and therefore the amplitude of the wave, will be stronger when there is a greater contrast between materials (Conyers 2013). Different amplitude reflections can indicate the presence or absence of subsurface features. A stone-lined cellar would have a much higher amplitude reflection than the sediments surrounding it because of the abrupt change in the material overlying the cellar floor. In order to interpret features in the ground, we must understand what causes reflections and their amplitudes.

The energy pulses are measured in nanoseconds as two way travel time, the time it takes for the pulse to travel from the transmitting antenna, reflect off of a subsurface interface and travel back to the receiving antenna, and is recorded as a trace by the receiving antenna. The travel time can be converted to actual depth once the velocity is calculated. Hyperbola fitting in the computer program GPR Viewer can be used to determine velocity (Conyers 2013). A hyperbola reflection created by a subsurface point source by objects such as rocks, the tops of walls and pieces of ceramics. As the radar antenna is moved along the ground on a transect, the radar energy reflects off of a point source before the antenna is directly over the point source. The energy continues to reflect off of the point source when the antenna is directly above the point source and again after it has moved past it producing a hyperbolic reflection (Figure 5.21).
Figure 0.20. Example of hyperbolic reflections caused by point sources in the subsurface. No distinctive reflections are noticeable below these hyperbolas due to the attenuation of the radar energy as it travels deeper without hitting any interfaces.

The size of the point source and steepness of the resulting ‘arms’ is a function of the types of material the radar energy passes and its average velocity (Conyers 2013). The velocity of radar energy can vary depending on the types of subsurface materials through which it travels. Energy can be transmitted fast or slow based upon these materials. Air allows the fastest transmission of radar energy while water is much slower. Water content of the ground surface and subsurface is one of the most important factors in determining energy velocity (Conyers and Lucius 1996).

The velocity at which energy travels from the transmitting antenna changes depending on the relative dielectric permittivity of the material the energy is trying to penetrate. Relative dielectric permittivity (RDP) is a measure of the ability of material to hold a charge from an applied electromagnetic field and then to transmit that energy (Conyers 2013:45). If the RDP of the material is high the energy passes through at a
slower rate, and with a low RDP, the energy will travel faster. Different materials carry different RDP values. Fresh water carries the highest RDP (80) causing the energy velocity to travel slowly while air (1) has a very low RDP allowing radar energy to travel very fast. The RDP of any given soil changes with the addition or subtraction of moisture (Conyers 2013) and usually increases with depth. The RDP of the ground at Port Tobacco varied throughout the survey areas but was relatively low, allowing the radar energy to travel fast. This was due to the nature of, and depths, of sediments in the ground and the daily weather changes that brought high heat during the day with almost daily afternoon rain showers.

Depths of reflections can be determined once the RDP of a site is known. Knowledge of the depth of these reflections, which may be cultural features, is important. Based on this knowledge, excavations can be targeted for certain depths, and can help in understanding the depositional history of the site. On archaeological sites, radar energy is usually used to resolve features between 10cm to around 5m in depth (Conyers 2013). Both surface and subsurface conditions play a major role in the success of a ground-penetrating radar survey. The conductivity of subsurface soils and sediments can drastically impact the depth to which radar energy penetrates into the ground. Soils containing salts and certain types of clays will attenuate radar energy, which is not reflected or recorded. Energy that is attenuating is not moving beyond the materials which caused it to attenuate, hampering the ability to collect data below these materials (Conyers 2013). However, the frequency of the antenna is more important.
The frequency of an antenna determines the wavelength of the radar wave in the ground. This is measured in megahertz (MHz). The antenna frequency of GPR machines range from 10MHz to 1000Mz. On archaeological sites, the range of antenna frequencies is usually between 200MHz to 900MHz. The frequency of an antenna is measured as the center frequency and has a one octave bandwidth of energy around it (Conyers 2013).

For instance, a 900 MHz antenna will generate energy from 450 to 1800 MHz (one-half to two times the center frequency) (Conyers 2013). The lower the frequency of an antenna, the longer the wavelength it creates, and the deeper the radar penetration into the ground. So a 100 MHz antenna will theoretically resolve deeper features than a 900 MHz antenna, which will only penetrate less than one meter. Therefore, it is necessary to have a basic knowledge of the type and size, and depth, of the targeted features are also important in choosing the proper antenna for the survey.

Environmental conditions such as the soils and sediments, moisture content of the ground surface, vegetation, and topography are critical in a successful GPR survey in archaeology. The conditions of subsurface soil and sediment conditions affect the propagation of energy waves in the ground. For example, certain types of clay are electrically conductive and will attenuate the radar energy, making it less effective. The moisture content of a site has proven to be a major factor in the propagation of radar energy (Conyers 2013). In some cases it can dramatically alter the way radar energy moves through the ground. Certain material, soils, and soil and sediment interfaces retain different amounts of water (Conyers 2013). The retention of water in some materials will show up in radar profiles and slice maps as higher amplitude reflections. To test this
theory, I conducted a GPR survey on a small (10m x 10m) grid in one of the open fields in town. Using the same collection parameters, I conducted the survey twice, once after a weeklong dry spell, and the second time after a two day rainstorm. The results can be seen in the amplitude slice-maps from the survey (Figure 5.22). Stronger reflections can be seen in the data from the survey collected after the rainstorm. These reflections are from materials, soils, and sediments that retain water better than the surrounding matrix.

![Amplitude slice maps](image)

**Figure 0.21.** Four nanosecond amplitude slice maps representing 0-20cm in depth from a test grid of GPR data collected before (Left image) and after (Right image) a heavy rainstorm on an open field in Port Tobacco. Stronger reflections (seen in green, yellow, and red) can be seen in the right image after the rainstorm.

The ground surface of the site is another important factor before performing a GPR survey. Heavy vegetation, uneven surfaces and rocks are some of the surface conditions that must be taken into account when conducting a ground-penetrating radar survey. When collecting data, it is important to keep constant contact between the antenna and the ground (Conyers 2013). Not doing so will cause “coupling” problems, where the surface antenna loses contact with the ground surface. When this happens,
energy is lost by going into the air instead of into the ground. This results in hard to interpret changes in the recorded amplitude. If possible, a walkover of the survey area, removing surface obstructions may be necessary before conducting a GPR survey to avoid these issues. The many variables that impact the possibility of conducting a GPR survey are important in choosing to use the GPR method on an archaeological site and it is important to have a basic knowledge of ground and subsurface conditions.

Since I had been working at the site of Port Tobacco for several years prior to conducting the GPR survey, I have a good understanding of the types of soils and sediments, topography and vegetation, and most importantly how moisture affects the ground surface. Southern Maryland, the site of Port Tobacco, is prone to severe weather at all times of the year but especially in the summer months. Afternoon summer storms are an almost daily occurrence here, as was the case when I conducted my survey in 2011. The soils are mostly silt with a mixture of sand and clay but not enough clay to adversely affect the propagation of radar energy. I determined that the site was a good candidate for a GPR survey and that I would get good depth penetration. I confirmed that through field collection when it was seen that the radar energy was reaching a maximum penetration of 35-40 nanoseconds. Velocity testing through the use of the computer program GPRViewer, I found that the RDP varied between 6 and 16 in the different survey areas of town, which translated to between 31cm per 5ns and 20cm per 5ns. I also knew from the excavation data that undisturbed subsoil on the site averaged about 0.5m in depth except where there were cellars and then it averaged 1m – 1.5m in depth. With this knowledge, I estimated that the 400 MHz antenna would be sufficient to produce a
long enough wavelength to reflect off of the possible cellar features that I was looking for. The results, as described below, show that this was correct.

