Revisiting the Archaeology of the Pilgrims: The Plymouth Colony Archaeological Survey

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Introduction

The approaching 400th anniversary (1620-2020) of the founding of Plymouth Colony, New England’s first permanent English settlement, provides a unique opportunity to revisit our scholarly understanding of the Colony’s history. As part of this effort the Andrew Fiske Memorial Center for Archaeological Research and Department of Anthropology at the University of Massachusetts Boston have launched a broad scale project to reassess the past archaeology of the Plymouth Colony and undertake new excavations at additional sites. Working with community partners and descendant organizations, including the Town of Plymouth, Plimoth Plantation, the General Society of Mayflower Descendants, the Plymouth Antiquarian Society, and Pilgrim Hall Museum, we are undertaking a series of initiatives focused on the Plymouth Colony to help advance a complex, inclusive, and scholarly understanding of the region’s Colonial and Native American communities. Here we consider some of the contributions archaeological research has made to our understanding of the Pilgrims, set out some major questions that remain to be addressed, and describe the progress of our recent collections research and excavation projects. One of the central goals is to undertake a systematic search in the downtown area of the Town of Plymouth for any preserved remains of the original 17th-century settlement. Despite work by James Deetz and others in downtown Plymouth, no remains of the original settlement have yet been discovered, and this remains a major challenge for our future work. We are also bringing new research questions and methods to a reanalysis of known sites and collections from excavations of several outlying farms that were established after 1627, when families began moving out of the original settlement. We do not yet have answers to all of our questions, but have established a framework for the remaining years of work in the lead up to 2020, focusing on new excavations in the downtown and reanalysis of known sites and collections from the sites around Plymouth Bay. The next
several years of work are supported in part by a three-year Collaborative Research Grant from the National Endowment for the Humanities.

The story of the Pilgrims and their interaction with the Native Wampanoag in Plymouth Colony occupies a unique place in America’s national consciousness and mythology.¹ This colony was New England’s first permanent settlement, established in 1620 atop the Native Wampanoag village of Patuxet, which had been recently decimated by an epidemic. It was founded with families and led by religious separatists. Between 1620 and 1627 the community resided together in a single settlement in the town of Plymouth, with a peak population of probably about 180 people.² Historical sources describe the 1620s settlement at Plymouth as a palisaded village, with a fort at the western end atop what is now known as Burial Hill (previously known as Fort Hill); the central street was estimated at 800 feet long, and the palisade as one-half mile around.³ The long axis of the settlement ran east down Burial/Fort Hill towards Plymouth Bay, with more than twenty houses and other buildings along a central street following the route of modern Leyden Street (Figures 1 and 2). Aside from these general descriptions and William Bradford’s sketch of seven house lots along a street with a single cross street,⁴ there are no known maps of the original settlement, and its exact location, layout, and shape on the ground are unknown. After 1627 the Colony was reorganized, dividing its domestic stock, spreading out to farmland in the surrounding region, and establishing twenty new towns from 1636 to 1687.⁵

2. Deetz and Deetz, The Times of Their Lives, 78.
3. Sydney V. James, Three Visitors to Early Plymouth; Letters about the Pilgrim Settlement in New England during its first Seven Years by John Pory, Emmanuel Altham, and Isaack de Rasiers (Plymouth: Plimoth Plantation, 1963). Pory’s description (James, Three Visitors, 11) provides a 2700 foot measure for the total length of the palisade; Altham provides the figure of 20 houses (James, Three Visitors, 24); and de Rasiers the 800 foot length for the main street (James, Three Visitors, 76). See also Deetz and Deetz, The Times of Their Lives, 65-74.
The Town of Plymouth continued as the political, administrative, and defensive center of the Colony, but with a small population. Despite the influx of additional colonists, by 1646 the number of freemen in Town was estimated at 79, and that number appears to have remained under 100 for the rest of 17th century; some estimates place the total population of the town of Plymouth (both the town center and outlying areas) at 775 people in 1690. Additional work on the fortifications took place in the 1630s and 1640s, with the area atop Burial/Fort Hill continuing to be used for the Town’s defense through the time of King Phillip’s War in the 1670s. Expanded agriculture and animal husbandry on rural farmsteads and the development of Scituate as a population center after 1650 moved the economic basis of the Colony outside of the Town. Agricultural and dairy products supplied an important trade with the Massachusetts Bay Colony to the north. Despite starting a decade later, the Massachusetts Bay Colony grew much more rapidly than Plymouth, quickly surpassing it in wealth and population, and ultimately annexing the Plymouth Colony in 1691.

