

DATING HISTORIC HOUSES IN ALACHUA COUNTY, FLORIDA

By

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TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS	iii
LIST OF FIGURES	vi
CHAPTER	
1 INTRODUCTION	1
Why Research Buildings?.....	2
Why Date Houses?	3
Why Alachua County?.....	4
Summary.....	5
2 DATING BUILDINGS	6
Dating Techniques	6
Spread of Technology	8
Summary	9
3 HISTORY OF FLORIDA AND ALACHUA COUNTY.....	11
Early Contacts.....	11
Colonial Change	12
Settling Alachua County.....	14
Growth and Maturity	18
Summary	22
4 ANALYSIS OF THE HOUSE: STYLE DATING	23
Vernacular Forms	24
Early Styles.....	27
Early Twentieth Century Styles.....	30
Analysis	34
5 ANALYSIS OF THE HOUSE: EXTERIOR MATERIALS AND FEATURES DATING	36
Site	36

Wood Finishing Marks	37
Wood Framing	38
Wall Materials	43
Exterior Paint Finishes.....	47
Doors.....	48
Windows.....	49
Roofing	56
Analysis	61
6 ANALYSIS OF THE HOUSE: INTERIOR MATERIALS AND FEATURES DATING	63
Metal Elements	63
Fasteners	65
Hardware	67
Flooring.....	69
Wall Treatments.....	70
Plaster Walls	70
Paint Finishes.....	73
Wallpaper	74
Moldings and Woodwork	75
Ceilings.....	77
Services.....	78
Heating	78
Lighting	79
Analysis	81
7 CONCLUSION.....	83
Final Analysis	84
Haile Plantation House and Family Chronology	84
Haile Plantation House Description	84
Building Technology Chronology	84
Review	85
Research Opportunities.....	86
APPENDIX TIMELINE OF BUILDING TECHNOLOGY	88
LIST OF REFERENCES	94
BIOGRAPHICAL SKETCH	99

LIST OF FIGURES

<u>Figure</u>	<u>page</u>
3-1 A map of Florida dating from the transfer of Florida to the United States government. (Alachua County Library District Heritage Collection).....	16
3-2 Steamboats carried passengers and cargo along the canals that connected the lakes and towns. (Alachua County Library District Heritage Collection)	20
3-3 Train tracks ran down the center of the street in Gainesville. (Alachua County Library District Heritage Collection)	20
4-1 1840s log cabin with later rear addition, Hogan's Cabin, Morningside Park, Gainesville, Florida.	26
4-2 Haile Plantation House, Gainesville, Florida, 1854.	26
4-3 Merrill House, Jacksonville, Florida.	31
4-4 Sears catalog house, Jacksonville, Florida.....	31
4-5 Floor plans of the Haile Plantation House, Gainesville, Florida. (SouthArc 1997, 9-10)	35
5-1 Hand hewn and circular saw marks. Haile Plantation House, Gainesville, Florida.	39
5-2 Angled saw marks. Hogan's cabin, Morningside Park, Gainesville, Florida.....	39
5-3 A small example of a heavy timber frame structure located in Newport, Rhode Island.	41
5-4 Kingsley Plantation slave cabin, Amelia Island, Florida.....	45
5-5 Tenant house, Marjorie Kinnan Rawlings State Park, Cross Creek, Florida.	45
5-6 Window frame construction. (New York Landmark Conservancy 1992, 22).....	51
5-7 Detail of meeting rails of double hung sashes. (New York Landmark Conservancy 1992, 23).....	51

5-8	Pulley and rope connecting the sash to balancing sash weights hidden behind framing, Housing Authority Building, Gainesville, Florida.	55
5-9	Kitchen window of addition to Hogan's cabin, Morningside Park, Gainesville, Florida.	55
5-10	Underside of palm thatch roofing. Mission San Louis de Apalachee, Tallahassee, Florida.....	58
5-11	Underside of wood shingle roofing. Hogan's cabin, Morningside Park, Gainesville, Florida.	58
6-1	A surviving portion of the main staircase of the Merrill House , Jacksonville, Florida.	72
6-2	Framing under the stairs of the Haile Plantation House, Gainesville, Florida.	72
6-3	A portable lamp suspended on a rope and pulley. Schoolhouse, Morningside Park, Gainesville, Florida.	80
6-4	An electrified candle chandelier with plaster ceiling medallions and molding. Housing Authority Building, Gainesville, Florida.	80
6-5	Gas/electric chandeliers and wall sconce. State Capitol Building, Tallahassee, Florida.	80

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DATING HISTORIC HOUSES IN ALACHUA COUNTY, FLORIDA

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The purpose of this project was to compile information useful in developing a chronology for historic houses based on key dates of when construction technology and techniques changed in significant and readily identifiable ways, and relate it to development in Alachua County, Florida. Establishing a date for a building using only a few pieces of information is problematic for a number of reasons because an overall view analyzing the whole structure creates a series of checks and balances to more accurately provide a date as well as answer other important research questions. The review of building technology, history and preservation literature yielded an extensive collection of dates, details and methods, which has been organized as an abbreviated history of house construction, as well as a quick reference for researchers investigating a house. The growth of transportation networks and the migration of large segments of the population into different regions carrying their own traditions of house construction are a few factors which affect the spread of technological developments and materials into new areas from their origination points. The history of Alachua County has been examined to discover

relevant issues which may appear and modify the chronology of house dating as it applies to this specific region.

CHAPTER 1 INTRODUCTION

Historic preservation is the discovery and remembrance of our past through the medium of the built environment and its surroundings. It is interpreted by analyzing the material fabric of the structure as well as the written and photographic documentation of the building or site and the oral memories of its history. Building documents such as construction receipts, personal letters or diaries of the occupants or neighbors, and newspaper articles are rarely complete records of the historical development of a building, and usually critical information is lacking altogether. An analysis of the fabric of the building, if it has not been drastically altered in a total renovation, can yield valuable information about the historical development of the house from both the original materials from initial construction to later work that was done.

Historical research into certain aspects of building technology development has provided a chronology for reliably dating materials, which can then be applied towards a construction sequence for the building. The spread of new construction techniques, material technologies and architectural styles from the regions of their first appearance did not occur all at once either temporally or geographically, so an adjustment to fit the local historical context of a building is necessary when a standard chronology is used for evaluation purposes. This thesis will compile a dating chronology relative to the development of house construction practices and apply it to the unique historical situation of Alachua County.

Why Research Buildings?

Research to determine the historical background of a building occurs for many reasons. The exact program of the research depends on the structure in question, the sponsoring client, the abilities of the researcher and the use to which the results of the research will be applied. It is general practice within the preservation community to conduct research on the background of a historic building prior to the commencement of any work which will affect the current conditions. The extent of the research depends on the needs and the available resources for the project, but it usually includes such areas as oral history and the review of documents, as well as an investigation of the physical fabric of the building itself for details concerning initial construction and subsequent alterations.

The need for historical accuracy and an awareness for how the building was put together are the main reasons for a research project with the goal of dating the components of a building. Some homeowners rehabilitating an older house research the past occupants and how they lived and decorated, to satisfy their curiosity and answer questions about anomalies they may have come across in the construction of the house. The planning process for the renovation of older buildings should identify existing and hidden conditions that may affect the cost of necessary labor and materials, which is a large factor in successfully completing many rehabilitation projects. Surveys of a building or a neighborhood district may be conducted by historical societies and preservation professionals with the intent to nominate properties to the National Register of Historic Places or for local recognition. The accumulation of this collected information contributes to the overall body of knowledge that is then accessible to

scholars and field practitioners alike, leading to a greater understanding of the buildings in which we live and work.

Why Date Houses?

When researching the background of a building's historical development, the building itself should be considered the primary source of information. The fabric and form of the building records the sequence of changes which have occurred as alterations to meet the needs of the occupants and as developments in construction technology. The timing of the diffusion of technological innovations and architectural influences varies by region through economic and transportation linkages that affect the ability of the resident population to adopt or adapt concurrent traditions of construction to the latest improvements or styles. Relying upon only one or two methods to analyze a structure is risky because of the common practice of reusing building materials, the need to compare dates from different sources for correlation, and the probability that certain features such as hardware or roofing has been replaced over the years.

Commercial and public buildings were built on a larger scale and often used new construction techniques that differed from those typically used in residential structures. Materials such as cast iron and glass were used to create unobstructed interior spaces and large openings for display windows on the front façade. The very nature of public buildings called for a formal design scheme that often would not be emulated in private homes because of cost considerations. Construction records would often be kept for architect-designed buildings as they might be required for maintenance purposes and to direct later renovations, unlike many residential structures which often leave no written records or drawings.

The American dream of owning a home and a piece of land has contributed towards the large quantity of residential structures that qualify for historic status on the basis of age. A private home was often of a vernacular design and form, integrating decorative elements and ideas from popular architectural styles to use as embellishments as the budget of the homeowner permitted. The variety of vernacular houses reflects regional conditions and social history through the choices made in materials and design forms (Meeson 2001, 27). A craftsman directed by the owner would leave behind little written record of the construction process, making it necessary for a researcher to gain information almost solely from the physical fabric of the house at a later date.

Why Alachua County?

Florida was a part of the Spanish empire for over two centuries with a distinctive development pattern before becoming an American territory early in the nineteenth century. Within the geographical boundaries of the peninsula, settlement patterns vary a great deal. For example, the Spanish founding of St. Augustine in 1565 versus the rapid growth of the southern point of the peninsula from a sparsely settled wilderness to a thriving metropolitan center at the beginning of the twentieth century. The region of present-day Alachua County in North Central Florida attracted the attention of Native Americans and Europeans alike for centuries because of the abundant natural resources and a favorable location as a central crossroad for major trade routes. This attention resulted in the first interior settlements of the Spanish and later the Americans apart from their footholds along the coast line. A consistent historical development pattern can be found within the geographical boundaries of the county, providing a stable and manageable region to study.

Summary

In the following chapters a comprehensive chronology covering the development of building technologies and materials will be developed and applied towards understanding the chronology of a historic house located in Alachua County, Florida. The history of Alachua County will be investigated to discover how the development of the region could affect building traditions practiced by the inhabitants of the area. A discussion of dating techniques and how they can be used when researching a building will touch on some of the issues which may affect the modification of a chronology to fit the specific situation of a region.

CHAPTER 2

DATING BUILDINGS

A wide range of resources offers useful information to researchers investigating the history of a structure. Relevant documents including public records, maps, old photographs, diaries and miscellaneous receipts and papers concerning the lives of the inhabitants may be found in various public archives and private collections and can shed light on a building's history. Interviewing past and current residents and neighbors provides detailed oral histories of events and stories which have been passed down from generation to generation. Together with an analysis of the physical fabric these written and oral sources for the building can often contribute the information necessary for an accurate chronology of the evolution of the structure to be assembled.

Dating Techniques

Investigating the physical fabric of a building can become a very involved process requiring specialized training and equipment, but the basic technique of visual inspection often is sufficient for a standard structure report or for identifying potential locations for more intensive research. Researchers have a number of options available besides visual inspection to examine and date a building non-destructively. A few options that require sophisticated equipment and expert analysis to produce usable results are mentioned below to lead to new avenues for exploration.