*Data Collection and Processing*

Data from ground-penetrating radar surveys are collected by pulling the antenna across the surface of the ground. On archaeological surveys, rectilinear grids are established with evenly spaced transects within. Transects are usually placed at 50cm intervals but can vary depending on collection parameters such as type of antenna, size of grid, and size of possible features. For example, if you are looking for a known foundation wall that is 20m in length, there is no need to have smaller intervals. In the town core, I placed nine grids of various sizes with transects at 50cm within four of the eight survey areas. These locations were chosen based off of results of my previous magnetometer and shovel testing surveys. The other four survey areas were not surveyed for two reasons. First, they did not show the same possibilities for identifying structures, roads, or open spaces. Secondly, time constraints for use of the ground-penetrating radar equipment limited the amount of ground I could survey.

The GPR system emits radar pulses at a rate of 50,000 pulses per second into the ground as it is pulled across the surface on the linear transect (Conyers 2013). These radar waves are transmitted from the surface antenna and reflect off buried objects, features, and soil strata and sent back to the receiving surface antenna. GPR systems use a sampling method to record a certain number of these pulses called a reflection trace, which is a series of the reflected waves at a singular location. The number of samples per
trace can vary per survey. For my survey, I used a rate of 512 samples to create individual traces. Traces are stacked together from locations along transects to create a reflection profile. A reflection profile is the two-dimensional vertical profile of the subsurface showing the differences in amplitudes of the materials the traces encounter. These profiles are important because they show the difference in the properties of buried materials that could be potentially interesting archaeologically. As the radar pulses travel through different materials in the ground, their velocities change based on the physical and chemical properties of the subsurface materials. These velocities can be used to measure the travel times of the radar waves in order to find depths of buried objects. The radar pulses produce greater amplitude reflected waves depending on the contrast of the different materials the waves travel through. Radar waves that do not reflect off of subsurface materials continue to travel through the ground until they hit something or attenuate away. The greater the difference in the properties of the materials in which the radar waves are reflected, the more energy that will be reflected. This shows up as higher amplitude reflections in the radar profiles.

In order to produce clear data, certain settings on the GPR are made before collection begins in the field. As radar energy travels in the ground, it attenuates and the deeper reflections will have a lower amplitude than the shallower reflections (Conyers 2013). In order to make deeper reflections visible on screen, range gains must be applied to all of the reflection profiles. This is usually done in the field prior to data collection. Another collection parameter that must be done in the field is applying vertical filters. Vertical filters remove high- and low-frequency noise from recorded reflection traces that
may be generated from system noise or frequency interference (Conyers 2013). These filters are set around the center frequency of the antenna being used in the survey. In this case study, a 400 MHz antenna was used so the low and high pass filters were set accordingly; 200 MHz for the high pass and 800 MHz for the low pass. This is necessary so that reflections are easier to see and to interpret. Frequency filtering during post-acquisition processing can also be done to focus on specific areas of interest seen in the reflection profiles by removing ‘noise’ from the unwanted frequencies.

The time window is an important step that must be determined prior to data collection. The ‘time window’ is defined as the amount of two-way travel time, measured in nanoseconds, of the reflected radar wave energy (Conyers 2013). Setting the time window in the field can be done by looking at when (in depth) radar energy attenuates within the survey area. The time window must be open wide enough so that deeply buried features are recorded. At Port Tobacco, the time window was set to 40 nanoseconds after determining through field testing that that would be enough time to record deeply buried features. It is important to always leave the time window open for longer than you might need to avoid missing potentially interesting features.

When preparing for a ground-penetrating radar survey, the conditions of the survey area surface must be considered. Obstructions such as heavy vegetation and above ground structures must be taken into account during grid placement. The depth and resolution of radar energy can be affected by things such as surface vegetation and uneven ground surfaces. These and other conditions can cause coupling problems, which is when the antenna loses contact with the ground surface (Conyers 2013). Energy is lost
into the air instead of going into the ground when the antenna losing connection to the ground. Removal of surface vegetation and other obstructions may be necessary prior to the start of any GPR survey to prevent coupling loss. For these reasons, it is important to maintain contact between the antenna and ground surface.

Post-collection processing is necessary after the collection of GPR survey data. This is done to aid data interpretation. The two-dimensional vertical profiles are just one way to look at the data. A second and equally powerful way is through the use of three-dimensional amplitude slice-maps. Amplitude slice-maps are an important interpretive tool for interpretation of radar data because they show a plan view of features at varying depths. These slice-maps are created by comparing the reflected amplitudes from vertical reflection profiles that were next to each other along transects within a grid (Conyers 2013). The amplitudes are compared using various computer based interpolation methods along the profiles. This database is then “sliced” horizontally at set depth intervals to show the variation in the reflected amplitudes. By slicing the amplitude maps into different sized layers, subsurface features can become more visible.

Together, vertical radar profiles and horizontal amplitude slice-maps are important and valuable tools to identify and interpret features. Mapping and digital imaging through the use of magnetometry, total station, and ground-penetrating radar can reveal a lot about an archaeological site. The maps created from these methods were used independently to identify features hypothesized to be structures and to identify strata of sedimentation. In conjunction with excavation data, they were used to confirm the presence and locations of buried structures as well as the absence of features. My
preliminary analysis of this data shows that the layout of Port Tobacco was modified several times and that the historical documents do not always reflect what was actually there. This is seen in the presence of architecture in the historic village green, the absence of it on the eastern edge of the village green, and the presence of it under several feet of sedimentation on the west side of town. However, evidence of continuity in the layout for some parts of town is also present.

**Survey Area 1**

I placed three grids for the GPR survey in this survey area. The first grid was 15m x 18m (Grid A) and placed in the area where shovel testing and excavations identified an area with high concentrations of brick and mortar, and where a deep rubble fill was encountered. The magnetometer survey also revealed a strong magnetic signature of a rectilinear feature below the surface in the same area. I placed this smaller grid within the larger magnetometer grid. The data from this grid were interesting, showing a 6m x 10m rectilinear feature was revealed in the 100-150cm amplitude slice map (Figure 5.23). There is a line of several high amplitude point source reflections along the east edge of the feature.
Figure 0.22. 100-150cm amplitude slice map from grid A. Low amplitude reflections in blue and purple represent the rubble fill of the cellar. High amplitude point source reflections in yellow, orange and red represent some of the whole bricks of the eastern foundation wall.

The feature is represented by low and medium amplitude reflections represented in blue and purple in a rectilinear shape against a light background, which represents the surrounding non-reflective materials. These low amplitude reflections represent the rubble fill within the cellar but not the cellar floor itself. The slice maps from this grid were important in defining the outline of the cellar that was encountered during excavations. Those excavations were not able to define the edges or depths of the cellar. Vertical profiles of the same feature did reveal both the depth of the cellar but also the location of the cellar/foundation walls. The high amplitude point source reflections seen in the 100cm -150cm slice map show up as hyperbolic reflections in the corresponding vertical profile. These are the reflections of the eastern wall of the building. A distinct five meter long planar reflection between 2-2.5m in depth represents the cellar floor.
(Figure 5.24). This feature is confirmation of the limited excavations of a brick-lined cellar along the west side of the gravel road in town.