Previous Archaeology of the Plymouth Colony

There is an extensive body of earlier archaeological research on the Plymouth Colony that can only be briefly summarized. The historical fascination with the Pilgrims drew attention to the region very early, including one of America’s earliest systematic archaeological excavations of an historic site in 1863, which focused on the Miles Standish house in Duxbury. Despite the excavation taking place in the 19th century, the site is still being discussed, notably for the interpretation of the foundation plan. The archaeological collections from this site are curated at Pilgrim

Hall and thus a potential source of additional comparative study. Subsequent excavations in Plymouth and the surrounding towns made important contributions to our understanding of the Plymouth Colony and to the development of the field of historical archaeology. Henry Hornblower, who had family connections to the Plymouth area, became interested in archaeology as a youth under the influence of Jesse Brewer, one of the founders of the Massachusetts Archaeological Society, who excavated and collected extensively from Native sites in the region. Hornblower excavated several early colonial sites with the Harvard Excavator’s Club and later founded Plimoth Plantation, and brought in James Deetz to continue an archaeological program. Deetz, one of America’s foremost historical archaeologists, brought Plymouth Colony archaeology to prominence through his excavation and analysis of the Colony’s sites.\(^{11}\) With his attention to “small things forgotten” and his broad view of cultural change and development, Deetz helped create the field of historical archaeology. However, Deetz’s Plymouth excavations took place in the 1960s and 1970s, when many of the methods and techniques used in archaeology today were not available. Our proposed project expands on Deetz’s early work in a series of substantive ways that reflect the field’s maturity as a discipline.

One important aspect of this earlier work is that it provides a significant body of data for restudy. A central tenant of professional archaeology is that collections be curated in the public interest, with site records, photographs, and artifacts preserved and made available for future study. This gives researchers the opportunity to reexamine collections with modern eyes and new questions. Plimoth Plantation in particular is a significant repository as it maintains the collections and some of the records from Hornblower and Deetz’s earlier excavations, with collections from thirteen historical sites from Plymouth County. These collections provide important comparative data, as well as opportunities for reanalysis focused on our project-specific research questions.\(^{12}\) Based on our recent

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12. Note that we are not the first people to conduct reanalysis of Deetz and Hornblower’s material. See, for example Mary C. Beaudry and Douglas C. George, “Old Data, New Findings: 1940s Archeology at Plymouth Re-examined,” *American Archeology* 6 (1987): 20-30; Beaudry, Goldstein, and Chartier, “Archaeology of the Plymouth Col-
assessment,\textsuperscript{13} five of the site collections contain adequate materials and documentation to merit substantial reevaluation for comparative analysis, including the “RM”/Clark Garrison Site in Plymouth, MA, the Winslow Site in Marshfield, MA, and the John Howland Site, Joseph Howland Site, and Allerton Site, all in Kingston, MA.

Two re-examinations of these older collections have been carried out as Masters’ thesis projects. Lindsay Randall studied the red earthenware vessels used for processing and storing milk and dairy products at the Allerton Site in Kingston, MA, and the documentary references to dairying in early colonial records.\textsuperscript{14} These coarse earthenware vessels make up the bulk of the ceramic assemblage, and Randall’s study argued that dairy products, traditionally processed by women, played a very important role in subsistence and the colony’s early economy.

Kellie Bowers analyzed artifacts from the Winslow, RM, and Allerton sites that could indicate interaction between Native Americans and English settlers.\textsuperscript{15} These relationships were more complex than an initial moment of contact, and developed into long-term interactions of different types. The Winslows, Edward and Josiah, were colonial governors and filled diplomatic roles between the English and Wampanoag; a Native manservant probably also lived on their property. William Clark (at the RM site) was a merchant and may have traded with Native people, and Isaac Allerton was also involved in a variety of colonial enterprises, including trade, though there are no documents that clearly link the Allerton site to the storage of trade goods. Using historical accounts and previous archaeological research, Bowers outlines three ways that material culture was used by both colonists and Native people as: 1) a means of communication between groups that was imbued with symbolic meaning; 2) economic items to be traded for other goods or services; and 3) objects that crossed cultural lines and barriers, acquiring new meanings in the process.

Scholarly literature, ethnohistorical accounts, and comparative 17th-century site assemblages were used to identify these materials in the

\textsuperscript{14} Lindsay Anne Randall, “Dairying in 17th-Century Plymouth Colony” (master’s thesis, University of Massachusetts Boston, 2009).
selected assemblages and provide context for relationships formed by and around these interactions.

Colonial landscapes like Plymouth are fundamentally situated within multicultural interactions. The assemblages at Plimoth Plantation contain materials that demonstrate the complexity of these multiethnic sites. Many items in Bowers’ analysis are ambiguous in nature as Native people and colonists alike used items such as scissors, knives, and straight pins. Determining who used what in a colonial setting is difficult at best. Bowers argues for a more inclusive understanding of these sites and collections as multi-ethnic, situating object types, and sometimes specific objects themselves, in cross-cultural circulations and genealogies. Artifacts of particular interest in the collections are those that are Native in origin (e.g., stone tools), Native in destination (e.g., glass trade beads), or even Native in co-use through re-appropriation (e.g., scissors, firearms, reworked copper kettles). All of the colonial sites included in the re-analysis contained items destined for trade with Native people, showing the importance of these relationships to the colonists.

Despite their usefulness these collections also have specific limitations. Their age and the long time in curation have resulted in the loss of some materials over time, the mixing of some contexts, and uncertain documentation for parts of the collection. The field projects that recovered these collections are also a product of the time they were excavated, which had different field standards. Many of these projects focused on excavating cellar holes of historic houses, and never collected site data around the house that would allow for a broader interpretation of the cultural landscape. None of these projects at colonial sites undertook flotation or collected plant remains. Given the importance of Native crops to the early colonists’ diet, these data are extremely important. All of these limitations argue for the value of additional site data from new excavations to complement reanalysis of existing collections.