A major feature that is examined is the surface texture of a building element for clues concerning how it was made and what type of markings remain behind. The finish of a wooden element for example can be revealed by shining a raking light across the

surface to show faint patterns of bumps and grooves that tell a story about the construction process which can be read like a book.

Paint analysis is used to acquire different types of information about early layers of paint when a full and accurate restoration is the goal of a researcher. Relatively dating certain architectural features is also possible by a comparison of paint layers and similar finishes. Scraping may verify if decorative painting, such as a border or mural designs, was originally in an area where it would be expected to appear, as popular decorative conventions and the family's status would have permitted. An extracted sample that includes all the surviving finish layers down to the original coating is examined in a laboratory with chemicals and high magnification to determine the physical makeup and colors of paint layers of importance to the investigator. A layer sequence can also be revealed by cutting through the layers at an angle, or cratering, to aid in identifying areas for extraction of field samples, as well as relative dating of the building fabric (Perrault 1978, 11). Decorative features such as moldings or paneling that were installed during different renovations would have fewer paint layers in relation to earlier features, consistent with how long they had been in place (Judd 1971, 35). A surface that is examined with a raking light may reveal how finely the paint was finished, ranging from the presence of heavy brush marks to that of a smooth glossy surface which was rubbed by hand to remove marks (Perrault 1978, 33).

A technician using a portable x-ray machine can look inside a wall or architectural feature where there is a question concerning the construction methods used or the physical condition of the materials because different levels of radiation are absorbed by the materials inside. The x-rays can penetrate such materials as plaster to show wood

grain patterns, damage caused by rot and insects, lead painted features, iron and other metals, though they cannot show anything covered by mortar, clay or stone (Hart 1973, 9). Some skill is required in positioning the machine and the plate holding the film so that the hidden subject is properly recorded for analysis.

The most accurate method of dating buildings that has been developed is that of dendrochronology, where the ring patterns from core samples of wooden timbers are matched against a master tree ring chronology of the tree species. A long sequence of the tree ring sample is required, especially that of the final growth ring, to determine when the tree was harvested by the builder for use in the building. Soft wood species are generally unsuitable for producing tree ring chronologies (Roberts 2001, 111). The difficulties in finding suitable tree ring cores, as well as in the cost of the analysis means that this technique is only applicable to a small proportion of the buildings being researched, but the findings can provide new criteria for dating similar historic structures (Roberts 2001, 116).

Spread of Technology

In the absence of nearby navigable waterways, railroads and factories, it was cheaper and easier to manufacture building materials by hand on site because it was so difficult to move them by wagon over roads which were typically in poor condition (Lounsbury 1983, 83). A number of canals were built during the first half of the nineteenth century to supplement the naturally navigable waterways of the nation and efficiently transport the latest manufactured goods to the residents in the area (Winkler & Moss 1986, 1). During the 1840s and 1850s, railroads extended into new markets and opened the way for quarries and other producers of heavy construction materials to reach

a wider segment of the population when interest began rising in fireproof materials for urban construction (Waite 1973, 13).

Mechanizing the production of building materials decreased their cost and lightened the workload of craftsmen, while the finished products became increasingly standardized in form and size (Lounsbury 1983, 4). The use of water power confined mills manufacturing building materials to certain locations based on the vagaries of the climate and topography in producing sufficient water flow to run the machines. The introduction of steam powered mills allowed the availability of resources and labor to dictate their placement, usually near railroad lines to transport the finished products to distant markets (Lounsbury 1983, 106). The high production capabilities of the mills were able to supply the new prefabricated house catalogs that emerged at the beginning of the twentieth century. The large scale buying and marketing power of the catalogues provided prospective homeowners with a supply of materials to build their chosen design with the prices and efficiency that a lumber yard would usually only be able to offer to large commercial interests (Schweitzer & Davis 1990, 62).

Summary

Written and oral sources of building history should be supplemented by an examination of the physical fabric of the building through a visual inspection, aided by a variety of non-destructive investigative techniques as necessary. A meticulous record of the researcher's discoveries, tracking such small details as nails and molding profiles, can be used to evaluate when and where changes occurred in the fabric of the building and guide later research. The spread of building technology depended on the reach of the nation's transportation networks in order to affect the building traditions of newly developing regions. In the absence of trade routes and manufacturing facilities,

construction materials were fabricated by hand on the building site until the region became more densely settled. In the next chapter the historical development of Alachua County will be explored to discover how the spread of building technologies was affected by historical events.

CHAPTER 3

HISTORY OF FLORIDA AND ALACHUA COUNTY

An understanding of the historical development of a region can aid in interpreting information about a house and place it in context. The transition from frontier settlements to stable communities and commercial growth was marked by diverging building traditions that freely borrowed details and methods of construction. Understanding the historical context can answer why the choice was made to continue utilizing traditional building methods when constructing a house, or how a state of the art technique reached an area when it did. The historical development of Alachua County will be covered as far as the early decades of the twentieth century because an explosion of new and experimental building techniques and materials were developed during the first half of the century. Structures dating from before the nineteenth century no longer remain standing in Alachua County due to the passage of time and the destruction of war, but interest in settling the region has continued despite several events which led to the temporary depopulation of the area.

Early Contacts

Sporadic contact between the native people of Florida and European explorers dates from within a few decades of Christopher Columbus' discovery of the Americas, but it took over fifty years to establish a firm foothold on the peninsula. In 1513 Juan Ponce de Leon led an expedition which explored the coast of Florida and laid claim to the new land in the name of Spain. A series of attempts to settle the new lands were made during the succeeding decades by various leaders to extend the influence of the Spanish

empire. The hostile responses of the Native Americans, ill-planned expeditions with conflicting goals and the challenging climate and terrain of Florida became part of a recurring pattern of failure for the Spanish commissioned by the king to settle the region (Gannon 1983, 1-3).

The Hernando de Soto expedition in 1539 was the first group of Europeans to come in contact with the Potano, a subgroup of the Timucua tribe, who were settled in thriving villages in and around the grasslands which would later be known as Paynes Prairie (Andersen 2001, 27). In 1564 the French settlement of Fort Caroline was founded near the mouth of the St. Johns River under the leadership of Rene Laudonnier. To cultivate an alliance with a neighboring tribe, he twice sent a contingent of his soldiers to reinforce raiding parties on the Potano people, who controlled access to the rich chert trade among the Native Americans in the region (Andersen 2001, 32). The arrival of the Spanish fleet under the leadership of Pedro Menendez de Aviles in 1565 was the end of the short-lived French colony and the beginning of the first permanent European settlement in Florida, St. Augustine (Andersen 2001, 36).

Colonial Change

The Spanish left the Potano alone for two years before forming a similar alliance with the same tribe as the French had earlier, leading to the first of many confrontations that would sour relations for a long period between the Spanish and the Timucua tribe. The dual weapons of the cross and the sword took their toll on the native peoples of Florida as the growing Spanish power gradually increased demands for labor and provisions (Andersen 2001, 36). A series of missions were constructed along trails leading from St. Augustine to the lands of the Apalachee, near present-day Tallahassee, following the declaration of a truce between the Spanish and the Timucua in 1600. At

that time, the Mission San Francisco de Potano was built to spread the Catholic faith and conduct trade among the Potano (Andersen 2001, 39).

The fertile homelands of the Timucua and Apalachee peoples located in the center of the Florida peninsula were vital in the early years to the survival of the fragile colony of St. Augustine, which was almost completely dependent on food supplies procured from the interior or irregularly scheduled supply ships. In the late 1640s a cattle ranch was established by Francisco Menendez Marques and his family on land near Paynes Prairie to supply St. Augustine with a source of fresh beef. The ranch was destroyed during a Timucua rebellion in 1656, but the Marques family was able to rebuild their stock and property holdings into the powerful La Chua ranch during the rising prosperity of the 1670s (Andersen 2001, 41-42). Between 1704 and 1706 English colonists and their Creek allies in a series of devastating raids destroyed every mission and native settlement that their raiding parties came across, systematically driving the Spanish and their surviving native allies to retreat to the safety of St. Augustine in a full scale territorial abandonment of the majority of Florida (Andersen 2001, 44-46).

A band of Creeks from the Ocnee tribe migrated into the population vacuum surrounding Paynes Prairie in the 1750s and became prosperous tending the wild Spanish cattle herds in the area, earning their leader Ahaya the name of Cowkeeper (Andersen 2001, 48). The transfer of Florida from Spanish to British control following the end of the French and Indian War in 1763 was welcome news to the Spaniard-hating Cowkeeper, whose determination to meet separately with the British to sign a peace treaty caused the other Creek tribes to brand the band as a wild or runaway people, known as the Seminoles. A trading company in 1774 explored the potential for

establishing trading posts with the approval of the Seminoles in the area of Paynes Prairie, whose former designation as La Chua was corrupted by the British into the present day name of Alachua. William Bartram, a young naturalist, accompanied the successful trading expedition and described the Alachua Savanna, as Paynes Prairie was called at that time, in great detail in his popular book *Travels through North and South Carolina, Georgia, East and West Florida* (Andersen 2001, 50-51).

An attempt was made by American militiamen in 1812 to overrun Florida, which had been returned to the Spanish in the 1783 treaty ending the American Revolutionary War, and cede the territory to the United States for American settlement. A small troop of men under the command of Colonel Daniel Newnan on a foray away from the attack of St. Augustine stumbled upon a party of Seminole warriors led by King Payne, the son and successor of Cowkeeper. King Payne was mortally wounded in the initial exchange of fire and the besieged Americans were reduced to eating their horses before they managed to escape the Seminoles who had surrounded them (Andersen 2001, 60-62). The Seminole chiefs of the villages around Paynes Prairie decided to move their people away from the area to avoid further clashes with the Americans who were crossing the border to harass them with increasing frequency (Andersen 2001, 65). Andrew Jackson's 1818 campaign through north Florida to subdue the hostile Seminole villages in the area during the First Seminole War further encouraged the remaining Seminoles to move their main settlements to the south away from the lengthening reach of the Americans (Andersen 2001, 68).

Settling Alachua County

The Spanish government rewarded Don Fernando de La Maza Arredondo in 1817 for extraordinary service during the American siege of St. Augustine with a large grant of

land that included the Alachua Savanna. The conditions of the grant required Arredondo to recruit and settle two hundred families on the land within three years before complete title to the property would be turned over to him. In 1819 the territory of Florida was ceded peacefully to the United States by Spain with the stipulation that the terms of prior Spanish land grants would be recognized by the American government. Edward M. Wanton and Horatio Dexter, prominent traders and businessmen in Florida, were hired by Arredondo to direct the affairs of the prospective settlement and smooth relations with the Seminoles who retained a claim to the area's prime hunting grounds. The new town was named Micanopy in honor of the current chief of the Seminoles, and construction on the first buildings in the oldest settlement in present day Alachua County began in 1820 (Andersen 2001, 69-70). From a section of the Arredondo grant Moses Levy carved a large plantation on which he experimented with crops and pursued his dreams of a Jewish colony in Florida. In 1821 he invited a group of German immigrants to settle a new village called Pilgrimage near his plantation, which was one of several speculative land developments underway in the region (Andersen 2001, 72). Territorial representatives like J.M. White worked to clear titles on Spanish grants so land could be sold to the new settlers, as well as suggesting a shipping canal project to be built across the peninsula through Alachua County to bring even more growth (Buchholtz 1929, 69).