Figure 0.23. Vertical profile in grid A showing the eastern foundation wall and the cellar floor.

Historical documents place a dwelling along this road in the late 19th Century that served as a house and store. Artifacts recovered from the excavations place occupation of this building to the second half of the 18th Century, making it one of the more consistently occupied areas in town. The gravel road today partially follows the old road leading south out of town towards the warehouse landing a mile downstream.

Grids B and C (30m x 30m; 17m x 30m) were placed to the northwest of Grid A, running east to west. These grids were placed to test the south edge of the village green, looking for possible structures and a road. One structure was discovered during the excavation of test units in this section of the survey area so the grid was placed to cover those test units. This was done to test the depth of the rubble fill that was encountered
during excavations, and possibly delineate the dimensions of the structure. While no roads are present on historic maps, there is a modern “path” today that runs through this part of the town towards the far west field (Survey Area 5). Since there are records of buildings on this side of town, it is a good possibility that a road or path did exist at one time leading to the west side of town.

On the north end of the grid, a series of high amplitude reflections in a linear shape appear in the 0-10ns slice map (0cm - 50cm). The feature runs from the northeast corner and runs slightly southwest around a large oak tree on the edge of the grid (Figure 5.25).
Figure 0.24. Slice map from Grid F showing a linear series of high amplitude reflections. The vertical profile shows a corresponding 3.5m long high amplitude planar reflection representing a well used path on the north end of the grid.

This follows the same path as the modern ground surface. The vertical profile shows a 3.5m wide high amplitude planar reflection starting at the 25m mark of the grid at a depth of 0.2cm to 0.4cm and appears in consecutive transect profiles from the 5m mark through the east end of the grid. The presence of the planar feature is evidence that this is a well used path in between the church to the north and the building on the southwest edge of the village green and likely extends to the west end of town from the village green.

A series of high amplitude point source reflections also show up in the vertical profiles and amplitude slice maps of Grid B in the location of the excavation test units (Figure 5.26). These reflections appear between 0.5m and 1.0 meters in depth. The test excavations encountered a rubble layer at 0.5m but we did not excavate the feature any deeper. The reflections in these profiles show that the layer of rubble goes much deeper. This feature is roughly seven meters wide and appears in 10 consecutive profiles, making it five meters long.
Figure 0.25. Amplitude slice map and corresponding vertical profile showing a group of high amplitude point source reflections between the 5m and 10m mark. These reflections represent the partially excavated rubble fill layer of a post in ground structure on the south edge of the village green.

There does not appear to be any rectilinear shape to the feature as was seen in Grid A. That rubble fill was confined to the interior of a rectilinear brick-lined cellar. The brick rubble feature in Grid B is different; it is more scattered and amorphous. This is more evidence that the structure here did not have a cellar but rather a burrow pit that was dug into the ground surface under the building and that the building was a post in ground structure, which was then filled in with demolition debris.

This large field was extensively surveyed with shovel testing, excavations, and magnetometry before conducting the ground-penetrating radar survey. Due to this, and time constraints, only a small portion of the area was surveyed to test for several specific features. The data from these GPR grids, however, confirmed the location of two
different buildings, one along the south edge of the village green and the other on the west side of the gravel road leading south from the village green. I also found remnants of a possible old road running east to west along the north side of the south edge of the green. Unfortunately, excavating this feature was not possible due to time constraints and landowner permission. However, the strong planar reflections running east to west along the edge of the village green is highly suggestive of a hard compact surface just under the present ground surface.

**Survey Area 2**

This area was surveyed for two reasons, to test the depths of sedimentation in town, and to look for possible structures and other historical features. The shovel test survey conducted here revealed high concentrations of large gravel more than a foot deep. Most of the shovel test pits on this side of the courthouse were stopped before they could hit sterile soil due to the gravel. Prior to the GPR survey, I conducted a magnetometer survey here. That survey revealed a linear organic-filled ditch feature and an area of larger strong magnetic dipoles. I placed two grids (A, 30m x 25m; B, 15m x 25m) over the same area as the magnetometer survey, with grid A to the south and grid B to the north. The GPR grids, like the magnetometer grids, were placed just north of the excavations of the 1860’s jail.

The maps produced from Grid A, showed several features of interest at different depths. The first was the same linear feature seen in the magnetometer gradient map that I interpreted as a paling ditch. The depths of the feature in GPR survey indicate the same
interpretation as it is a very shallow feature between 40cm and 70cm. Since paling ditches do not require a deep ditch to support the pickets to make the fence this feature confirms my preliminary interpretation. The corresponding vertical profile shows the ditch feature as a high amplitude “bow-tie” reflection (Figure 5.27). This is caused when the radar reflects off the sides of the ditch and not the bottom of the ditch, making it look like there are two hyperbolic reflections with one in reverse on top of the other. This was not the only interesting feature discovered in this grid.
Figure 0.26. Vertical profile and corresponding amplitude slice map showing the high amplitude reflection representing a paling ditch between 0.5m and 0.8m in depth at the north end of Grid A.

A ten meter long high amplitude planar reflection at 1.3m in depth is seen in this same vertical profile image. Directly above this planar reflection is a 30cm layer with few low amplitude reflections, likely representing the fine sedimentation that blankets most of the town. A series of high amplitude point source reflections sits above this layer at 0.8m – 1.2m. While the planar reflection cannot be seen in the amplitude slice maps, the series of high amplitude point source reflections above are very visible. They appear in the 25-30ns slice, which relates to 1.0m – 1.5m in depth (Figure 5.28).

Figure 0.27. Vertical profile from Grid A showing a high amplitude planar reflection circled in red representing the floor of the likely earlier 19th Century jail. Two red arrows point to a series of high amplitude point source reflections above the floor representing the fill from demolition of the structure.
These features are very similar to the cellar fill and floor that was revealed in Grid A in survey Area 1. However, the 1888 Page map does not show any structures in this area. Artifacts from behind the courthouse within the GPR grid have a MCD of 1808 and a pipestem date of 1749. This shows that the structure predates that map and was abandoned and demolished earlier than the 1888 map. It is likely that this feature represents the earlier jail built in the first quarter of the 19th Century that was demolished when the new jail was built in 1860, which the foundations of were found during our excavations. The data recovered from excavations and geophysical surveys point to a continuity of layout on the west side of town behind the courthouse as government controlled land used for the location of the county jail.