Another of Deetz’s significant contributions to the archaeology of the Plymouth Colony was his identification of post-in-ground or earthfast construction, first recognized in New England at the Allerton site in 1972. In earthfast construction, major framing members are set directly into pits, or post holes, in the ground, not on a stone foundation, making the archaeological traces of the house much more subtle and difficult to locate. The post-in-ground building tradition had been recognized in

Maryland and Virginia previously, and current research indicates that roughly 60% of the buildings identified from the first hundred years of settlement in the Chesapeake are earthfast. Since that time, fully or partially earthfast buildings have been identified at 17th-century sites in New England, particularly in Maine, and archaeologist Emerson Baker argues that we should expect earthfast construction to be the norm for parts, if not all, of most early 17th-century houses. One of the implications of this is that early excavations in Plymouth may have missed, or not known how to interpret, the post holes that represent the full outline of the house.

**Framing New Questions about Plymouth Colony Archaeology**

While the history and genealogy of the Plymouth Colony has been extensively studied, and there has been a significant amount of past archaeology, there are still important questions to be investigated. As archaeologists we often approach the study of the past from material and environmental perspectives, starting with the artifacts of daily life, studying the function and meaning of these artifacts within individual households, and interpreting how these varied households are linked to create the mosaic of the past cultural landscape. These perspectives often lead us to questions that are different from those typically addressed by historians or genealogists. This project investigates three specific and interrelated research questions. We are studying: 1) the Colonists’ structured use of space for family and community activities to understand the creation of the English colonial landscape; 2) patterns of environmental change through time and their causal social and economic practices to understand the ecological consequences of colonization; and 3) the material remains and dimensions of Native-Colonist interactions to understand the genesis of new cultural practices as well as maintenance of traditional cultural spheres. These interpretive themes differ fundamentally from previous questions applied to Plymouth Colony archaeological sites, reflecting new approaches to the research.

1) How did the Colonists’ actions define an English colonial

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landscape? When the Plymouth Colonists settled atop the Native village of Patuxet they immediately began a process of transforming the landscape. As they restructured it, the Colonists’ ideas about land use, ownership, and “improvement” framed their actions, creating practices that ultimately dispossessed Native people. While many of the underlying ideas came from the Colonist’s English cultural heritage, the interactions with Native peoples and the new environmental setting influenced their practices in important ways that made the end product a new colonial landscape rather than a strictly English landscape. Investigating the material, spatial, and environmental dimensions of the creation of the colonial landscape is a primary goal of this project.

To investigate the creation of the English colonial landscape we need to identify the spaces used and structured by the Colonists for family and community activities. The earlier archaeological work on Plymouth Colony sites focused on the use of space in a very specific way, looking at the architecture of houses to determine construction methods and house plans. However, there has otherwise been very little attention to the broader spatial layout or structure of space—the outbuildings, fences, gardens, and other features that together created the English colonial landscape. This is an inherently multi-scalar question, from the layout of individual houselots, to the organization of the main settlement and fortifications. The fort and palisade around the settlement are fundamental parts of the structured landscape, setting lines of access and defense for the community, while reflecting the Colonists’ fears and influencing their interactions with Native people. Investigating this question also provides an opportunity to compare and contrast the use of space inside the palisaded settlement, when the community was tightly circumscribed and communal, with the use of space on dispersed rural farmsteads of individual families. This research will potentially tie together the previous archaeological research conducted by Deetz, which focused on house plans, to our work on the broader organization of the farmstead, the distribution of farms across the landscape, and ultimately the relationship

between the rural farmsteads and the nucleated community within the palisaded settlement.

We do not expect large areas of the initial settlement to be intact under downtown Plymouth, but instead hope to undertake integrated sampling and intensive study of discontinuous and limited archaeological deposits, a hallmark of the modern practice of urban archaeology. Town landscape change through time also inevitably leads to a long-term view of the town’s growth, including the landscape changes that took place through the 18th, 19th, and 20th centuries. Plymouth is a highly memorialized landscape, restructured over time by changing notions of heritage, urban renewal, and other processes. Interestingly, some important changes to the landscape occurred at past points of anniversary, including the 300th and 350th anniversaries of the initial settlement. An exploration of these processes over time is an important theme and valuable contribution of our project. All of these questions about the structuring of space and creation of the colonial landscape have not been previously addressed for the Plymouth colony and require new archaeological and geophysical data.

Our interest in the way space was defined to create the colonial landscape draws on a variety of spatial data from geophysical survey, archaeological excavation, and historical research. All of our spatial data are compiled in a Geographic Information System (GIS) computer database, linking data of different types and scales. Shallow geophysical data from ground penetrating radar consist of individual radargrams as well as GPR-SLICE software images that combine a series of radargrams to create maps of the subsurface deposits at different depths. These maps provide a major source of data, both to help guide excavation, and also to complement spatial information about archaeological features and deposits recovered from excavation. We have also compiled all available historic map data for Burial/Fort Hill and surrounding areas of the Town in the GIS database, and are using these to look at the past layout of buildings, street, and houselots, as well as change through time in Town layout and land use.