Two years after Florida officially became a part of the United States in 1822, the territorial legislature of Florida created Alachua County because settlers were coming to the area in such high numbers. The town of Newnansville was designated as the county seat because it was located on the Bellamy Road, connecting St. Augustine to Pensacola. This road was completed by 1826 with the purpose of easing travel between these two

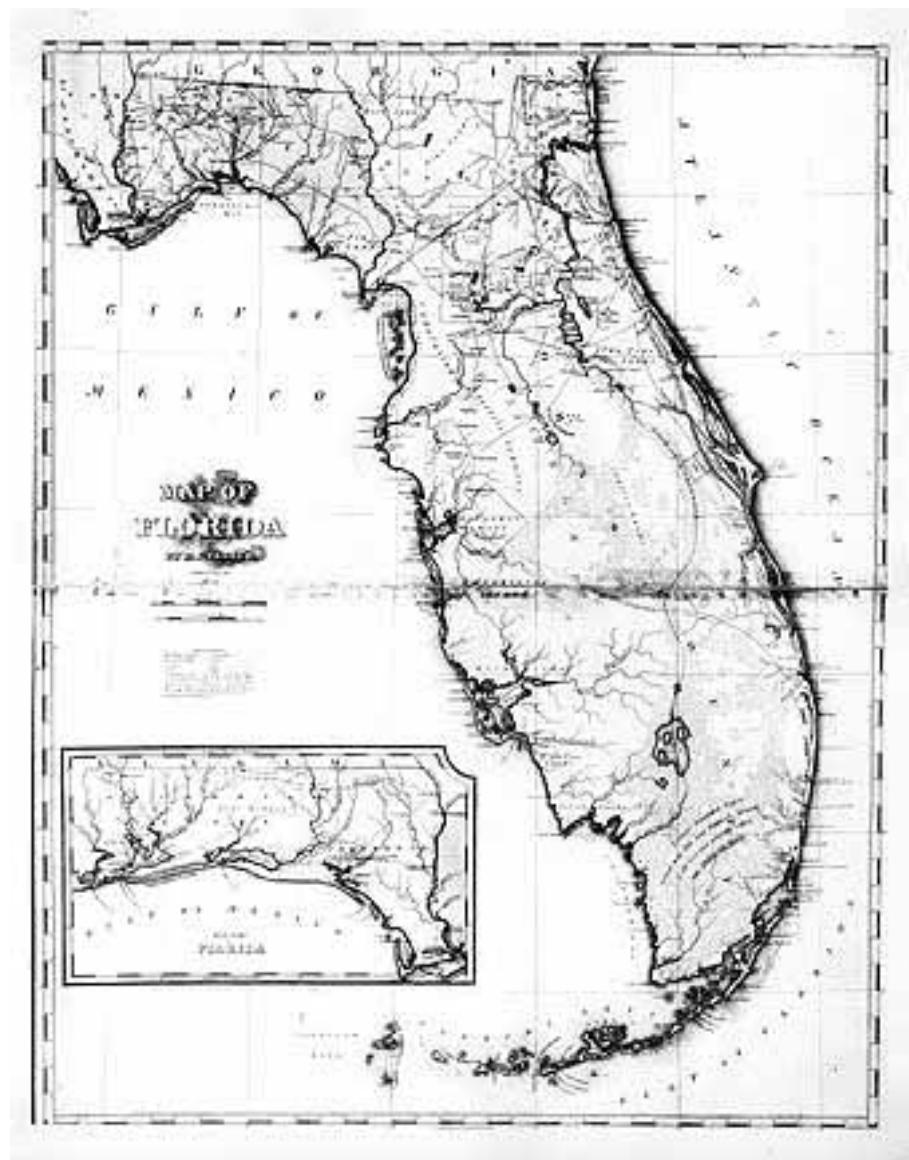


Figure 3-1: A map of Florida dating from the period when Spain transferred the territory to the United States government. (Alachua County Library District Heritage Collection)

important towns (Andersen 2001, 73). The primitive conditions of many of the trails that were the main links of communication and trade for the settlers in the county encouraged commercial interests in Micanopy to clear a water route using a series of shallow waterways that connected the St. Johns River to nearby Orange Lake (Andersen 2001, 71). Due to the expense of transporting bulky items to and from the area, even goods such as cotton needed to be cultivated proximate to navigable waterways in order to be profitable. Items made of iron and other metals were scarce and had to be imported into the region at a high cost, so many structures were made out of wood as it was an abundant area resource (Buchholtz 1929, 106).

Increased prosperity from cotton cultivation created a class of wealthy planters after the 1830s who were able to invest in larger plantations containing the best lands throughout the region. Often with the help of slave craftsmen, they constructed simple but well-made houses that were large and spacious to reflect their high status as planters. In contrast the marginal subsistence farmers along the frontier in constant danger from Seminole attacks lived in roughly built log huts with clay floors, unglazed windows and highly flammable chimneys built of sticks and mud (Buchholtz 1929, 108-109).

As the number of settlers attracted to the area increased, renewed pressure was placed on the Seminoles to vacate their lands and immigrate to the western reservations in Oklahoma created as part of the federal Indian Removal Act of 1830. Conflicts between the Seminoles who were determined to stay on the lands guaranteed by treaty for their use and the encroaching white settlers escalated as hunting bands were sighted crossing the reservation boundaries in search of food until the outbreak of open war in 1835 began the Second Seminole War. In 1837 a series of forts and blockhouses were

built at regular intervals throughout Florida to protect settlers from the guerilla warfare tactics of the Seminole warriors, who had effectively driven the majority of the white population into the relative safety of the fortified towns (Andersen 2001, 91). The Armed Occupation Act of 1842 was passed to attract new settlers to the region as the last of the hostile Seminoles were either captured and sent to Oklahoma or driven into the depths of the southern end of the Florida peninsula (Andersen 2001, 98).

Growth and Maturity

In 1845 territorial representatives wrote a state constitution that was approved by the population, and Florida became the twenty-seventh state of the United States of America. The decade of the 1850s was marked by a doubling of the white population of Alachua County, mostly through an immigration from nearby territories and states such as Georgia and South Carolina (Buchholtz, 109). The Haile family of South Carolina relocated to the area with their slaves during this period and created a large cotton plantation and house along the lines of their former home (SouthArc 1997, 4). The original small log cabins of the early settlers transitioned to small frame houses with the availability of cut lumber from area saw mills (Everhard & Browne 1977A, 24).

When the route of a new coast to coast rail line connecting Fernandina and Cedar Keys was discovered to be bypassing the county seat of Newnansville, the citizens of Alachua County decided after much debate to incorporate the new town of Gainesville as the permanent county seat to be located centrally near the proposed path of the tracks (Andersen 2001, 99). The major tipping point for the decision was the generous land donation by Major Bailey for municipal buildings, as well as the proximity of a sawmill to provide lumber for the new county courthouse (Everhard & Browne 1977B).

A few minor skirmishes with Union forces and the passage of the Confederate treasury through the region was the extent of the direct action that Alachua County experienced during the Civil War, though the agricultural products grown in the region as well as the men who enlisted to fight were key to sustaining the Confederacy throughout the conflict. Despite the prickly political situation in 1866 when northerners began directing reconstruction efforts to reorganize the government and enfranchise the freed slaves, business and population was growing strong (Buchholtz 1929, 140).

With the rise in area prosperity, larger houses were constructed though they were detailed simply (Everhard & Browne 1977A, 24). The high demand for lumber and building materials created a sawmill boom, fueling the prevalence of wooden structures until the 1880s when brick and stone construction was favored for its fireproofing characteristics. During the 1870s, the majority of manufactured building materials such as doors, window sashes, paint, lime and plaster, and bricks were brought into the region by rail, though a planing mill opened in Gainesville in 1873 and began turning out prefabricated wooden building components (Everhard & Browne 1977B). The shift away from simple functional vernacular forms for houses was assisted by the availability of affordable ornamental scroll work and other architectural detailing which could be added for style (Everhard & Browne 1977A, 24).

Paynes Prairie periodically flooded and became a lake when the sink hole filled with debris. In 1871, a particularly wet period, Alachua Lake was formed nurturing a flourishing steamboat trade until the area reverted to a prairie again when the lake drained between 1891 and 1892 (Andersen 2001, 108). More railroads and spurs were built following the end of the Civil War through the 1900s to connect the most remote

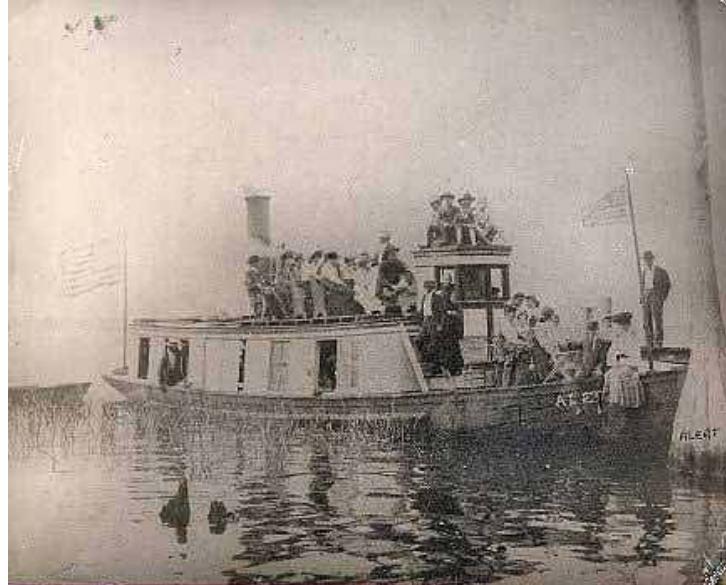


Figure 3-2: Steamboats carried passengers and cargo along the canals that connected the lakes and towns to each other because travel on the poorly maintained roads was so difficult. (Alachua County Library District Heritage Collection)



Figure 3-3: Train tracks running down the center of the street in Gainesville were in use until the middle of the twentieth century. (Alachua County Library District Heritage Collection)

communities with the rest of the state and nation, and carry goods to and from distant markets (Andersen 2001, 114).

An invasion of caterpillars ruined several cotton crops and the fortunes tied to them including that of the Haile family, so the agricultural industry of the county shifted away from cotton and towards citrus groves, which were severely damaged by several deep frosts late in the century. Subsequently truck farming vegetables to supply northern winter markets became more common in the region as a cash crop (Buchholtz 1929, 145). The discovery in 1890 of phosphate led to the founding of the town of Newberry and the subsequent economic boom was marked by the construction of a number of elegant homes in the county using a variety of Victorian era styles (Everhard & Browne 1977A, 40). During World War I German submarines in the Gulf of Mexico sank the ships carrying the phosphate ore, and as production shifted to more secure and profitable sources of phosphate, the economy of the region slowed (Buchholtz 1929, 183).