The second grid, Grid B, was placed to survey the area north of Grid A up to the edge of the swamp. This grid was surveyed to test the depths of the gravel layer found during shovel testing. It was this part of the town that had the largest amount of impenetrable gravel between 1 – 1.5ft below the subsurface. Amplitude slice maps of the first 70cm show a series of small but medium amplitude point source reflections representing this gravel layer mainly on the west side of the grid (Figure 5.29). No other features were revealed in this grid.
Several important features were revealed during the geophysical survey on the west side of town near the river. The floor of a second structure north of the excavated jail was revealed based on a planar reflection and a series of point source reflections representing rubble fill above it. A linear ditch was also discovered just north of this feature near the surface. This rectilinear structural feature is likely the earlier jail that was demolished during the construction of the 1860s jail excavated during the previous field seasons by the Port Tobacco Archaeological Project. This interpretation is based off the MCD of 1808 from behind the courthouse. The town lots that make up this part of town were part of the original courthouse lot of 1729 that was reserved for the county courthouse and jail. Based on the rebuilding of newer courthouses and jails on the same lots is evidence of the continuity of the layout of this section of town.
Survey Area 3

This survey Area covers the east edge of the village green where historic documents place several structures. However, the shovel testing and magnetometer surveys did not reveal any features related to structural remains. I decided to pursue an additional survey here using GPR to confirm the absence of any structural remains. This is an important area to study the modifications of the layout of town. It shows that the historical documents are not always accurate and that shape of the village green had changed since its creation in the 1729 town act. Due to time constraints and the specific nature of the survey, only one 30m x 30m GPR grid (Grid A) of data was collected in the same area as the magnetometer survey.

With a time window set at 40ns, I created eight amplitude slice maps at 5ns each. The maps created from the GPR data show various low to medium amplitude reflections over the whole grid in the first four slices representing 5ns each (33cm each; 1.3m total) (Figure 5.30). These first four slice maps do not show any rectilinear or linear features that would indicate foundation walls and the point source reflections are not grouped in any shape that would suggest rubble fill such as those found in Areas 1 and 2.
Figure 0.29. Amplitude slice map from 10-15ns (70cm-105cm) and vertical profiles show various low to medium amplitude point source reflections.

The second four slice maps show very few reflections and most of the radar energy has dissipated at 30ns, which can also be seen in the vertical profiles. The vertical profiles show various low to medium point source reflections over different parts of the survey grid. None of these reflections, however, show any features related to structural remains or any other features of cultural interest.

Overall, this survey area has not produced any evidence of structures on the east edge of the village green from any of the archaeological or geophysical surveys. Besides the artifacts recovered during the shovel test survey, which include ceramics, glass, pieces of metal, and pipestems, this part of the village green seems to have been used only as an open space and not built upon. This is consistent with the definition of a
village green as an open space. However, this is only part of the village green, which extends into other survey Areas including Area 4.

Survey Area 4

A single test excavation unit revealed a partial foundation in front of the courthouse, placing it within the west edge of the village green. This is in contradiction to historical documents (land deeds and maps), which do not show any structures within the village green. It also goes against the planned open space that was directed by the town act of 1729. While not stated explicitly that nothing was to be built within the market space, it was common practice during the Colonial Period and later 19th Century to leave these spaces open. Based on this discovery, I conducted a magnetometer survey in front of the courthouse and on the south and north end extending beyond the courthouse. A cluster of high resolution magnetic anomalies were found in the northernmost grid. I interpreted this as possible rubble fill similar to that found in survey Area 1. Using these data, I decided to place one grid (Grid A – 15m x 15m) for the GPR survey overtop of those findings and a second larger grid to the north. The second grid was placed with the purpose of testing the front yard of an old hotel on the north edge of town for additional structures. The hotel was excavated by archaeologists in the 1960s and the foundation remains are in the hedgerow that separates the survey area from the swamp to the north.

The slice maps from Grid A do show several very high amplitude reflections on the west side of the grid. However, these reflections are singular and do not form any
type of rectilinear feature or clustering. The depth of these reflections is shallow (0.5m – 0.8m) and only appear in two consecutive transect profiles. They are represented by high amplitude hyperbolic reflections in the vertical profiles (Figure 5.31). The radar energy has attenuated by 1.5m below the surface and only noise is visible in the profiles below that depth.

Figure 0.30. Amplitude slice map showing several high amplitude reflections and corresponding vertical profile showing the reflections in three dimensions.

The strong magnetic features found during the magnetometer survey appear in the very northwest corner of the grid. However, the features do not relate to any structural remains or demolition debris and are only visible in the first 50cm of the grid.

The second grid (Grid B) proved to be less interesting than Grid A, with far fewer reflections in the slice maps or vertical profiles. Several low to medium amplitude point
source reflections are seen scattered throughout the grid. These reflections likely represent large buried objects related to the demolition of the courthouse and subsequent grading and reconstruction. No features related to remnant structures or roads and pathways are present in this grid.

Overall, the ground-penetrating radar survey in Area 4 proved to be less successful in uncovering features related to the layout and internal structure of the town. The front of the courthouse was heavily disturbed during the reconstruction of the courthouse and during early attempts at archaeology in the 1960s and 1970s. Several small high amplitude hyperbolic reflections were the only features found during the GPR survey. These are likely caused by buried materials but not part of any building features.

Conclusion

The magnetometer and ground-penetrating radar surveys employed on this project were essential in understanding the spatial layout and use of land in Port Tobacco. These non-invasive techniques allowed for a large amount of data to be collected in a short period of time and identifying of more areas of potential archaeological interest, which would not have been possible with conventional techniques. Mapping these sites with the total station and the AutoCAD map that followed provides a more comprehensive site map. The maps created from these surveys were only part of the project, however. The next step was to use the previously collected artifacts from surface survey, artifact analysis, and unit excavations in conjunction with the magnetometer and GPR surveys to
test and answer questions about the use of spaces in town and how they may have changed over time due to sedimentation and economic decline.
Chapter Six: Synthesis and Conclusion

Introduction

Port Tobacco is a large and complex site with over 350 years of historic occupation. Reconstructing the design, layout, and modifications to the site are an important part attempting to understand how it was influenced by the economic and political power structures of the town. The combination and integration of digital surface mapping, geophysical subsurface mapping, excavation, and historic records provide datasets that can be interpreted for this purpose. The datasets provided by each technique can be synthesized to allow for a much fuller understanding of the layout of the town, how people used spaces in town, and how the economic and political forces affected these changes. With the data from historic documents and combined fieldwork in hand, it is possible to readdress the questions proposed in Chapter 1 about the town layout, its modifications, and the power it had in social order. Can the organization of the town be seen in changes in the material culture, architecture and layout of town? Changes in types of architecture, for example, will show that certain areas in town were being used for either residential or commercial purposes. Sedimentation of the river has been documented historically. Did this sedimentation also occur within the town, and did that impact the town layout? Heavy sedimentation would have caused certain areas in town to be unsuitable for erecting buildings or roads. What can the changes in the layout say about the changes in the social and political dynamics within the town from the early 18th
century to the end of the 19th century? For example, the presence of “monumental” architecture around a town square may suggest a change in layout due to economic revival. Were changes in the grid pattern a reflection of changes in the social structure in town? For instance, imposing an organized pattern of building structures around a town square would be a symbolic show of the local elite’s wealth and ability to maintain authority. By building structures in the town square, we would see a loss of social power in the local elite. Does the layout follow the patterns of other 18th century towns? If the layout of Port Tobacco is similar to those of other towns than it would tell us that the planning of small towns in the Chesapeake was more sophisticated than previously thought. Before moving on to interpretation, it is necessary to give a brief summary of the information I used to answer these questions.
Review of the Data

Understanding the historic background of the town of Port Tobacco including the reasons for the creation of towns in the Colonial Chesapeake region is important in order to examine the data. Specifically, towns were created for the consolidation of wealth through the collection of taxes, and the centralization of trade, and in the case of Port Tobacco to be the seat of county government with the establishment of the county courthouse in town. In the early 18th century, the possibility of wealth and the social status that came with it was a motivating factor in the tobacco trade. As the populations grew of farmers and traders, towns became essential to facilitate this trade. With the creation of towns, came a way to confirm the social status of landowners, trades people and farmers. This was done in the creation of towns and the ownership and control of lots in towns. The use of the grid pattern was adopted throughout the Chesapeake, although not always in the same manner and seemingly without any regard to formal design except in the cases of a few capital cities. Historic records show a variety of grid patterns for towns with and without the monumental architecture of Church and State, towns such as Snow Hill and Cambridge on the eastern shore of Maryland. However, the grid pattern at Port Tobacco showed a level of order that was lacking in the more linear layouts of the 17th century like in the town of Calverton, Maryland. These newly created towns with orthogonal grids, monumental architecture, and open spaces for markets became the norm.