2) What are the ecological consequences of the Plymouth Colony settlement? The establishment and growth of the Plymouth Colony provides an opportunity for examining the ecological transformations that accompanied colonization. The Plymouth Colonists changed plant and animal communities through deliberate actions, but also accidentally

introduced invasive species and undertook practices that had unintended consequences. The outlines of some of these are known, including depletion of beaver, decreases in the population of waterfowl noted by Bradford himself, interruption of the annual herring migration by water-powered gristmills, and depredation of Native cornfields by livestock. However, the timing and full extent of these and other changes have yet to be defined. Studying these issues requires attention to the colonial practices that altered the environment, from the creation of garden beds at individual farmsteads, to large-scale land clearing for agriculture. By focusing on this issue in Plymouth Colony, archaeology can enhance our understanding of the dramatic ecological changes that accompanied Europeans’ arrival.

To answer questions about the ecological consequences of colonization we need to identify patterns of environmental change through time and investigate the ways they were linked to social and economic practices of the Colonists. One of the key strengths of our research team is expertise in the environmental archaeology of recent sites through the analysis of plant and animal remains. Careful analysis of plant and animal remains from sites potentially elucidates not just environmental changes, but also the social and economic practices from which they arose—land clearing, use of timber for fuel and other purposes, the introduction of new species, and agricultural and animal husbandry practices. This line of research also has major implications for understanding Colonist-Native interactions, as the Colonists’ adopted both corn and Native fertilization

practices. Preserved plant remains have not been analyzed from earlier Plymouth Colony sites and it is possible that Colonial households used a variety of other indigenous plants besides corn. While faunal remains can be studied in existing collections the analysis of macrobotanical remains requires new excavation samples.

We also plan to identify patterns of environmental change through time by undertaking a sediment and pollen coring program in and around Plymouth to build a view of the regional vegetation changes and to contextualize the more localized changes associated with the Colony. The environment the Colonists entered was not pristine but a landscape altered by millennia of Native American use. Our analysis will focus on the last 1000 years of vegetation change, with an explicit goal of understanding the last 500 years in as much detail as possible. By developing a comparative analysis through time we will look at the trajectory of Native landscape uses and modifications, as well as understand the initial transformation and subsequent impacts of the Colonists’ new agricultural and land use regimes. The palynology draws on Trigg’s recently completed project to create a searchable database of anthropogenic pollens, such as crop plants, ornamental trees and shrubs, and the weeds that follow crops into agricultural fields. The coring and pollen analysis is an important part of our fieldwork and data collection, requiring survey work to locate coring locations, systematic radiocarbon dating of the cores, and fine-scale sampling in advance of pollen identification.

Our interpretation of the environmental context and ecological consequences of the Plymouth Colony is closely integrated with the other research questions. Reconstructions of climate regimes in the Chesapeake show that the early colonization at Roanoke and Jamestown coincided with a 100-year drought, potentially stressing Native subsistence systems

31. Reportedly, Jesse Brewer collected soil samples from Native sites that were curated at Plimoth Plantation; however, the authors are not aware of samples from colonial period sites. Old soil samples can be used for macrobotanical analysis if the sample size is large enough, but cannot be used for pollen analysis or soil chemistry.
32. Trigg et al. "Human Impacts Pollen Database."
in the region, as well as adding to the difficulties for the first colonists. This highlights the value of understanding the environmental context of colonization. We will look at these issues through analysis of pollen in a sediment core and through recovery, identification, and analysis of the plant and animal remains in archaeological contexts. Quantifying the different types of pollen in stratified sediment samples and examining how the pollen spectra changed through time will allow us to look at surrounding forest composition, land clearing, and the introduction of European plants. Analysis of plants remains and animal bones recovered from the excavations will help us understand the diet and use of wild and domestic food sources, as well as wood used for timber, fuel, and other purposes. These lines of data will also help elucidate Native-Colonist interactions, as the exchange of food products and food production technologies, especially the adoption of corn by the colonists, is one of the best recognized areas of exchange.

3) How did interactions between Colonists and Native people create new practices in some cultural spheres while others remained more traditional or distinct? One of the major recent changes in the theoretical approach to historical sites is increased sophistication in dealing with complex, multi-cultural colonial situations. Our work at Sylvester Manor on Shelter Island, New York, showed the complex cultural dynamics engendered by the coming together of European, African, and Native American people in a colonial setting. At this site, complex archaeological deposits that mixed European, Native, and other locally manufactured objects highlighted the pluralistic character of the colonial space. We will bring this same interpretive approach to our work in Plymouth, expanding the archaeological understanding of the Colony with a new focus on pluralism, cultural interaction, and syncretism.

To answer questions about the role of cultural exchange in the alteration or maintenance of practices we need to identify the material remains and dimensions of Native-European interaction. While Native people figure prominently in the many historical accounts of Plymouth, no archaeological studies of the Colony’s historical sites have fully encompassed the role of Native people in the Colony and their interactions with the Colonists. Despite the presence of Native American artifacts at many Plymouth Colony sites, most interpretations have classified Native artifacts as “prehistoric,” a practice that removes Native peoples from historical archaeological interpretations. Since the original Plymouth settlement was established on top of a Native village that had been decimated by an epidemic, Native artifacts are to be expected, and differentiating pre-settlement Native material from post-settlement material is potentially challenging. However, we believe critically assessing past assumptions about the age of Native artifacts is key to identifying the presence and actions of Native people at Plymouth Colony sites. Despite the palisade and fortifications, to what extent was the interior of the original settlement a multi-cultural space? Addressing this issue requires close attention to the full range of artifacts assemblages in specific archaeological contexts, as well as careful consideration of trade goods and hybrid artifacts that mix Native and European materials, forms, or manufacture techniques. In addition to bringing this perspective to the analysis of new archaeological data we have begun to re-examine collections from previously excavated Plymouth Colony sites for this evidence.