Local mills and factories took over the manufacture of building supplies during this period and began shipping surplus products to other markets, instead of the other way around. A series of downtown fires in the mid 1880s convinced residents in the county to build structures out of fireproof materials like brick, cast iron architectural elements and metal roofing (Everhard & Browne 1977A, 27). The county courthouse built in 1885 was the last major public building designed with Victorian detailing as was evident in the classical detailing of the National Oddfellows Home completed in 1894 (Everhard & Browne 1977A, 37). In 1893 the Eddins company, based in Gainesville, advertised their tin ceiling patterns with the claim that they owned the only embossing machine in the state of Florida. Between 1900 and 1905 the building boom in Alachua County slowed

and growth in the economy became minimal as many industries reached their limits of production (Everhard & Browne 1977B). During the same period the Buckman Bill consolidated the institutions of higher education in Florida, and to educate the men of the state the East Florida Seminary was renamed the University of Florida and returned to Gainesville (Buchholtz 1929, 161).

Summary

A major part of understanding the information contained within the physical fabric of a building is an awareness of the historical development of a region so it can be interpreted through the context of a region rather than in isolation. Alachua County has been the focus of a number of important events for several centuries even though the composition and settlement patterns of the population have changed. A large number of settlers were attracted to the region's abundant resources and they chose to build their homes using the traditions that had traveled with them. The Haile family established a plantation named Kanapaha in 1854 following the organizational patterns that they had used before in South Carolina. By 1900 the house was no longer occupied as a full-time residence, and it became the setting for the parties and events of the Haile family and friends (SouthArc 1997, 6). Some adaptations in building technologies and techniques were made in response to the availability of construction materials and a skilled labor supply, and this will be addressed in the following chapters.

CHAPTER 4

ANALYSIS OF THE HOUSE: STYLE DATING

Architectural styles provide a relative dating framework for initial construction of the house and later exterior renovations. A close look at details and finishing marks left from different construction techniques and technologies can separate later revival styles from the original iterations (Ferro 1976, 14). An old map showing the presence of a building on a site may not be the building that is currently in place because houses were frequently rebuilt on old foundations of earlier structures, and sometimes older buildings were moved to a different location and placed on new foundations (Howard 1989, 155). A wide variety of reasons for renovating or changing a house from how it was originally built include a desire to update the appearance of a house to the latest architectural style, adding space for the family and minimizing the necessary maintenance load by the removal or replacement of doors, windows, porches and wall surface materials (McAlester & McAlester 1984, 14).

When settlement of Alachua County first began, simple vernacular forms were used by the builders to construct shelter from the weather and a hostile environment. As the area developed, more complex forms were incorporated within the body of building traditions then in use. Formal building designs and the inclusion of architectural details from popular styles into vernacular forms followed as inexpensive manufactured building materials became increasingly available.

Vernacular Forms

Several basic floor plan patterns are the basis for the vernacular forms of organizing interior spaces and the variations which were derived by house builders. These initial forms were further elaborated following traditional practices by expanding and changing the original houses to meet the need for more space and the current trends and conventions of home design. A southern family intent on expanding their home often would build a larger and more stylish house directly in front of the original small homestead to provide more space and symbolize the higher social status that the family had reached. A colonnade or covered porch would connect the kitchen, separated to prevent the spread of fires, to the main body of the house, creating a house composed of complex building masses all connected together (Howard 1989, 29).

The hall and parlor house is one room deep and usually one story in height, and the unequal sizes of its two rooms were eventually modified into the central hall version of larger expansions. In the southern United States chimneys were usually located externally on the gable end of the house rather than internally as done in northern climates to conserve heat in the wintertime (Arrington 1978, 17). The I-house was a two story version of the hall and parlor plan that had front and back porches with additions attached to the rear as space was needed (Arrington 1978, 19). The dogtrot house was designed to take full advantage of cooling breezes by separating two equally sized rooms with an open hall, including a front porch with large windows opening onto it and elevating the whole building off the ground (Arrington 1978, 21-23). A southern variation on this popular design was to construct the rooms from two log pens spaced apart to create the open hall (Howard 1989, 19).

The Georgian plan had a large central hall flanked on both sides by a pair of rooms heated by internal chimneys. Porches were a common feature in this form as well. The front rooms were arranged for social purposes to keep the back rooms private for the family (Arrington 1978, 26-28). The Creole house was a one story mass two rooms wide and two deep heated by a central chimney, so access between the rooms was provided through paired front and rear doors. The front porch was inset under the main roof of the house and windows were only located on the side walls (Arrington 1978, 28-30). A house with two similarly sized rooms was called a saddlebag if the chimney was placed between the rooms. If the chimney or chimneys were located on the ends, it was called a double pen (Arrington 1978, 24). The shotgun house was commonly built in an urban context on narrow lots. A typical configuration is a one story, one room wide gable front house on which multiple rooms, sometimes in two story blocks, were added onto the rear (Arrington 1978, 30).

The Florida Cracker house is closely associated with the settlement of the region. This style has numerous variations as it was widely built by people drawing from different vernacular traditions though they are all connected by adapting to the climate using certain key characteristics of design. The house is constructed of wood framing or logs raised off the ground for ventilation and covered by a steeply pitched roof. Cracker houses commonly use dog trot, Georgian or hall and parlor floor plans to organize interior living spaces, though other plans were chosen depending on practicality and traditions (Ferren n.d., 4). Often as more room was needed an addition or relocated building would be attached to the main body of the house using open breezeways and porches for ventilation rather than enclosed hallways. Some examples of this practice



Figure 4-1: 1840s log cabin with later rear addition, Hogan's Cabin, Morningside Park, Gainesville, Florida.



Figure 4-2: Symmetrically designed Haile Plantation house, Gainesville, Florida, 1854.

include the Cracker house of Marjorie Kinnan Rawlings in Cross Creek and Hogan's cabin at Morningside Park in Gainesville.

Early Styles

The major colonial styles and their construction practices were brought to America by the immigrants who colonized the different regions, such as the Spanish in Florida, the French in Canada and the Mississippi River Valley, the Dutch along the Hudson, and the English who spread out from their initial colonies in the Mid-Atlantic and New England regions. The Spanish colonial style of building came to Florida with the first Spanish settlers in 1565 and persisted despite a twenty year occupation by the English until the 1820s when Spain turned the territory over to the United States. The colonial houses were usually one story timber and masonry structures with a long covered porch, a low pitched tile or flat roof and multiple exterior doors opening onto a courtyard area (Howard 1989, 72). English settlers in the colonies brought the English medieval style with them and it was a standard vernacular house design from 1603 to the beginning of the nineteenth century. A simple boxy form with a steeply pitched roof, it was typically enlarged with a shed addition on the rear creating a house called a saltbox in the northern colonies and a cat slide in the southern colonies. Southern colonists would build with brick when it was available and chimneys were placed on exterior walls (Howard 1989, 71).

An early foray into formal design schemes was the Georgian style, popular among the more affluent segment of society between the 1720s and 1800. The Georgian is a two-story house with a symmetrical entrance usually flanked by two windows on either side, with the upper story windows aligned above those on the lower story. The cornices and corners of the building are detailed with architectural elements like dentil moldings

and quoins. After 1750, a tripartite Palladian window was placed over the doorway. The rooms were arranged within the five bay structure two rooms deep to create a double pile plan, and the stairs in the central hallway would be a prominent design element. Double-hung multi-light windows with thick muntins, two chimney stacks, and an increase in the amount of plaster and paint work for the interior decorating are a few of the main characteristics of the Georgian style (Howard 1989, 74-76).

The Federal or Adamesque style drew on certain elements of the Georgian style and was prevalent from the time of the American Revolution until the 1820s. The style was greatly influenced by the work of the English architects Robert and James Adams, who introduced new decorative features while at the same time criticizing the excessive application of decoration. A fan design and side lights were added to the entrance door, and elements like swags, garlands and urns were delicately executed to truthfully reflect the fact that they were made out of wood (Howard 1989, 78). The main focus was on proportioning and materials, rather than being classically correct. Windows had six-over-six light sashes with thinner muntins supporting the panes than were typical during the earlier colonial period (Howard 1989, 88).

Between 1820 and 1860 the Greek Revival style drew on a growing interest among Americans in ancient Greece and the classical orders of architecture, nurtured by an abundance of published travel accounts and detailed studies of Greek buildings. Shallow roof pitches were paired with gable front oriented buildings which echoed the triangular pediments and entablature trims of the temple form. In the south eyebrow dormer windows and a surplus of white paint were combined with a full height portico (Howard 1989, 100-101).

The Gothic style was fueled by technological advances in circular and scroll saws, which were used to create many of the architectural elements such as the decoratively cut bargeboards located in the gables (Howard 1989, 93). One of the products of the increased efficiency and productivity of the circular saw was the availability of vertical board and batten siding, which was a favorite walling material because it emphasized the verticality of the building (Howard 1989, 95). Steep roof lines were echoed by pointed windows. Porches surrounded the irregular floor plan and massing of the house. The Gothic style was prevalent mainly in rural areas from the 1840s to the 1880s, though it was rarely found in the southern part of the United States (Howard 1989, 107).

Another style that was rarely built in the south but was an influence between 1840 and 1880 was the Italianate Bracket. The signature elements of the style are a low pitched roof with wide overhangs supported by decorative brackets, narrow two-over-two light windows with arched or curved top sashes grouped together in bay or paired configurations, and double front doors with inset glass panes (Howard 1989, 112).

The Second Empire followed a resurgent interest in French styles between 1860 and 1890. This style was considered suitable for the narrow street frontage of the typical town lot. Architectural elements of the Italianate style were incorporated into the design for decoration, but the Second Empire style is most noted for the use of a mansard roof structure, which opened up the attic area with the aid of dormer windows to create an extra floor of living space (Howard 1989, 116).

The Stick style flourished during the same period, and its main characteristic is the emphasis on the structure of the building, or at least an imagined structural framework. Wood boards were applied to the surface of the wall to resemble half

timbering, and decorative truss work adorned the overhanging open gables of the roof.

The practice of picking out the numerous architectural elements in different colors introduced the painted ladies as a visible part of the Victorian era (Howard 1989, 118).

The Queen Anne style, popular between 1870 and 1900, is noted for experimentation with free-form designs and the creative application of a wide variety of materials within a single composition. The complex mass of irregular rooflines, dormers, turrets, bay windows and porches were further elaborated upon by the use of multiple materials, textures and colors to adorn the wall surfaces. Often an older home would be updated with the addition of one or more of these features to create an asymmetrical form, which was a major theme of the style (Howard 1989, 120-121). The creative use of the porch as a part of the building's massing and the use of decorative stained glass windows influenced the development of subsequent American styles (Howard 1989, 108).

The Shingle style flourished from 1880 to 1900 and was quite different from the Queen Anne by emphasizing a homogenous surface of shingles and a low grounded appearance. Small windows would be grouped together in various combinations and free form interiors reflected the trend toward open plan houses as a change from the compartmentalizing of earlier styles (Howard 1989, 123).

Early Twentieth Century Styles

The first half of the twentieth century was marked by the simultaneous popularity of a wide profusion of styles both new creations and revivals from earlier style periods. Prior to World War I, popular older styles such as the Queen Anne and the Colonial Revival were joined by unique designs like the Prairie, Craftsman, Bungalow and the Four Square, as well as designs drawing from various international tradition sources (Schweitzer & Davis 1990, 119). An interest in recreating the European and colonial



Figure 4-3: Merrill House, Jacksonville, Florida. The simple box house was later renovated as a Queen Anne with the addition of a tower and architectural detailing, which was tracked through a careful analysis of key building materials.