The use of architecture and its placement within a town layout as displays of power and social order has been investigated by archaeologists and anthropologists. The
capital cities of Annapolis and St. Mary have in particular shown how a formally planned layout evoked a social order and visual dominance (Leone and Hurry 1998). While formal planning was seen in these larger capital cities, it has always been thought that the planning in the small port towns of the Chesapeake were unplanned and without design. The archaeology at Port Tobacco suggests a more ordered design that changed over time due to changes in the social order.

As the county seat, Port Tobacco was an important place for commercial, social, and judicial activities. The orthogonal grid and placement of monumental architecture at the center of town, shows elements of formal planning inclusive of the pre-1729 town. This shows a connection to the earlier settlement of Chandler’s Town and the importance placed on using the land in the town core for the placement of important architecture. The archaeological surface survey I conducted showed how the town was spread out south of the town core prior to 1729 and gradually became more concentrated around the town square, courthouse, and church. I suggested earlier that open spaces such as town squares or marketplaces can hold symbolic power over the social order of towns. These spaces are where residents and visitors interacted socially and commercially. Any modifications or changes to either the general layout or within these open spaces show a change in the social order. This is important because after the establishment of Port Tobacco in 1729, it is around the town square that the most changes in the layout occurred.

The archaeological fieldwork undertaken for this project included historic background research, shovel testing, surface survey, excavations, and geophysical survey.
Historical documents show little about the layout of the town before an 1888 plat was drawn. Therefore my work was necessary to understand how the town looked at various times throughout its history.

Prior to the 1888 plat, the few descriptions of the town come from travelers and land records. These descriptions are short on detail concerning the location of structures within the town or how spaces are used beyond general descriptions of the courthouse and market. The earliest land records show the combining of town lots from the pre-1729 legislated town, Chandlers Town into the newly legislated town. Newspaper articles of the late 19th century document the demise of the town through political fighting over the new town of La Plata and the railroad bypassing the town, essentially sealing its fate as a commercial and governmental center. The shovel testing conducted by PTAP between 2007 and 2010 documented widespread cultural deposits and possible buried structures throughout the town, many of which were not depicted on the 1888 plat. This tells me that the layout of the town went through different phases of construction and change prior to 1888, and that it looked much different than it does today. Surface survey of the fields south of town revealed the presence of Chandler’s Town, which is the linear settlement that represents the earliest form of Port Tobacco. Unit excavations in the town core revealed the location of several early 18th century structures as well as late 19th century structures in previously unknown locations. The geophysical surveys using magnetometry and ground-penetrating radar delineated two of the structures found during excavation and revealed the possible location of two other structures near the courthouse and church.
The sedimentation that essentially buried the town over and over from heavy agricultural practices during its 350 year existence that was first encountered during shovel testing, was confirmed during the GPR survey. An overall site map was created using a total station. This map shows the locations of artifact concentrations, extant buildings and landscape features, and buried structures found during excavation and geophysical survey. With this information I described the ways in which the town layout changed and how and when spaces in town were used and modified during a 350 year period. These data helped to explain how those modifications were an expression of the changing social order.

*Towns: Interpreting Design and Social Order*

Generally the layout of Port Tobacco shows several periods of design, construction, and use; the Chandler’s Town era and the early beginnings of the town, the mid to late 18th century, and the 19th century. Theoretically, the spaces created and modified during these periods encompass both functional and symbolic construction and uses of space and architecture based on the power of design and the control of social order. While legislated by the Maryland General Assembly, the ownership and control of land was in the hands of a few wealthy families for much of the town’s history. The placement of monumental architecture in the middle of town and on the edge of the village green that faces the main road into town shows an awareness of location. It also shows the importance placed on visual dominance. This visual dominance reinforces the social order by establishing the power placed on the institutions of church and state. The
land surrounding the other three sides of the village green was filled with houses, hotels, and commercial buildings while the village green itself remained an open space. This type of layout is what was in place at the end of the 19th century depicted in the only known map of the town.

The earlier manifestations of the town were either not mapped or have been lost to time. The results from the surface survey of the south fields along with concentrations of early cultural materials within areas of town prove that the earliest historic settlement of Port Tobacco was linear in shape with no discernible design or plan to its layout. It was the legislation of 1729 that ultimately created the planned town. The total station mapping of extant structures in town showed that the layout followed a general grid pattern surrounding a central open space, the church, and the courthouse. This grid, while loose in construction, was orthogonal in nature. This means that all of the extant buildings were aligned in a general north to south order except one house on the south end of town. This is important because the placement of architecture in town is essential to this thesis.

One of the puzzling aspects of the layout of this town is the seemingly open areas to the south (Survey Area 1) and southwest (Survey Area 5) of the town core (Figure 6.1). These open fields have undergone extensive plowing since the end of the 19th century and presumably much earlier.
Figure 0.1. Survey Areas 1 and 5 south and southwest of town core. No building foundations or evidence of structures was found any farther south or west than the edges of the Village Green. Those now empty Areas were reportedly filled with buildings according to historical accounts.

However, it is likely that there were buildings throughout these areas during the more economically productive years of the town’s history before the Revolutionary War. At the time of the town’s founding and well into the late 19th century, these areas were arranged as separate lots. It wasn’t until the 20th century that they became two large lots. As separate lots with individual owners, these lots would have been built upon with dwellings, workshops, or outbuildings. Explaining the lack of structures can be done in three ways. First, modern human activity, primarily plowing, has destroyed any features related to structures made of brick or stone. The foundation discovered during my geophysical surveys on the east side of the open field to the south (Figure 6.2) is proof
that not all buildings were destroyed in the area, leaving some trace of subsurface construction.

![GPR profile of foundation](image)

**Figure 0.2.** GPR profile of foundation discovered south of the village green and its location on the site map.

The second possible explanation is that there were no buildings at all in these fields and were likely in use as agricultural fields since at least the time of Chandler’s Town. Third, and most likely, is that these areas were built upon using only post-in-ground architecture. This type of construction was used primarily for outbuildings and other semi-permanent structures up through the 19th century and for almost all structures built prior to the mid-18th century as wood was plentiful and brick expensive. While this was not unusual in itself, it does give evidence to the likely use of these locations in town. These lots in Area 5 were closer to the river on the west, known as “the point”,

203
making it likely that they were used as temporary storage for tobacco and other goods making their way in and out of town (Figure 6.3).