Archaeological research is helping to document diverse patterns of interaction between Native peoples and English, Dutch, Spanish and other colonists. The ideologies, settlement goals, and practices of the


Plymouth Colonists, as well as the objectives, attitudes, and actions of local Wampanoag people led to distinct patterns of treatment and interactions between them. These practices had long-term implications for both Colonists and Native communities. We plan to study the material and spatial dimensions of these interactions through our archaeological research. This will require careful attention to the archaeological context of the material remains to identify artifact assemblages that include Native objects, trade goods, or hybrid objects made with a mix of European and Native materials, forms, or manufacture methods. Previous archaeological research on the Plymouth Colony has not addressed this line of research and this proposed analysis would thus make a major scholarly contribution.

**Accomplishments to Date**

Our work on this project began in 2012 and has included: 1) a reconnaissance survey of Plymouth Colony and Contact Period Native sites around Plymouth Bay; 2) development of a computerized map database of historic maps and a predictive model for site preservation in downtown Plymouth; 3) an overview and assessment of the existing archaeological collections pertinent to the Plymouth Colony; and 4) three joint UMass Boston-Plimoth Plantation fieldschools that have undertaken archaeological testing at three locations and geophysical survey at four sites. We have also undertaken an extensive public outreach campaign as part of our work.

During 2013–2014 we undertook an archaeological reconnaissance survey of the Plymouth Colony, compiling data about all known sites related to the Colony, developing predictive models for potential sites, and assessing existing archaeological collections. This project was supported by two grants, a Survey and Planning Grant from the Massachusetts Historical Commission and a matching grant from the University of Massachusetts Joseph P. Healey Research Grant Program. This survey encompassed the settlement around historic Plymouth Bay, including Plymouth, Kingston, Duxbury, and Marshfield. While a major focus was on the period of the Plymouth Colony (1620-1691), we also included Native American sites that closely predate European settlement as well as

39. Landon and Beranek, "Plymouth Colony Archaeological Reconnaissance Survey."
7th-century “Wampanoag sites contemporaneous with the Colony. The reconnaissance survey helped build the foundation for the broader project by: 1) creating our initial historic and modern map database; 2) developing a predictive model for site preservation in downtown Plymouth, allowing us to prioritize areas for geophysical and archaeological testing; 3) providing an assessment of the research value of existing archaeological collections; and 4) compiling information about known and potential Plymouth Colony sites in the region around Plymouth Bay.

In addition to guiding our future fieldwork, several general conclusions can be drawn from the results of the reconnaissance survey. Currently all of the known sites of the Plymouth Colony that have been investigated archaeologically are rural farmsteads established outside of the Town after the initial land division. Many of these are located along waterways that served as transportation routes in the 17th century. Many of these same environments were favored by Native people for settlement, creating some significant overlap in the distribution of both Native and Colonial sites. By the mid-20th century these areas were viewed as prime spots for modern development, which has exploded in the region, threatening the preservation of undiscovered sites. We hope that raising the visibility of archaeology in the lead up to the 400th anniversary will encourage additional efforts to identify, report, and preserve the region’s fragile and limited archaeological heritage.

In downtown Plymouth the reconnaissance survey highlighted the challenge of discovering intact remains of the original settlement. Very few buildings survive from even the first century of the Town’s history. Despite the appearance as a small town, Plymouth is in fact fundamentally an urban area, with a complex history that has reshaped the landscape in significant and dramatic ways. From an archaeological viewpoint the current town landscape is not natural, but a human creation, altered first by the action of Native people, with the overlay of four centuries of occupation by the Colonists and their descendants. Notable examples include major reshaping of Cole’s Hill and the creation of the park around the Pilgrim Rock, the de-industrialization of the Town Brook, and the clearing and urban

renewal of the south side of Burial Hill along Summer Street.\textsuperscript{41} These types of major events reshaping the landscape, combined with the continuous occupation of the Town, mean that in many areas the remains of the 17th-century settlement are not going to be well preserved. Our analysis has a strong focus on understanding these historic processes of landscape change, a key prerequisite for envisioning the past landscape.

As part of our overview survey we also started discussions with some of the numerous heritage and descent organizations in the region, including the General Society of Mayflower Descendants, the Plymouth Antiquarian Society, Pilgrim Hall Museum, the Mashpee Wampanoag Tribe, and several of the family based descendant organizations. In this regard the Plymouth Colony appears unusual, as few other communities have such a diverse and engaged array of historical and descendant organizations tied to the history of a settlement, and people who feel a direct connection to—and concern for—the area’s history. Issues of presentation and the representation of history get very personal when people feel it is their ancestors’ story that the archaeologists are trying to tell. The Plymouth Colonists settled on the Wampanoag village of Patuxet, after the Native people who lived there had been decimated by the introduction of European diseases. This history remains painful for many Native people in the region. Many Native people are also uncomfortable with archaeology and are especially upset with the practice of excavating burials of their ancestors, which they do not want disturbed. The diverse views of different descendant communities are an important part of framing and shaping our work. We are undertaking this project with a dedication to outreach and consultation with stakeholders, and the development of public programming to share the results.