Figure 4-4: Sears catalog house, Jacksonville, Florida. Early twentieth century cottage with modern interpretive detailing of windows and porch.

revivals based on academic studies of the original house forms, rather than freely adapting architectural features from different sources into one form, guided architects and builders during the period between the two World Wars. Some major changes in the way houses were designed and used during the 1930s included the disappearance of front porches as they declined in social importance, wider lots to build on, and the increased prevalence of attached garages to provide protection for residents between their home and car instead of a detached outbuilding (Schweitzer & Davis 1990, 171).

Beginning in the 1890s through the present day, a revived interest in colonial styles oscillated between faithful reproductions and fanciful constructions as tastes and the budgets of contractors dictated. Architectural elements from different styles and ethnic traditions would be mixed and matched, and modern technology and conveniences such as multiple bathrooms, modern kitchens, electrical and plumbing systems were added to suit the changed needs of a twentieth century family with an exterior appearance echoing ancestral homes (Howard 1989, 139). Architectural details such as broken pediments were rare with the original renditions of the early American styles but became a popular element at the turn of the twentieth century. Other modern adaptations included finishing cornices with open eaves, rake or exposed rafters as influenced by the Craftsmen style, and the grouping of windows into bay, paired or triple window configurations (McAlester & McAlester 1984, 324).

The Georgian Colonial Revival house has a center hall plan with porches or sunrooms attached as wings, and was usually finished in brick or stone. The size, materials and high style origins placed it in the higher priced category of houses, so it

was a rare purchase from a ready-cut catalogue for budget-conscious builders (Schweitzer & Davis 1990, 121-124).

The Tudor style was a revival of English medieval design elements, most notably the traditions of exposed framing timbers, stucco infill, overhanging eaves and arched entry doors. The walls were typically covered with stucco or shingles, and Craftsman style windows, a multiple light sash over a single light sash, were arranged on the facades in groups (Schweitzer & Davis 1990, 130). Towards the middle of the twentieth century, elements from both the Tudor and the Colonial Revival styles appeared in blended combinations on the same house (Schweitzer & Davis 1990, 187).

Frank Lloyd Wright is credited as the main creator of the Prairie School style of design. It had a brief period of popularity between 1900 and 1920, though it survived after that as an influence on later styles. Broad overhanging eaves emphasized the horizontal characteristics of the house and large chimneys were located at the crossing of the main roof lines to symbolize the centrality of the hearth. Breaking the barrier between the interior and exterior was another important guiding idea for the style (Howard 1989, 138).

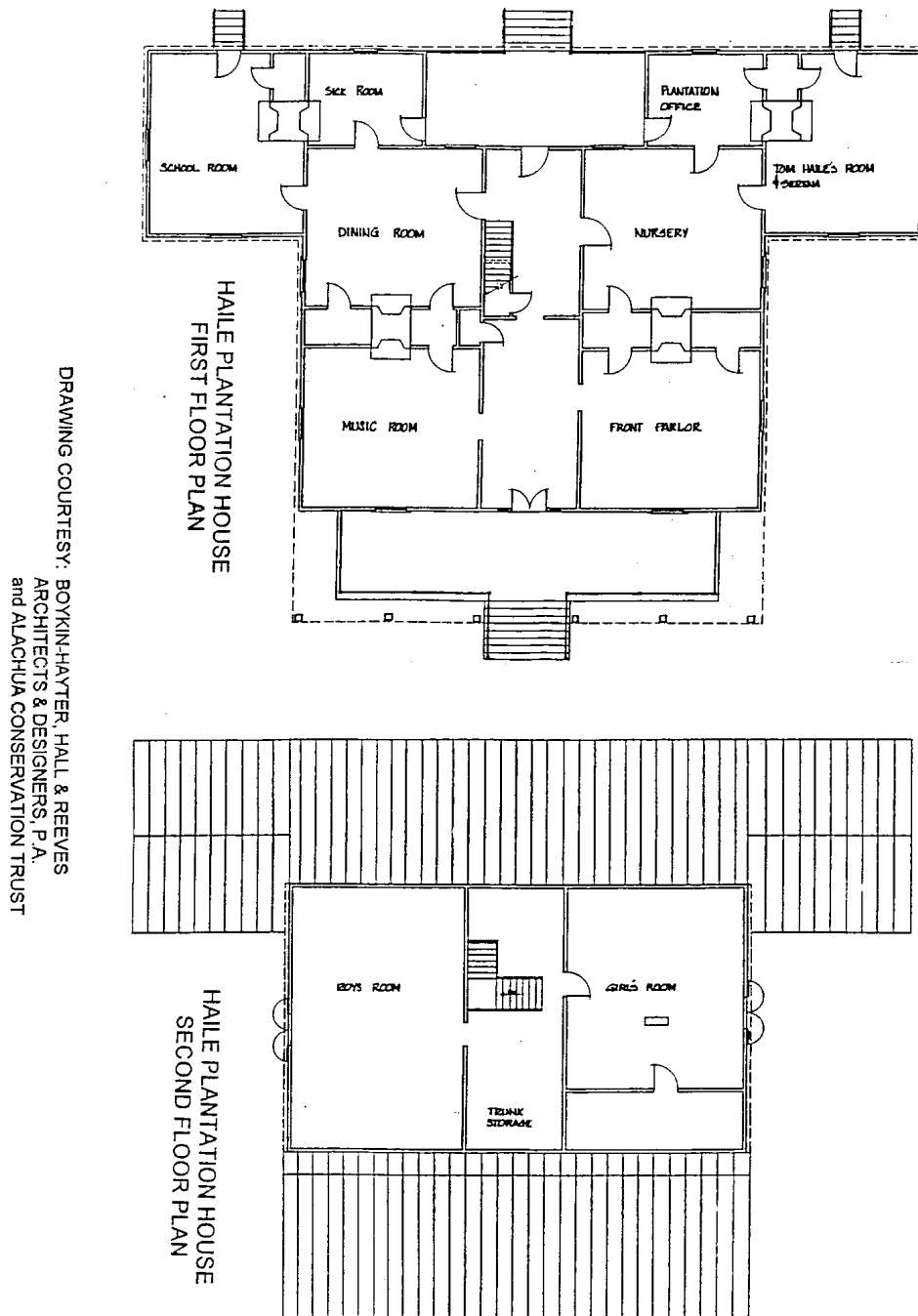
The Bungalow was a one- or one-and-one-half story house without a basement, and the roof extended over the porches and verandas. Two-story houses with similar architectural detailing are categorized as Craftsman style (Schweitzer & Davis 1990, 152). The structural members were left exposed for decoration and the oversized columns on the veranda or porch were often tapered square forms. The Bungalow style was popular between 1903 and 1930, but the organization of interior spaces using simple open plans was a practice borrowed by other styles (Howard 1989, 136).

The Four Square or Box house is a basic house form on which a variety of style elements and motifs were freely applied to suit the tastes of the builders with little regard to formal style design (Schweitzer & Davis 1990, 164). It is a simple box-like two story mass with a hipped roof and dormer windows (Schweitzer & Davis 1990, 161).

Analysis

Examining the plan form and architectural style of a house provides a starting point for an in-depth investigation of the house by a researcher. A look at the form of the Haile Plantation house reveals a symmetric one-and one-half story Georgian center hall house with matching rear wings. Front and rear porches provided protected activity areas for the family. Raised foundations, large windows protected by roof overhangs, and interior doors linking every room created an efficient ventilation flow for optimum cooling conditions during the hottest days of the year. Further examination of the physical fabric of the house will yield more information concerning its construction and historical evolution.

Fig



a

ntation House, Gainesville, Florida. (SouthArc 1997, 9-10)

CHAPTER 5

ANALYSIS OF THE HOUSE: EXTERIOR MATERIALS AND FEATURES DATING

The building researcher should follow a systematic pattern of investigation to minimize the chances that a critical detail or issue might be overlooked. Starting on the outside and then moving to the interior, all accessible areas should be covered in a similar order, and key aspects, such as construction techniques, fixtures and hardware, nails, molding and finishes, should be examined to discover clues that differentiate between original work and later alterations (Reed 1982, 19). Analyzing such diverse elements as chimney detailing, framing construction methods, brick bonding patterns and mortar composition can yield information about the history of a house which rarely has been recorded through historical documentation (Bullock 1966, 35).

Compiling a building history and dating chronology for exterior features and their construction techniques is an important part of the analysis process. Application of the identification and dating knowledge should take into account the historical context in which the house was constructed and contribute towards a refinement of the regional building chronology.

Site

A walk around the property of a house may reveal the location of historic walkways and gardens, as well as the foundations from outbuildings and additions which no longer exist. Constant use would compact soil and affect the texture and color of nearby plant materials to show evidence of roads or paths that have long been neglected (Stewart 1977, 65). Flowering perennials usually bordered walkways in regularly spaced

lines or clumps (Stewart 1977, 66). Lilacs were favorites near the outhouse, just like daylilies, which grew near the back door because they responded well to the harsh wash water that was disposed of in the area. Fence lines would appear where stones had been cleared away, or when older trees had scars from growing adjacent to a structure which affected their growth (Stewart 1977, 67).

Glass, shingles, woodwork, hardware, shutters and sashes that were removed from the building or broken and replaced may have been stored somewhere out of the way on-site rather than thrown away, and these fragments can reveal important clues about the house as well (Judd 1971, 30). Excavations of builders' trenches near the foundations usually hold artifacts dating from the time of construction and old work removed during a renovation. The fragments may also be reused as part of the alteration work (Judd 1971, 34). Other valuable locations for evidence of everyday life are old wells, trash pits, crawlspaces and spaces underneath porches (Howard 1989, 25). Changes in the foundation and in how it was constructed indicate a sequences of construction phases that may reflect conditions in the living spaces above (Howard 1989, 31).

Wood Finishing Marks

Carpenters prided themselves on how skillfully they could smooth the surface of a piece of wood, leaving as few marks from the finishing tool as possible. Unless the woodwork and timbers were resurfaced with a power sander, a raking light shone across the surface of the wood will reveal how it was finished. As the carpenter moved down the length of the timber with a broadax or adze, faceted marks would be left behind, and a pit sawn timber would have uneven saw marks at a slight angle. Saw mills usually installed up-and-down, or reciprocating, saws which produced evenly spaced, slightly angled saw marks. The development and spread of circular saws during the nineteenth

century increased the capacity of the mills and produced distinct curved markings on the surface of the wood (Ferro 1976, 14). The circular saw was in general use in many areas by 1830, though it was limited by current technology at the time to cutting thin boards for lathe and shingles. The older styles of saws continued in use in the mills until the improved capabilities of the circular saw made it the preferred tool for cutting larger timbers into boards by 1860 (Howard 1989, 9). The high speed band saw was developed at the end of the nineteenth century to improve the efficiency of the mills by reducing sawdust waste, and this saw produced an even vertical pattern (Ferro 1976, 15).