Figure 0.3. Image and location of "the point" in Port Tobacco. This is the westernmost area of the town core where no building foundations or concentrations of architectural debris were found during shovel testing. Geophysical survey also failed to reveal any significant findings.

The clearest examples of deviation from the grid pattern are within the village.
green in front of the courthouse and on the north edge of the village green in front of the extant “Chimney House” (Figure 6.4). Shovel testing and excavation in front of the courthouse identified a building foundation dating to the mid-18\textsuperscript{th} century while the magnetometry and ground-penetrating radar surveys revealed a second possible foundation to the northeast of the courthouse (Figure 6.5).

Figure 0.4. Location of foundations and concentrations of architectural debris within Village Green. Historic Village Green boundaries denoted by the blue rectangle.
Figure 0.5. Foundations uncovered in front of courthouse and to the northeast during shovel testing and magnetometry surveys.

Both of these structures would have been within the “boundaries” of the historic village green. In front of the historic Chimney House along the north edge of the village green were concentrations of brick and other architectural debris uncovered during shovel testing suggesting a building location. These buildings were also within the historically open space of the village green (Figures 6.4 & 6.5).

Several areas of this study were inconclusive. One was the identification of structures predating the 1729 legislation within the town core other than the extant “Stagg Hall” on the north edge of the village green. However, one building on the edge of town makes this link (Burch House). This house is situated along the road leading to Warehouse Landing and faces northwest. Deed reconstruction and archaeology suggest that this house was built prior to 1729 with an estimated construction date of 1722 although it has been heavily reconstructed. Construction of buildings dating to the
Chandler’s Town settlement are likely not going to be oriented orthogonally as there was no formal plan put into place for it. The settlement was a linear one alongside the river and the road leading south to Chapel Point (Figure 6.6).

Figure 0.6. Map showing locations of early Colonial sites leading from Warehouse Point north into the modern town core of Port Tobacco. Sites are indicated by red circles along the river and modern Chapel Point Road.

The Burch House at the south end of town is one example of the link between the earlier linear Chandler’s Town and the newer gridded Port Tobacco. The original construction of the building is in question based on the many periods of reconstruction.
but its orientation is not on the north-south or east-west type that is present near the center of town (Figure 6.7).

**Figure 0.7.** Location of Burch House (ca. 1722) at south end of town core showing its orientation to the northwest. The rest of the extant buildings face north/south or east/west on an orthogonal grid.

This makes it likely one of the lots that was part of Chandler’s Town that was then incorporated into Port Tobacco. It also explains its presence on the curve of the road leading from town towards the pre-1729 site south near Warehouse Landing. This interpretation answers one of the questions of this project about the change from a linear settlement to a more grid-like pattern and the incorporation of that settlement into the 1729 legislated town. Also inconclusive was determining the extent of the town due to modern construction and lack of time and permission to excavate on additional lands. The legislated town in 1729 was for 60 acres. The current town consists of 101 acres.
For this project, less than 10 acres of land was surveyed including the fields south of town and the town core, leaving 90+ acres untested.

*Monumental Architecture and Village Green: Symbolic Display of Social Order*

The presence of a courthouse within a town during the Colonial Period was limited to those towns considered advantageous in location to be the county seat. Churches for the most part were usually not part of the town proper but lied in different parishes around the counties. The town of Port Tobacco had both early in its existence and they were the focal points of society, on display for everyone passing by to see. They were the largest structures in town when built and occupied prime lots in the town core sitting just east of the river and facing the road leading north-south out of town. In front of the courthouse is the village green (or market square) that villagers and travelers had to pass through to get to the courthouse or church. These were the spaces used most in town, where society mingled and conducted business. Land sales and slave sales took place side by side on the courthouse steps, the church held meetings for social clubs, and all manners of household wares and services could be bought or sold in the village green.

The placement of these structures and open space in prime locations is part of the built environment of Port Tobacco. According to Low (2000) the built environment is regarded as an expression of social and political order. Site plans, such as town layouts, act to express or reaffirm social relations or social status within a cultural framework through symbolic associations (Lawrence and Low 1990). These aspects of the built environment of Port Tobacco displayed the social order of the day, that of the importance
of the state. The state in this regard is the General Assembly that created the town and
collected the taxes on trade going in and out of the town. The church and court are
symbols that display power and control. Accordingly, social order is brought out through
power and control. At Port Tobacco, the power and control of the town were in the hands
of the elite landowners and prosperous traders, particularly those in the tobacco trade in
the 18\textsuperscript{th} century. During this time, the town saw an expansion in population and the
layout went under very little change after its move from a linear to grid pattern, which
was the first modification of the town to convey a change in social order. That first
modification was an attempt to take control out of the hand of the individual farmer and
put it into the hands of the state.

Traveler’s accounts of Port Tobacco paint the courthouse and church as excessive
in size and stature (Townsend 1865). The continual use of these monumental structures
as functions of power and control reinforce the social order in town. When these
structures are left in disrepair as they were in the beginning of the 19\textsuperscript{th} century and again
at the end of the 19\textsuperscript{th} century, it is a signal of a changing social order and a loss of power.
Examining this part of the built environment offers a look into the social, political, and
economic forces that created it. Conflicting sociopolitical and economic forces are
driving factor in the creation of spatial forms including town plans (Low 2000: 49). It is
my interpretation that during these times of disrepair that the social order went through
change and the disrepair of the church and courthouse are the visual products of that
change. The elite landowners were losing their influence and control over the
commercial and judicial aspects of town as their power was derived through wealth. At these times economic recession was hitting the Chesapeake region.

However, it is not just the monumental architecture that displays social order in towns. Open spaces such as town squares (and plazas such as seen in Spanish Colonial towns) also display their own symbolic power over the social order. Setha Low (2000: 100) argues that the design of public space was used as a way of controlling spatial meaning of a place. She cites examples from the Spanish New World that were constructed in a way that conveyed power and social order. This was done through the erection of a centrally located plaza with the Church in the middle as a focal point with the purpose of maintaining power and control over the social order through visual displays of ordered design.

Open spaces in Port Tobacco are difficult to define as formal plazas such as those in Spanish America. The only planned open space is the village green in the middle of the town core. This space was designed as a market area with lots surrounding it on all sides. Historic records indicate inappropriate uses for the market such as allowing livestock to run freely within it during the early 18th century. Along with the church and courthouse on the west side, it was a visual and functional focal point for the residents and visitors to town. Three roads and one small pathway lead directly into the village green. This is an example of showing control through centralizing the location where goods were to be bought and sold. This was further seen by the way buildings on the edges of the village green were facing in towards the open space. It created a central market square where the daily activities of the towns inhabitants could be on display.
Modifications to the built environment and specifically to the village green show the change in social order. Evidence of these modifications was revealed during geophysical surveys and archaeological excavations (Figures 6.4 & 6.5).