**ARCHAEOLOGICAL FIELDWORK**

UMass Boston and Plimoth Plantation conducted collaborative archaeological fieldschools in downtown Plymouth in the summers of 2013, 2014, and 2015. To date we have investigated three locations: the south end of Spring Street, across from the Plimoth Grist Mill (shallow geophysics, test excavation, and coring); the north end of Spring Street just south of Burial/Fort Hill (test excavation only); and the eastern edge of Burial/Fort Hill along School Street (shallow geophysics and test.

\textsuperscript{41} Karin J. Goldstein, "From Pilgrims to Poverty: Biography of an Urban Renewal Neighborhood in Plymouth, Massachusetts" (PhD diss., Boston University, 2007).
excavation). The 2013 testing at both ends of Spring Street showed very similar results, with evidence of intensive 19th- and 20th-century land use and alteration, and poor site preservation. Most test units found either a thin modern soil level over subsoil (evidence of clearing) or deep deposits of soil with 19th- and 20th-century artifacts throughout (evidence of filling). As part of this fieldwork we cored in the bottom of some test excavation units to characterize deeply buried sediments. This coring helped us understand site formation processes and will be used in future fieldwork to identify areas with good pollen preservation and recover cores for palynology.

Aside from this first summer of testing along Spring Street most of our fieldwork has focused on Burial/Fort Hill (Figure 1 and 2). This area today is a 5.12-acre parcel of Town land and is listed on the National Register of Historic Places. The site contains over 2,200 gravestones dating from 1681–1957 and a range of other historic markers and memorials. Two markers identify the locations of 17th-century fortifications, though neither is based on archaeological data. The burial ground is well known historically, with a series of books documenting the epitaphs, gravestones, and monuments. In addition to being the location for the Colony’s fort, the current reconstruction of settlement layout places several houses on the hill, including those of Myles Standish and John Alden.

Our work on the east side of Burial/Fort Hill has been focused on a north-south corridor between the edge of the burials to the west and School Street to the east. This area was the location of a school in the late-18th and early-19th centuries, followed by a series of stables, storehouses, and a second school later in the 19th century (Figure 2). These buildings were torn down beginning in the late 19th century to remake Burial/Fort Hill as a commemorative landscape and tourist destination.

42. Landon and Beranek, "Plymouth Colony Archaeological Reconnaissance Survey."
Figure 1. Conjectural map of the original palisaded settlement overlaid on the aerial photograph of downtown Plymouth. The outline of Plimoth Plantation's reconstructed palisade was used to represent the settlement, and then scaled to the current historical understanding of its placement on the town landscape. This is hypothetical, as no sections of the settlement have been identified archaeologically.

Figure 2. A section of the 1874 Beers map of Plymouth showing Burial/Fort Hill and surrounding streets. Note the designations for the site of the "old Fort" and "Watch Tower" on Burial Hill. Most of the archaeological work to date has been along School Street, inside, between, and behind the series of buildings shown fronting onto School Street.
part for the 300th anniversary. This area was the property of the Alden and Bradford families in the 17th century, and includes a historical marker at the southern end showing the estimated location of Alden’s original house inside the palisaded settlement. Based on our current understanding, the north wall of the original settlement’s palisade wall should cross this area running east-west, with the center of the settlement to the south and east in the area that remains as Town Square (Figure 1). Our work on this section of Burial/Fort Hill is thus intended to cross perpendicularly to the palisade wall and potentially allow us to identify the areas inside and outside of the settlement.

A major component of our fieldwork has been shallow geophysical survey, mostly using ground penetrating radar (GPR). The GPR measures the way different types of buried sediments and features absorb or reflect electromagnetic energy. Burial/Fort Hill is a glacial deposit of sand and gravel, with well drained soils that generally allow electromagnetic energy to pass easily through. Areas with a higher moisture content or buried features such as building foundations affect the energy differently from the surrounding sand, providing a contrasting signal, or “reflector.” We collect these data about the soils electromagnetic properties and computer process them into maps of the subsurface prior to excavation, using the data to help characterize the deposits and guide the placement of test excavation locations. This technology is not foolproof and has some distinct limitations. It cannot find deposits with similar properties to the surrounding sand, so is best for identifying dramatic rather than subtle soil difference. It also does not tell us the age or nature of a particular reflector. Since we are measuring electromagnetic properties, buried metal objects, including modern pipes and utility wires, strongly affect the readings. Despite these challenges, by checking the geophysical results against our excavation data, we have been making significant progress in understanding and interpreting the results.