The first machine planer was patented in 1828 and the time saving machine quickly became popular until the majority of the finish boards produced by the mills in the 1850s were planed prior to sale (Howard 1989, 95). The actual dimensions of boards shrank from the nominal one inch incremental dimensions of the board because the planing process typically removed 3/8" of material from the smaller sized boards, which was later changed to 1/2" to produce a finished dimension of 1 1/2"x 3 1/2" for a 2x4. The type of framing used can be determined to some degree by examining the dimensions of the lumber framing the attic space and measuring the thickness of the walls, with heavy timber framing usually a minimum of 7 inches and light timber or stick framing about 5 inches in width (Howard 1989, 14).

Wood Framing

For centuries wood frame buildings were constructed of large timbers connected together with mortise-and-tenon, dovetail, lap and a variety of other carved joints. Wooden nails or trunnels would be driven through holes in the joints to hold the pieces in



Figure 5-1: The timber on the right has the faceted markings from the axe which was used to shape it. The timber on which the first one rests has the curved markings that a circular saw would leave behind. Haile Plantation House, Gainesville, Florida.



Figure 5-2: The angled saw marks on this timber are unevenly spaced, placing it in the category of a pit sawn timber rather than the evenly spaced marks from a reciprocating saw in a mill. Hogan's cabin, Morningside Park, Gainesville, Florida.

position. The bents, sections of frame, would be linked together by floor joists and rafter purlins to form bays, a basic design module, and diagonal braces kept the frame square (Howard 1989, 18). Since the framing timbers and joints were individually carved and not interchangeable, the pieces would often be identified with maker's marks of symbols or numbers to guide where each went together when the framing was finally assembled. Wooden sills laid on the earth deteriorated quickly from the damp, so frame houses were often constructed on brick or stone foundations when available. Another option to secure the foundation in the seventeenth century drove posts into the ground to carry the sill (Buchanan 1976, 58). The plate, sills and wall studs of a wood frame building hold evidence in the form of mortise pockets or other joints for former openings, porches and other alterations to the house, as well as tool marks, fasteners and hardware identifiers (Judd 1971, 34). The frame could be covered by a number of different materials. Methods to produce a weather-tight building ranged from wood sheathing to brick noggin infill, or even wattle and daub (Shurtleff 1939, 17).

The log cabin required fewer complex joining and finishing techniques of the builder as compared to a heavy timber frame building. The skills and time available for construction determined how the logs used for the cabin were finished and joined together at the corners (Howard 1989, 19). The blockhouse type, where the corners were hewn flush to the wall and the logs either dovetailed or mortised together, was rarely used for houses. The protruding log ends on the corners of the typical American log cabin are traced back to Swedish traditions of log house construction. Plank wall construction is a variation where the logs are split, fitted tightly along their length and joined at the corners with vertical notches (Shurtleff 1939, 164). Openings such as doors and windows could



Figure 5-3: A small example of a heavy timber frame structure located in Newport, Rhode Island. Note the angle braces and the practice of staggering where multiple timbers intersect to avoid weakening a post at a critical point.

be cut and framed with planks anywhere the householder desired after the log walls of the pen were assembled (Howard 1989, 20). The pen is the basic module on which the cabin is designed, similar to the bay of a heavy timber building, and the modules could be arranged as desired (Howard 1989, 19).

The technique of light timber framing and the liberal use of nails to secure the joints of a building was developed and refined into the balloon and platform framing methods common in the Midwestern and Western portions of the United States beginning in the 1830s. In the East the tradition of heavy timber framing continued strong until the 1870s when it began to lose ground to the simpler framing methods of a light timber frame (Howard 1989, 15). George Snow is credited with inventing in 1832 the Chicago balloon framing technique, in which heavy timber sills were connected with mortise-and-tenon joints at the corners and where the studs and joists met the sills as well, though the rest of the framing construction consisted of light timbers and nails (Sprague 1983, 38). The attached sheathing provided the stability and rigidity necessary for the frame to resist wind loads. There was no need for diagonal braces as in heavy timber framing, though sometimes builders included such framing because of tradition and a perceived need. The sills could have been of smaller dimension lumber if the building was built on a continuous foundation, but it was a common practice in Chicago to raise a building on a foundation of posts driven into the ground instead (Sprague 1983, 40). A balloon frame constructed entirely of light timbers nailed together at the connections was promoted in 1846 by Solon Robinson and in the 1850s and 1860s by George Woodward in various publications across the country (Sprague 1983, 41). Pre-fabricated balloon frame buildings with heavy timber sills and regularly spaced mortise pockets that could be used

as desired to provide openings were produced for a number of years (Sprague 1983, 42), but Snow's method of construction gradually lost ground to other methods between 1874 and 1887 (Sprague 1983, 44). By the turn of the twentieth century, the practice of laying the sub-floor and sheathing boards diagonal to the framing members for strength became common in regular construction projects, though the use of sheet fiber sheathing after World War I revived the use of diagonal bracing members. Western or platform framing from California replaced balloon framing in the East after World War I because it was easier to assemble one floor at a time rather than having studs which ran the full height of a multi-story building as in balloon framing. Platform framing enabled the lumber mills to standardize the length of boards based on ease of handling and the rest of the construction industry to set the production of building materials ranging from lumber to plasterboard on a uniform 8 foot module (Sprague 1983, 45).

Wall Materials

Locally produced building materials were generally similar in size and in use because common construction practices dictated fairly uniform designs in buildings. Clapboards were limited by technology until 1830 to 4 foot to 6 foot lengths, and overlapping scarf joints commonly connected the ends of the boards together until the practice was phased out by carpenters after 1825 in favor of the simpler method of butt jointing (Howard 1989, 38). The use of decoratively cut shingles to cover the walls of a building to create patterns was given a large boost in the middle of the nineteenth century by the increased development of steam machinery in the woodworking industry (Howard 1989, 39).

The sizes of handmade bricks used could vary because of erratic production quality, but they were usually laid in courses 3 inches in height with the leveling medium

of mortar (Buchanan 1976, 54). By 1830 the size of bricks had been standardized to fit the dimensions used to the present day in brick making, and typical patterns and methods of laying brick changed very little (Howard 1989, 42). Wood frame buildings were mainly limited to a cladding of wood until a technique was refined in the early 1920s for attaching a thin veneer of brick or stone inexpensively to the frame (McAlester & McAlester 1984, 319).

The use of tabby, a mixture of sand, shells and lime mortar, dates back to the 1670s when the Spanish settlers of St. Augustine made walls, floors, flat roofs and bricks out of this versatile material. The popularity of tabby construction peaked during the first decades of the nineteenth century as a variety of residential, industrial, civic and religious buildings as far north as Charleston were built of the material (Sickles-Taves 1997, 22). A revival of tabby construction during the 1880s and 1890s was used to build winter homes and resorts for many of the nation's wealthiest families along the coasts of Georgia and Florida (Sickles-Taves 1997, 23). The time and resources available to the builder were the only limits imposed by tabby because it could be formed into a wide variety of shapes, allowing an element of creativity in the design of structures (Sickles-Taves 1997, 24). Sometimes only tabby foundation walls or piers would be poured and the upper stories of the building would be constructed of wood frame. Tabby walls are usually between 10 inches and 12 inches in width, poured in lifts or layers of a similar height, and are a light grey color under the layers of stucco and whitewash applied to protect the tabby from weathering (Sickles-Taves 1997, 26).

Throughout the nineteenth century, blocks of molded material which substituted for more expensive or unavailable natural stone were referred to as cast or artificial stone,



Figure 5-4: Kingsley Plantation slave cabin, Amelia Island, Florida. This unusual plantation from the early 1800s had a number of buildings including the slave cabins, barn and the house foundations constructed out of tabby.



Figure 5-5: The tenant house moved to the Marjorie Kinnan Rawlings State Park has vertical board and batten siding on the rear elevation of the building and horizontal lap siding on the gable end.

and by 1900, the terms manufactured and architectural stone were also in use (Prudon 1989, 81). Portland cement was not available in the United States until the 1870s. Not until the beginning of the twentieth century did the more expensive white Portland cement enter the market, so natural cement was used for the most part in forming cast stone (Prudon 1989, 85). Foundations were not made of concrete until the last quarter of the nineteenth century, and it was not a common construction practice until the twentieth century (Howard 1989, 37).

Utilized as a building material for thousands of years by a number of major civilizations using the same ancient techniques, architectural terra cotta is a molded clay material fired at a higher temperature than regular bricks (Mack 1983, 117). Beginning in the middle of the nineteenth century, architects began experimenting with terra cotta as a cheap stone substitute in a few of the larger cities. Not until the year 1877 when several prominent architects and contractors began incorporating the material into their designs, did it become an important part of design or construction as a representation of itself (Mack 1983, 119). Terra cotta could be formed into hollow units much like bricks and was commonly used as a fireproofing material to protect the metal structural frame of the building (Mack 1983, 120). An ideal building material to create the repetitive decorative designs found on most buildings of the period, terra cotta would even be used as a ceramic veneer that clad the surfaces of floors, roofs and walls (Mack 1983, 120). The terra cotta blocks were usually filled with mortar and hung on hooks driven into the mortar joints of a wall, but after 1885 the practice of building the decorative blocks as part of the wall was adopted and both methods continued in use depending upon the situation (Mack 1983, 137).

Until about 1890, the majority of terra cotta manufactured was a reddish color that matched the brick construction with which it was normally paired. When used as a stone replacement, terra cotta was painted to look like the desired material, such as brownstone. A yellow terra cotta became popular paired up with limestone in buildings after 1890, though a variety of colors utilizing slips of colored clay were developed and available as early as 1885. The addition of salt glazes produced colored terra cotta in 1894 that introduced a new form which was very popular as an exterior cladding system until the 1930s (Mack 1983, 119).

Exterior Paint Finishes

Color schemes for the exterior of houses were greatly affected by the prevailing paint fashions and color theories and also by ideas associated with specific architectural styles regarding color use. During the early part of the nineteenth century, buildings using styles which drew from Greek and Roman architecture and detailing were painted a bright white and for contrast the shutters would be distinguished with a green color. The picturesque styles of the 1840s which drew from the Gothic and Italian Renaissance periods called for a return to the colors of nature though green was avoided to eliminate any associations with leaves (Moss 1981, 9). Recommended practice for houses which were large or exposed on an open site was to paint them a dark shade. Houses that were small or surrounded by dense vegetation were painted a light shade. A.J. Downing favored the practice of painting projecting features a contrasting shade of the body color, such as a dark body with light trim or a light body with dark trim (Moss 1981, 10). The sash and shutters from the 1840s through 1900 were usually painted a color darker than the trim using deep browns, greens, olives, reds or black (Moss 1981, 13). The late Victorian period between 1870 and 1890 was filled with rich dark colors which are

muddy in tone in comparison to colors of the present day, and this trend was gradually reversed as white and light pastel colors replaced the Victorian colors during the Colonial Revival period between 1890 and 1920 (Moss 1981, 11). It was general practice when painting a house built in the Queen Anne, Shingle or Stick styles to bring out the important structural design by painting those elements a lighter color or shade than the body of the house (Moss & Winkler 1987, 89).

Porches usually continued the color scheme of the main body of the house, and a popular variation was to paint the ceiling blue to resemble the sky and the floor grey to hide the dirt (Moss & Winkler 1987, 81). To imitate the patterns found on window awnings, porch roofs were frequently painted with stripes to reflect their similar function (Moss & Winkler 1987, 46). Painters would add sand to the paint finishes that covered such architectural features as cornices, porch details, and window and door frames so they would look like expensive carved stone accents (Moss 1981, 10).