*Interpreting Changes in Layout*

In addition to the analyses that could be made using an overall site layout, excavations and geophysical surveys provided information that was used to make specific interpretations about how individual spaces were modified in the town. Geophysical surveys mapped and identified several features of interest, including a brick and stone foundation and possible road in survey Area 1, and an area of heavy sedimentation in survey Area 4. Archaeological excavations in survey Areas 3 and 4 uncovered artifacts and architectural debris that helped to date modifications to the layout in the town core. Diagnostic ceramics and pipe stems are critical in inferring information about how and when changes occurred to the layout, and how people interacted and negotiated their surroundings. The brick foundation uncovered in TU 3 (Figure 6.8) was a significant find because it showed building construction within an area used as open space.
The diagnostic ceramics found here suggest it was a post-1729 construction episode. Based on the small number of artifacts recovered and the shallow depth of the foundation, it is likely that the building was not in use for a long time and was not meant to be permanent. No other evidence of the foundation was found in the surrounding shovel test pits suggesting that the structure was small.

Outbuildings and other small structures were common in different settings throughout the 18th century Chesapeake (Olmert 2009). The one found here in Port Tobacco is likely one of those small “daily life” buildings, perhaps a place for lawyers to use as an office. Oftentimes small buildings like these were constructed of weatherboards or partially in brick and clustered together (Olmert 2009). Due to the ephemeral nature of the remains of the structure and lack of diagnostic artifacts leading to
its purpose, the purpose of this structure is unknown. However, given its proximity to the courthouse and the importance of lawyers in a courthouse town, the lawyer office interpretation is likely. The location of this building is important to the understanding of modifications of the town layout. Historical records show that many of the buildings that surrounded the village green were multiple use structures. For example, taverns also served as boardinghouses, and those with cellars also were used as storehouses. Others were documented as lawyer’s offices and boardinghouses (Olmert 2009). These buildings were outside, and facing in towards the village green. The small structure found near the courthouse is within the area historically reserved for the village green, which is evidence of modification of the layout. Whether or not it was a lawyer’s office, a privy, or something else, it stands out as a change in the way people viewed the open space of the village green during the mid to late 18th century.

The town of Port Tobacco was still relatively young at this point having only been founded in 1729 so it is possible that the village green was still being formalized. The short duration of the building based on the recovered artifacts suggest it was removed and/or demolished to create more open space in front of the courthouse. Other possible structures in the village green did not appear again for another hundred years or so, after the Civil War. These structures were additional significant findings was the three small concentrations of brick and other architectural debris on the north edge of the village green (Figure 6.9).
The creation of Port Tobacco in 1729 by legislation placed the town where Chandler’s Town already existed but the layout of that earlier town has been unknown. Land records indicate that lot numbers were created for the town and a few were bought up and built upon. However, only one structure dating to before the 1730s still exists in town, the Burch House on the far southern edge of the town core. It is also one of the only structures in town, not set on an orthogonal grid, which is evidence that the grid wasn’t established until after the 1729 legislation.

The results from the archaeological surveys and excavations reveal concentrations of artifacts dating to the first quarter of the 18th century in several areas within the town core. The survey from the southernmost field associated with town also revealed the location of one domestic site dating to between the last quarter of the 17th century and the first quarter of the 18th century. This information suggests that the pre-1729 version of
the town at Port Tobacco was a linear settlement with no design or layout established for it as was typical of 17th century Chesapeake towns. Construction of Stag Hall along the north edge of the village green is evidence of the beginning of the orthogonal grid and the formal layout of the town. That house has previously been dated to 1734, establishing it as one of the earliest structures built in the newly designed Port Tobacco. This change from a linear settlement to an orthogonal grid layout was the first step in creating order in town. A grid pattern, while convenient and functional, is a planned layout. Besides being functional, designed layouts, whether a grid pattern or a Baroque-style plan such as St. Mary’s or Annapolis, are meant to display order (Leone 2005).

There are several cities in the Chesapeake that have more sophisticated designs that were intended to evoke visual displays of social order. Port Tobacco has two of the elements also seen in those cities, a church and courthouse. The placement of these two powerful structures side by side in the town core was a purposefully designed construction. Unfortunately, the ways in which these buildings may have evoked certain feelings in the villagers and visitors at Port Tobacco are hard to find in the archaeological record. That being said, there is evidence from mapping and observation of the landscape that suggest how it may have affected the lives of people there. Most prominently is the visual impact of the two monumental structures. More of these modifications are seen at the end of the 19th century when the town is already in decline and the local elites have turned their attention to the new town of La Plata.

By the end of the 19th century, Port Tobacco is in decline. Historical newspaper accounts reveal the renewed push to remove the county courthouse away from Port
Tobacco (it happened previously in the early 19th century). With the expansion of the railroad bypassing the town for the newer site in La Plata a few miles away, Port Tobacco saw a decline in commercial activity and a departure of the landowners influence to this newer city. While most still owned land in Port Tobacco, they were renting it out to local families.

While modifications happened to the layout, there is also continuity in design and use of parts of the town. The lot where the courthouse and jail were built continued to hold these judicial buildings from at least the 1730s through 1895. Previous archaeological work conducted ahead of the reconstruction of the courthouse in the 1960/70s indicated a previously standing courthouse dating to the early 19th century. An earlier courthouse likely stood in the same spot as land records indicate. The jailhouse lot behind the courthouse revealed one foundation dating to the early to mid-19th century during excavations, and additional cultural material to the north indicating a second building dating to the mid-18th century. Historical newspaper accounts show that a new jail was being built “next to” the current jailhouse. Several hotels and taverns in the town core also seem to have continued to the town for over 200 years under different names and owners.

Design elements away from the town core were more likely to depend on environmental factors than those in it. Finer grained sediments from erosion on the eastern hills blanketed the west side of town and the river. The lots closest to the river on the west side of town no longer held importance as places to build wharfs or landings for incoming vessels, therefore diminishing their land value as they were no longer
connected to the river. The filling in of the river with sediment forced the removal of the town’s main tobacco warehouse to one mile south of the town core in the late 18th century. This coincides with the diminishing power of the tobacco trade in Maryland. This sedimentation was a major factor in the decline of the importance Port Tobacco held as a commercial center. The data from the GPR survey behind the courthouse and the shovel testing in town confirm the depth and widespread nature of the sedimentation.

Conclusions

Geophysical and archaeological data were incorporated in this analysis of the built environment. Both datasets offered a unique look at how the built environment can be understood and discussed. Interpreting the geophysical data was based on architectural changes in the region as identified by previous archaeological research. Theories about changes in social organization were combined with archaeological evidence of the built environment from PT to infer how the use-life of the town changed over a period of over a century and a half, from approximately 1727 to 1895.

Starting with the earliest Chandler’s Town, prior to the incorporation into the 1729 legislated town, Port Tobacco underwent several phases of modification to its design and layout. The original linear layout had no formal design or thought to its construction, it was merely a collection of houses, outbuildings, and other structures along the river. With the town becoming the county seat of government in 1729 and a major trading port, the design took on a gridded pattern with the courthouse and church set on the edge of the village green facing out towards the main road in and out of town.
A few houses lined the streets around the village green. The open space of the village green served as a marketplace and meeting place for much of the 18th century. Towards the end of the 18th century, the town had increased in wealth and importance with the tobacco trade making a comeback from its previous lows at the beginning of the century. A newer class of powerful tobacco farmers, merchants, and political figures held the majority of the land in town. This allowed them to control how the land was used and where structures could be built. The linear layout was something of the past with the sites outside of town along the river having long been abandoned or much less important. The importance of the village green as an open space was still a realization. However, the area directly around the courthouse was becoming more crowded with the addition of small structures likely used to hold the many lawyers offices and other important members of the court system. Additional houses and stores also surrounded the village green on the outside.