We conducted geophysical survey along the east edge of the Burial/Fort Hill in 2013, 2014, and 2015. One important application of our geophysical survey is to learn to identify the potential signature of burials to avoid any unmarked graves. We collected GPR profiles over marked graves higher on Burial/Fort Hill to record likely radar signatures associated with burials. Based on these data, several potential unmarked burials were identified with the geophysics, and we planned our excavations

46. Davis, Ancient Landmarks.
Figure 3. A sample of some of the Native American stone tools recovered from the Burial Hill excavations. The light colored stone is all quartz, while the slightly darker stone (bottom row, second from left) is a grey rhyolite. The Native artifacts recovered to date reflect the thousands of years of occupation of Plymouth before the arrival of the colonists, and show that Burial/Fort Hill was a Native tool workshop and likely village settlement.

Figure 4. A marked pipe bowl recovered in the archaeological excavations on Burial/Fort Hill. The maker’s mark provides both a date range and location for the pipe, as it is attributed to Richard Berryman, a Bristol, England, pipemaker who worked between 1618 and 1652. This artifact was recovered near the monument marking the purported location of Alden’s house in the original settlement.
to avoid those areas. We are not excavating burials during this project, and are taking special precautions to avoid any accidental grave disturbance. Drs. John Steinberg and Brian Damiata, who are directing this work, have considerable expertise in the use of shallow geophysical methods to map graves, applying these techniques to cemeteries in the United States and abroad.\textsuperscript{47}

We have also had some success identifying cultural features with the GPR. Many of the patterned return GPR signals we mapped ran either parallel or perpendicular to School Street, and corresponded closely with position of historic building foundations on 19th-century maps, suggesting they were associated with the buildings that once fronted onto the street. We used these data to help plan our test excavations, placing units to intersect GPR reflectors that matched walls on historic maps, in the area between the back walls of the historic buildings and the burials to the west, as well as testing some open areas between historic structures. We also undertook several test excavations specifically to ground truth aspects of the geophysical data, investigating deeply buried reflectors to clarify the differences between the signatures of cultural versus geological features. This work has allowed us to survey and characterize a much larger area than would be possible through excavation alone. As part of our work with the Town of Plymouth we are also sharing data about potential unmarked burials to help the Town with future management and preservation efforts at the cemetery.

**Results of Fieldwork on Burial Hill Early Deposits**

In 2015, we identified two areas on Burial Hill where early deposits had been preserved. One of these is a preserved part of a Native American site predating Colonial settlement. Colonial Plymouth was settled on the site of the Native village of Patuxet, and the Plymouth area has a long history of Native occupation, but prior to our excavations, no sites had been archaeologically identified on Burial Hill. The unit that we excavated contained flakes of rhyolite, quartz, and other types of stone broken

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off of large cobbles during the process of making stone tools and a small number of Native-made ceramic fragments (Figure 3). The high density of flakes suggests that this was a stone tool making workshop. The flakes are predominantly of local material that could have been found as beach cobbles. We do not plan to carry out any more work in this area because Native sites that pre-date the Colony are outside of the scope of the project at this time.

In another excavation unit, we found a small section of a pit or trench from the early Colonial period. The trench had been cut off at one end by the construction of one of the later buildings along School Street and at the other end ran into the wall of the excavation unit. Since we were able to expose only a small part of it in 2015, we cannot say much about the function of the feature. It contained very few artifacts, primarily Native ceramic shards, but the disturbed soil redeposited above and adjacent to the feature includes some 17th-century artifacts including window glass, a fragment of a case bottle base, tiny sherds of a ceramic type known as Border ware, and the heel of a marked ceramic smoking pipe. The pipe had an RB mark surrounding a dagger and a heart (Figure 4), which stands for Richard Berryman, whose pipes were made in Bristol, England, between 1619 and 1652. Pipes with the same mark were found in Ferryland, a 17th-century English colony in Newfoundland, and another example may have been found in Plymouth during the 1972 excavations at the Allerton/Cushman Site. We plan to return to this area in 2016 to see how much more of this feature is preserved.

**Later Plymouth**

While we have just begun to locate deposits from 17th-century Plymouth, our excavations have found rich archaeological deposits all along School Street that provide insight into other periods in the town’s history. In most places we have opened only small excavation areas, preferring to leave the foundations and deposits in place for future generations. These small windows, in conjunction with historic documents, have provided information about the late 18th through early 20th-century activities in this block and about the transformation of School Street from a residential and commercial area into a commemorative landscape.

In the early 18th century, the Town of Plymouth owned Burial Hill (frequently still called Fort Hill). Reserving parts of the hill as a burial ground, the town began selling parcels along School Street in 1722. The town built a school, called the central school, in 1765 at the southern end of the street and sold the rest of the lots to private individuals over the course of the 18th century. During the 19th century, landowners built barns and stables, frequently associated with businesses on Main Street, on the southern part of the block. The northern end became residential. A second school was constructed in the middle of the block in 1837.

All of these uses left archaeological traces, many of which are well-preserved. Small shovel test pits (50 by 50 cm) near the northern end of the block in 2015 showed that trash deposits from the houses are still preserved in some areas. In 2014, we dug a single 1 by 2 meter excavation unit in the area of the 1837 school. The unit was almost entirely covered by a dense layer of discarded bricks, some marked by Plymouth brick-maker Barnabas Hedge, that seem to have been pushed into the footprint of the building after it was demolished. The soil around the bricks contained many small items from that school including pen nibs, slate pencils, and an ink well, and fragmentary items such as beads and buttons from the students’ clothing.