Doors

Batten doors were composed of a series of vertical boards attached to horizontal batten boards with clenched nails because they could not easily work loose. The simple batten door attached to the door frame with strap hinges was relegated by changing fashion to secondary rooms after the beginning of the nineteenth century. In present day construction, its use is confined to barns and other outbuildings (Howard 1989, 62).

The rail-and-stile panel door evolved to meet the demand for a more decorative door style during the eighteenth century. Doors typically had six panels until the early part of the nineteenth century, and then a variety of four panel doors with ornamentally shaped upper panels became a fashionable feature of architectural design (Howard 1989, 63).

Doors were finished in a variety of ways depending on their style, the wood used in their construction and the owner's budget. The trim color or a combination of the trim and body colors would be used to pick out the front entry door as a prominent feature. Hardwood doors would be stained or varnished as desired to bring out the natural wood grain, and a less expensive wood door could have a graining pattern painted to imitate the look of a hardwood door (Moss & Winkler 1987, 98). The finish was applied by painters prior to mounting the hinges, handles and locks. Removing the hardware is a good way to check for clues about the original door finish since later painters often painted over earlier layers without removing the hardware (Moss & Winkler 1987, 100).

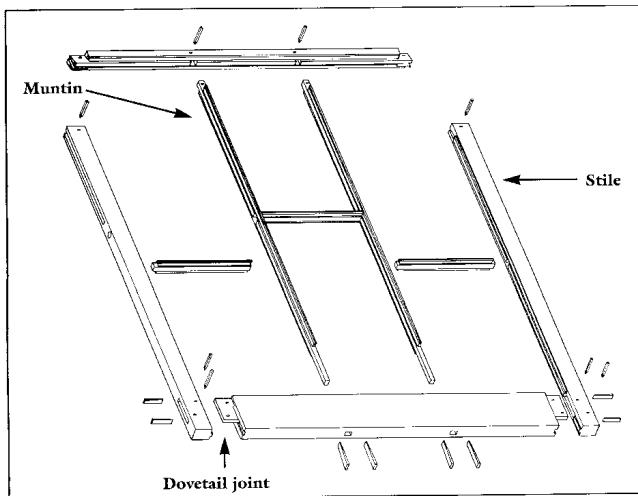
Windows

The glass for windows was imported from England for a long time because domestic production was of such a poor quality, and the uniform pane sizes of the British imports led to similar window proportions (Buchanan 1976, 54). Improvements in the production of glass, which was handmade up until 1880, gradually changed sashes from small panes of twelve over twelve glass in the eighteenth century to large panes of one over one glass late in the nineteenth century (Howard 1989, 33). Early glass has flaws from small air bubbles and impurities entrapped within the glass, producing a tint ranging from blue-green to a yellow or reddish color. Crown glass, which was made by flattening a blown bubble of glass and spinning it, has concentric ripples and was considered a finer quality of glass than that of cylinder glass. Cylinder glass has parallel markings and was made by slitting a blown bubble of glass down the middle and flattening it prior to cutting the desired pane sizes. The panes of glass changed from a nearly square shape to a more vertically oriented rectangular pane during the eighteenth century. By the beginning of the nineteenth century, the sizes of the panes of glass available gradually increased.

Common configurations for dividing the window sashes during the eighteenth century were eight-over-twelve, twelve-over-twelve and nine-over-nine lights, or panes, but by the beginning of the following century, the six-over-six light sash was a popular form. Improvements in glass-making technology in the nineteenth century led to the use of pressed glass patterns and textures as decorative features for window sashes, as well as curved sheets of glass for windows located on rounded walls (New York Landmarks Conservancy 1992, 17). The sizes of glass panes available were standardized by the beginning of the twentieth century at two inch increments (New York Landmarks Conservancy 1992, 41).

Window sashes were locally made, usually by the carpenter responsible for the finish work of the building, until the introduction of mail order catalogs by sash mills in the middle of the nineteenth century (Swiatosz 1985, 32). The mills and their catalogs served specific areas because of transportation costs and regional preferences in window sizes and needs, but gradually a standardized sash form emerged by the 1890s (Swiatosz 1985, 32). Windows and panel doors had mortise-and-tenon joints to connect the rails and stiles together which were visible along the edges. After 1900 mill working changed and blind or hidden joints, fastened with glue, were used to assemble window sashes and panel doors. Pegs were inserted through the mortise-and-tenon joints of window sashes so they could be taken apart and repaired if a section was damaged (Ferro 1976, 14).

Beginning around 1800 the more expensive sashes were constructed with a beveled check or lip meeting rail where the two sashes overlapped for a better seal, rather than the simple flush or plain meeting rail (New York Landmark Conservancy 1992, 23). The sashes were relatively thin, about 1 inch to 1 $\frac{1}{4}$ inches thick, and the muntins between the



Early 19th-century, double-hung sash construction: meeting rails join stiles with a dovetail joint, and vertical muntins pass through the lower rail. (Michael J. Devonshire)

Figure 5-6: Window frame construction. (New York Landmark Conservancy 1992, 22)

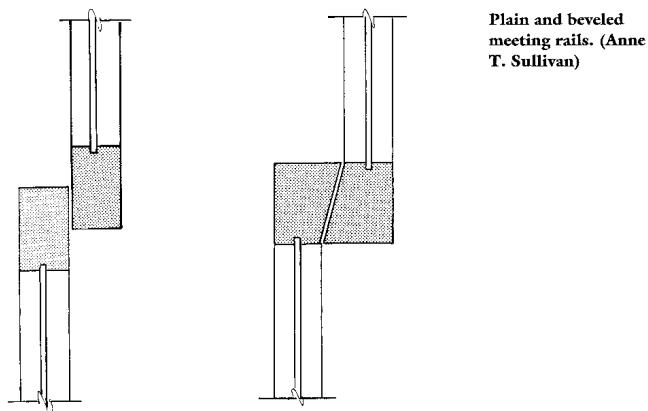


Figure 5-7: Detail of meeting rails of double hung sashes. (New York Landmark Conservancy 1992, 23)

panes of glass before the American Revolution were between 1 ¼ inches and 1 5/8 inches wide. These dimensions became narrower until the limits of wooden muntins were reached during the Federal period (Buchanan 1976, 71).

At the end of the nineteenth century, window frames and sashes began to be manufactured of steel mainly for industrial applications though residential usage was not far behind (Swiatosz 1985, 35). Steel and bronze window sashes in the first few decades of the twentieth century were mainly casement windows used in combination with pivoting and stationary windows, often with divided panes to mimic the revival style windows. A kalomein window used for large residences during the same period was a wooden sash and frame covered with ornamentally stamped galvanized steel or copper (New York Landmark Conservancy 1992, 39). The aluminum window was not manufactured until the 1930s and became popular following World War II (New York Landmark Conservancy 1992, 41).

The exterior trim of the majority of the windows during the nineteenth century was a simple rectangular outline, often with a drip cap, or it could resemble the stone detailing found on elaborate buildings (New York Landmark Conservancy 1992, 35). A key difference between older buildings and the later Colonial Revival copies is that thinner casing trim was used for the newer versions and the corner or head blocks of decorative trim from the earlier periods were usually omitted (New York Landmark Conservancy 1992, 38).

Windows were usually stationary or of casement design until early in the eighteenth century when the vertically sliding double hung sash window was enthusiastically adopted by builders (New York Landmark Conservancy 1992, 25). The

majority of sash windows had fixed upper sashes and movable lower sashes which remained open with the aid of prop sticks or pegs in the frame (Howard 1989, 33). The introduction in the 1850s of cast iron sash weights concealed within the window frame, or heavier lead weights if the window was too wide and low for the bulky iron, balanced sashes in an open position without the use of braces (Swiatosz 1985, 36). The spring balance replaced sash weights early in the twentieth century as the main method to keep a window open (New York Landmark Conservancy 1992, 40).

Storm sashes would often have built-in ventilators or a hinged light so that fresh air could enter during inclement weather. Expanding meshes, vertically sliding panels and wooden frames of wire screen were designed and used to prevent insects from entering an open window (Swiatosz 1985, 34). The frames were either fitted or adjustable so they could be moved from sash to sash as needed and tongued stops kept the frames in place (Winkler & Moss 1986, 159). An alternative to insect screens, more common in urban areas than rural, were small curtains of loose woven fabric hung over the opening on a rod or a cord and hooks called short blinds (Winkler & Moss 1986, 44). Weather stripping of felt or rubber was set in slots in the wood moldings, providing a seal against the damp as well as preventing a loose sash from rattling in the frame (New York Landmark Conservancy 1992, 33).

A variety of awnings, shades, shutters, and sliding and Venetian blinds were used alone or in combination to regulate the amount of light which entered the room through the windows. Interior roller blinds allowed the amount of light entering the room to be quickly and conveniently adjusted and were pulley operated even after the invention of the spring mechanism in the 1830s until the first factory began production in 1858

(Winkler & Moss 1986, 45). Fabric or wood lath awnings, often adjustable, were sometimes used to shade windows, though shutters were more common in the United States (Winkler & Moss 1986, 41). Usually located on the exterior of frame houses and on the interior of brick houses, shutters could be of paneled, batten or fixed louver styles (Buchanan 1976, 71). Solid panels were commonly used on the lowest floor because they were considered to be more secure against intruders, and louvered blinds would be placed on the upper stories to allow ventilation when closed (Moss & Winkler 1987, 97). Louvered blinds, which were stationary until 1835, were a popular feature of a Georgian style building (Howard 1989, 34). By the beginning of the twentieth century, the practice of cutting decorative shapes into the exterior shutters of windows was in fashion (Swiatosz 1985, 35).

Throughout most of the nineteenth century, exterior shutters and blinds were commonly painted a dark green, though sometimes two colors which complimented the rest of the house's color scheme would decoratively contrast the shutters against the house (Moss & Winkler 1987, 97). Interior shutters would be painted to blend harmoniously with the colors on the walls as a window was a major feature of a room (Winkler & Moss 1986, 95).

Architectural styles greatly affected the form and placement of a building's fenestration. The Classical or Greek style window in the 1830s had a squared head and a six over six pattern of lights in the sashes (Swiatosz 1985, 31). The earlier Federal style had uniformly sized windows on the façade, while Greek Revival windows were larger overall and of graduated height from the ground floor to the top floor, though the width of the windows remained constant (New York Landmark Conservancy 1992, 26). The



Figure 5-8: Pulley and rope connecting the sash to balancing sash weights hidden behind framing, Housing Authority Building, Gainesville, Florida.