By the mid-19th century, Port Tobacco was on the decline. The tobacco trade was no longer as important as it was in the 17th and 18th centuries. Landowners, farmers, and merchants were not as wealthy as they once were. More lots in town were being split up, with some merging, as the powerful landowning families of the 18th century having either lost land or sold it as the tobacco trade all but disappeared. The village green no longer held the importance as it did for the first one hundred years of the town’s existence. Structures, permanent and temporary, were encroaching more and more into the open space.
All of the change to the town’s layout was a direct reflection of the social and political changes that were occurring in town and throughout the region. As the tobacco trade wealth ebbed and flowed throughout the town’s history, so too did the power those people whose life was supported by it. This can be seen in the modification to buildings, the deterioration of others, abandonment of many sites, and the ultimate removal of the monumental structures of the church and state. The town of Port Tobacco, a once thriving governmental and commercial hub, reverted back to its roots as a small, sparsely populated village and remains so today.

Port Tobacco is an example of a more sophisticated planned town than previously thought. The evolution from a linear settlement along the river to a formally laid out grid around the central Village Green shows a sense of sophistication that is not seen in the small towns of the Chesapeake. Throughout its history the town underwent environmental, economic, and political changes that transformed its layout. Sedimentation from erosion and poor agricultural practices led to the abandonment of areas along the river. Reliance on tobacco in the 18th Century led to economic boom and bust cycles, and political changes in the 19th Century with the coming of the railroad and the new town of LaPlata shifted allegiances of the locals. These outside factors led to a change in the social construction of space in town. No longer was the early 18th century layout as important to people.

The village green, a once open space for a market square and meeting place, was built upon and manipulated as both a physical and social space. Both geophysical and excavation data confirm that parts of the village green were built upon
throughout the town’s history. The lack of archaeological evidence of a eastern edge to the village green filled with buildings as depicted on the 1888 plat is not evidence that one didn’t exist. It is, however, evidence that the village green’s size changed and does not completely match it. While once it was the first place visitors coming in by road would run into and be seen, it became a smaller open space with more buildings encroaching upon it. This transformed the way people saw the space from a more formal space to see and be seen, into a simple space for daily use. The power of the planned layout was lost as was the importance of Port Tobacco as a physical and social place. This evolution and transformation was something that I did not expect to find, nor was it something that has been heavily documented in the region.

The focus of this project is just one small part of the overall research of the Port Tobacco Archaeological Project. While my work highlighted the use of a multiple tool approach to fieldwork, and the importance of town layout and design, there are many more questions still to be answered regarding Port Tobacco. There are other questions that can potentially be addressed using this research. Some of those questions are ones relating to the change in use of space after the removal of the courthouse, demographic changes in occupation, and how cultural interactions were negotiated during changing economic and political realities. The focus of much research of the town has been on the years 1729 to 1895. However, the town existed in other forms both prior to, and after, these dates. A closer examination of the pre-1729 town will add to the rich history of port towns in the Chesapeake and may give clues to how they were used. And the early
20th century history of towns in southern Maryland has been almost completely ignored by archaeologists and historians.

This research is also only a small part of the larger study of settlement patterning and the power of design in the surrounding communities. Life in the Colonial and post-Colonial Chesapeake revolved around not just the towns, but the plantations and farms surrounding them. The many houses, workshops, and farms that dotted the landscape around the town of Port Tobacco would be very interesting to find and study their relationship with the town proper. Those buildings and any associated artifacts could add another layer of understanding to the relationship between design, architecture, and social order.
Works Cited

Aspinall, Arnold, Chris Gaffney, and Armin Schmidt. 

Baumann, Paul 

Benech, Christophe 
2007 The Use of Space Syntax for the Study of City Planning and Household from Geophysical Maps: The Case of Dura-Europos (Syria). Städtisches Wohnen im östlichen Mittelmeerraum 4. Jh. v. Chr.–1. Jh. n. Chr., Vienne : Austria

Benech, Christophe 

Bevan, Bruce 

Brauner, David R., ed. 

Bristow, C.S. and H.M. Jol, eds. 

Campana, Stefano and Salvatore Piro, eds. 

Carr, Lois Green and Lorena Walsh 
Clark, Anthony

Conyers, Lawrence and Lucius, Jeffrey

Conyers, Lawrence

Conyers, Lawrence

Curry, Dennis
1999  *Feast of the Dead: Aboriginal Ossuaries in Maryland*. Maryland Historical Trust.

Deetz, James

Defries, Ruth

Delle, James A.

Dunnell, Robert C. and Simek, Jan F.

Earle, Carville
Gaffney, C.F., J.A. Gater, P. Linford, V.L. Gaffney, and R. White

Gaffney, C. & J. Gater.

Geometrics, Inc.
 Geometrics, Inc.

Golden Software, Inc.

Graham, William J.
1935 *The Indians of Port Tobacco River, Maryland, and Their Burial Places*. Privately printed.

Harrington, Jean

Johnson, Jay K.

Johnson, Matthew.

Kauffman, Michael W.

Kihl, Kim R.

King, Julia
2008 *The Search for Charles County's First Courthouse*. Prepared for Wetherburn Associates, Inc
Kvamme, Kenneth

Leone, Mark P. and Silas D. Hurry

Leone, Mark P.

Little, J. Glenn

Low, Setha M.

Lukezic, Craig

Mathay, Sarah L.

McGuire, Randall H. and Robert Paynter, eds.

Miller, Henry M.

Noel Hume, Ivor
Olmert, Michael

Paynter, Robert.

Pearson, Michael Parker and Colin Richards, eds.

Pogue, Dennis J.
1984 *Town Rearing on the Maryland Chesapeake Frontier, A Reinterpretation.* Paper presented at the annual meeting of the Society for Historical Archaeology.

Purser, Margaret and Noelle Shaver.

Quantock, Peter C.
2011 *A Partial Geophysical Survey of the Elk Landing Site (18CE60), Elkton, MD.* Northern Chesapeake Chapter of the Archaeological Society of Maryland, INC.

Rotman, Deborah L. and Ellen-Rose Savulis.
2003 *Shared Spaces and Divided Places.* The University of Tennessee Press, Knoxville.

Roseberry, William.

Roundtree, Helen; Clark, Wayne; Mountford, Kent
2008 *John Smith's Chesapeake Voyages, 1607-1609* University of Virginia Press, Charlottesville.

Silliman, Stephen; Farnsworth, Paul; Lightfoot, Kent
Magnetometer Prospecting in Historical Archaeology: Evaluating Survey Options at a 19th Century Rancho Site in California. *Historical Archaeology* V.34, p. 89-109.

Smith, John
1907 *The generall historie of Virginia, New England & the Summer Isles: together with The true travels, adventures and observations*. University of California Libraries; 1st Edition

South, Stanley.

Ucko, Peter J. and Robert Layton.

Waters, Michael R.

Weymouth, J.W. and R. Huggins

Wilkie, Laurie

Wilson, Chris and Paul Groth.