Further south, we excavated inside the footprints of three of the historic stable buildings—the A. C. Chandler and Son Livery Stable, the Harlow and Bailey stable, and Zenas F. Leach’s stables—and located the foundations of two of those. These buildings were cut into the hillside so that their entrances were at street level but their rear walls would have been set into the hill. When the buildings were demolished, the upper parts of the foundation walls were removed and the building were filled in. The fill material varied; much of it was clean, sandy material, but some areas contained concentrations of coal ash, some had redeposited household trash, and some had industrial waste in the form of iron foundry slag, possibly

from one of the industries along Town Brook. Most of the artifacts that we found in these units had been brought in with the fill material and did not relate to the functions of the buildings as stables, but there were a few exceptions. In 2014 we found a horse bit and several possible saddle bosses, and in 2015 one unit contained a complete tinned iron storage barrel, possibly for grain. It may be that the floors of the buildings would have more artifacts that were connected to the use of the buildings, but we were only able to reach this floor level in a few small areas. The deposits inside and over the remains of the buildings are deep, and we frequently reached the limit of safe excavation (125 cm below the surface, approx. 5 ft) before reaching the floor of the building. In order to safely excavate below this depth, we would need to install shoring or excavate a larger area. Instead, we have left these deposits intact for later researchers interested in this time period.

Why was this street of houses, schools, and businesses demolished and the remnants buried under upwards of five feet of fill? Questions such as this about large-scale landscape transformation are also archaeological, and one of the UMass Boston students, Justin Warrenfeltz, is examining this question for his Master’s thesis research. The open, grassy area along the edge of Burial Hill that we see today was created as part of the preservation and beautification movement in Plymouth in the decades leading up to the 300th anniversary of the colony’s founding in 1920. The town began the process by demolishing the former central school at the south end of School Street shortly before 1882 (Davis 1899). Not long after, Zenas Leach sold three adjacent lots, with stable buildings, to the town for $1 in 1884. The town must have moved quickly to demolish the stables, because they were not shown on the 1885 Sanborn map. The rest of the lots along School Street and South Russell Street were acquired by an organization called the Stickney Fund, the buildings were demolished, and the land eventually transferred to the town.

In 1894, the General Court of Massachusetts passed an Act to incorporate six prominent Plymouth figures in a collective known as the Trustees of the Stickney Fund. Joseph Henry Stickney, born in West

53. Davis, Ancient Landmarks.
54. Plymouth County Registry of Deeds (PCRD), Zenas F. Leach to Inhabitants of the Town of Plymouth, Book 503 (1884): 102.
Brookfield, Massachusetts, in 1811, was a successful businessman and founder of Stickney Ironworks in Baltimore. Though he relocated to Maryland in 1834 and lived in the area until his death in 1893, he maintained strong ties to the Massachusetts area, visiting Plymouth annually in his later years. Upon his death, Stickney willed $75,000 to the Trustees of the Stickney Fund.56

Stickney had designs for several commemorative projects across the Plymouth area, including building a wall around the Standish monument, placing a monument on Clark’s Island in honor of the Pilgrims’ first Sabbath celebration, beatifying Cole’s Hill, and removing the canopy from Plymouth Rock. Additionally, Stickney allotted $10,000 to allow the Stickney Fund to purchase land adjacent to Burial Hill and convey that land back to the Town of Plymouth. This was so that the area around Burial Hill could be preserved in perpetuity as a monument to the first colonists of Plymouth.57 The Stickney Fund’s first purchase was in 1897,58 and by 1918, they had purchased ten lots adjacent to Burial Hill, mostly along the boundary with School Street. These same ten lots were conveyed by deed to the Town of Plymouth in 1929,59 and two additional lots in 1935. The buildings on Stickney land were demolished by 1919 to beautify Burial Hill in preparation for the tercentenary celebrations in Plymouth in 1920.

Although the primary goals of the project are to learn more about the 17th-century colonists and their landscape, the project has, and will continue to look closely at the whole history of this region, from its long (and continuing) history as a Native landscape through the urban transformations of the 20th century.

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58. Plymouth County Registry of Deeds (PCRD), Martha L. B. Stoddard to the Trustees of the Stickney Fund, Book 739 (1897): 529.
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To learn more about the project please consider visiting us in Plymouth during our fieldwork, which takes place in the month of June each year. You can also visit the project website: http://www.fiskecenter.umb.edu/Projects/Project_400.html

Left: Excavation in progress on the southeast corner of Burial Hill. The students at the back of the image are carefully sifting the soil through mesh screens to recover small artifacts.
Right: Excavation in progress at the second of the two historic schools that fronted onto School Street. The layer of bricks in the photograph are remnants of the school building after its demolition. Several bricks carried marks of the Hedge Company, a historic Plymouth brickworks.

Above: Plan mapping artifacts in one of the excavation units. This test trench uncovered a scatter of post-Civil War era trash that had been spread across the yard behind a building. The sheet scatter of artifacts represented a previous ground surface and is thus mapped for later interpretation and analysis.
Right: Mapping the sidewall of an excavation unit. The creation of a sidewall or profile drawing is one of the last steps in recording the soil layers. This unit has a series of complex soil layers, marked by metal tags during the digging. By interpreting the profile we identified and dated a series of historic cuts into the soil and the subsequent filling events.

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