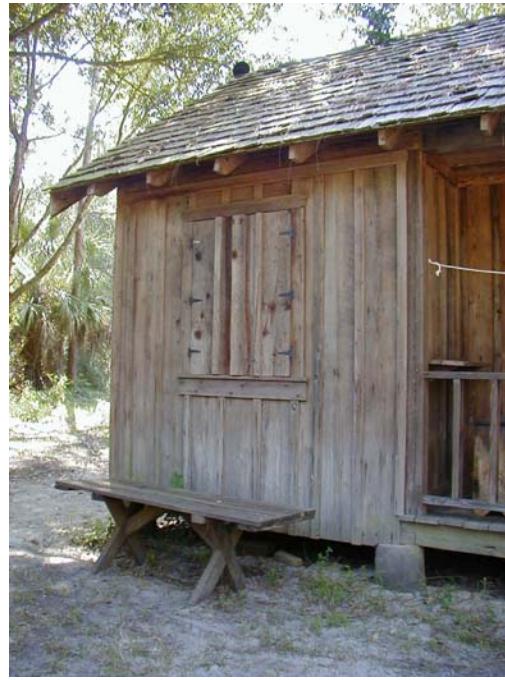


Figure 5-9 Kitchen window of addition to Hogan's cabin, Morningside Park, Gainesville, Florida. Simple shutters cover the opening when light and ventilation of the room are not necessary, but a splayed head for the window framing echoes Greek Revival architectural detailing practices transformed by vernacular ideas.

Picturesque period beginning in 1848 introduced round or shallow arched window heads and bay window groupings to complement the Italian Villa style, which was in vogue (Swiatosz 1985, 32). The Gothic style promoted the use of casement windows, though many people disliked how they worked so they imitated the look with a thicker center muntin in double hung sashes or horizontally sliding sashes (New York Landmark Conservancy 1992, 29). The decorative Queen Anne style of architecture featured an upper multiple light sash, usually ornamented with stained, cut, etched and embossed glass lights set in a geometric pattern above a single light sash. The Colonial style, which emerged following the 1876 Centennial Exposition, used six-over-one light double hung sashes together with a prominently featured Palladian window (Swiatosz 1985, 34). Windows are an easily modified element of the building façade and were commonly a major part of any updating renovations, though often the focus would be on the front elevation, leaving original window styles in place on the sides and rear of the building (McAlester & McAlester 1984, 156).

Roofing

The majority of the roofs dating back to the nineteenth century that are still in place, unless they were covered up by a later roof or addition, are most likely composed of a durable material like slate or metal (Howard 1989, 43). The original roof is rarely still in place, but clues from the framing techniques and nail hole patterns can provide information about what kind of roofing material was used in the past. Ceramic tiles were one of the materials used for roofing that was popular for its fire proofing qualities when buildings were in close quarters, but they required a steep pitch and became unfashionable beginning in the 1830s with the advent of architectural styles minimizing the appearance of the roof (Waite 1976, 136). Slate, because of its weight and bulk, was

only used as a roofing surface when the quarries or a major shipping port were nearby until the railroads began to widen the market. Several colors of slate would be chosen to create decorative patterns on the roof's surface, and wooden shingles ornamentally cut and stained dark red, brown or olive would sometimes be substituted as an inexpensive alternative (Moss & Winkler 1987, 44).

The designs and hanging techniques for wood shingle roofs are derived from traditional methods of laying thatch and tile or slate roofs. Tiles and slates were hung on poles attached to a board roof at short intervals of 16 inches to 24 inches, the derivation of the short shingle. Thatch was laid exclusively on a lath of poles, from which the long shingle of 36 inches was derived (Stevens 1970, 75). In the South it was common practice to lay wooden shingles over a sub roof of narrow wood strips, and the boards were usually not neatly squared along the edges prior to the 1850s (Howard 1989, 46). Wooden shingle roofs would be covered with pine tar or oil paints so they would last longer and to imitate the look of more expensive slate or tile roofing materials (Waite 1976, 138). Styles of finishing the butts of the shingles ranged from simple squared butts to clipped corners. Fancy rounded butts were the predecessors of the multitude of textural styles which were popular late in the nineteenth century (Stevens 1970, 76).

Tin roofs, which were composed of thin sheets of iron dipped in molten tin, were made in sheets sized 10 inches x 13 3/4 inches until a change in technology in the 1830s enlarged the sheets to the 10 inches x 14 inches and 20 inches x 14 inches sizes. During the 1870s a sheet with the dimensions of 20 inches x 28 inches appeared. This larger configuration was commonly used for standing seam roofs as well as the earlier 20 inches x 14 inches sheets (Waite 1976, 141). The metal roofs had to be primed and painted,



Figure 5-10: Palm thatching lashed to poles attached to roof frame of reconstructed house at Mission San Louis de Apalachee, Tallahassee, Florida.



Figure 5-11: Wood shingles nailed to widely spaced boards covering the roof frame of Hogan's cabin, Morningside Park, Gainesville, Florida. Rain would cause the shingles to swell and fill the cracks in between so the roof did not leak.

usually a red color, on both sides and required regular maintenance to prevent the sheets from rusting at damaged spots. The sheets would be soldered together into a roll running down the pitch of the roof and standing or flat seams would be used to seal the joints between the rolls (Howard 1989, 45). Metal sheets were generally soldered together with flat seams on a low pitched roof and standing seams were used on steeper pitches (Gayle et al. 1980, 10). Beginning in 1828 the metal sheets were corrugated to significantly strengthen the roof, so a lighter gauge roof covering needed a less substantial roof frame and the sheets could be laid without any sub-roof boarding underneath (Waite 1973, 8).

A variety of different metals were used for roofing, though the inherent qualities of the metal would have a bearing on their use in appropriate situations. The heavy weight of lead sheets and the tendency of the material to creep over time confined the use of lead roofing to low pitched roofs, but it was also used in downspouts, flashing and gutters on buildings built for the use of the public or wealthy clients (Gayle et al. 1980, 8). Terne plate, which was often confused with tin plate because it consisted of a lead and tin alloy coating, dates from the early decades of the nineteenth century and was commonly used by the 1840s (Howard 1989, 43). The use of zinc sheets to cover roofs came into practice in the United States during the 1820s and cycled in and out of favor for the next few decades (Waite 1976, 142). Pattern books published during the 1830s and 1840s recommended that builders use galvanized iron sheets when roofing a building because of its greater durability and lower maintenance costs (Waite 1973, 8). By 1836 the production of galvanized iron sheets, an alloy of iron and zinc as a skin on the base iron sheet, became practical, quickly overtaking other metal roofing systems, in part because

the 24 inches x 72 inches galvanized sheets were much larger in size than other available sheet metal roofing types (Waite 1976, 143).

Towards the end of the nineteenth century, shingles began to be manufactured out of sheet metal as a form of durable and waterproof protection for buildings (Dierickx 1983, 162). Europe led the way in the 1860s in the development of stamped metal roofing, but by the 1870s production began in the United States, and a decade later the frequency of their use rose (Dierickx 1983, 155). Decorative metal roofing usually resembled traditional shingle, slate and tile forms at its peak of popularity at the turn of the twentieth century. The thin sheets of copper, iron, galvanized iron, terne plate, tin plate, and zinc were given strength and rigidity by the corrugations produced by the stamping process (Dierickx 1983, 153). Iron, tin and terne plate shingles had to be painted to protect the metals from deteriorating and galvanized iron was only painted to order, while copper and zinc did not have to be painted and were left to weather naturally. Manufacturers used linseed oil and metallic paints like iron oxide, graphite and red lead to create imitations of the traditional materials the stamped metal shingles resembled (Dierickx 1983, 162). The companies which produced the stamped metal shingles did not carry a large variety of pattern dies because of the high cost to make them, so regions served by a major supplier would usually be dominated by a particular style (Dierickx 1983, 161). The patent dates for different styles and methods of production would often be stamped on the edge of the metal shingle, providing the earliest appearance and use of that particular shingle style (Dierickx 1983, 155).

The stamped shingles were generally 12 inches x 12 inches or smaller before the 1880s when they reached larger sizes like 14 inches x 20 inches, which was typically

used to roof larger structures such as barns and churches (Dierickx 1983, 157). During the twentieth century sheets resembling terra cotta tiles were manufactured in sizes 2 feet in width and ranging from 5 to 12 feet in length, but they had a tendency to buckle when placed under heavy loads (Dierickx 1983, 158). Production of stamped metal roofing continued until 1941, though the availability of asphalt and asbestos shingles by the beginning of the 1930s caused a rapid drop in demand (Dierickx 1983, 157).

In the middle of the nineteenth century, interest in flat roofs on townhouse rows, commercial blocks and industrial complexes grew and led to the development of composition or built-up roofing. Builders experimented with a variety of materials such as cloth, felt and paper, nailed down in layers and saturated with a tar-like substance like pine pitch during the 1840s and coal tar after 1853 to create a water proof surface (Waite 1973, 144-145).

Analysis

The systematic investigation of the physical fabric of the house should begin with exterior features and a close look at the building materials. The site of the Haile Plantation house includes the remains of a cistern, kitchen and other outbuildings, and the caretaker's house, as well as an old road leading to the site of the plantation's slave cabins (SouthArc 1997, 12-13). The main framing timbers were hewn by hand while the smaller boards were cut to size in a mill with an up-and-down saw. The side wings are a part of the original design of the house because evidence of the clapboard siding extending over the wall surface which would have been exposed did not exist. The framing of the roof was never altered to accommodate an addition. Though covered with a sheet metal roof for much of the twentieth century, the rafter purlins on which the wood shingles were nailed remained in place. The windows and doors were manufactured in a

mill and brought to the site for installation (Bellamy et al. 1977, Part 2). An analysis of interior materials and features of the house follows in the next chapter.

CHAPTER 6

ANALYSIS OF THE HOUSE: INTERIOR MATERIALS AND FEATURES DATING

The interior of a building is composed of a number of spaces that have been rearranged during renovations to suit the changing needs and tastes of the homeowners. Dating specific features such as nails, screws, hardware, molding profiles and wall construction methods provides a way to narrow down a probable date for the construction of the house (Mercer 1976, 3). Material dimensions and laying methods, the use of typical or unusual construction techniques, and the quality of the workmanship are affected by a combination of traditional methods and the spread of new ideas and technologies throughout a region (Bullock 1966, 35).

Metal Elements

A wide variety of metals and their alloys are used as architectural and structural elements depending upon their properties and visual aesthetics, and identifying them can be difficult because of similar characteristics and multiple layers of paint. Lead, tin, zinc and their alloys are grey and soft in composition, and their corrosion results in a whitish grey product. Bronze, a copper and tin alloy, is a deeper red in tone than that of pure copper, and brass, an alloy of copper and zinc, is yellow, though each produces a green corrosion (Brown & Clifton 1976, 4). Painting zinc, galvanized iron or steel is very difficult because the paint and the underlying metal do not adhere well to each other, so the paint usually peels off cleanly to show the metal. A galvanized iron feature is spangled in appearance and deteriorates with rust on the base metal. Cast or pressed zinc features have a greyish white surface color and are nonmagnetic (Gayle et al. 1980, 20).

Lead was, and still is to some extent, used as a versatile building material in the form of pipes, roofing and paints. Prior to the nineteenth century, sheets of lead were formed into tubes and welded along the seam to create pipes, but methods of extruding lead through a die were later developed, eliminating the weakness of the welded seam. These pipes were commonly used to carry water for drinking and washing until late in the nineteenth century when it was discovered that lead was highly poisonous, and the use of lead pipes was sharply curtailed (Gayle et al. 1980, 8).

The commercial production of zinc was limited until new techniques were created to process the ore during the first half of the nineteenth century. Developments occurred for the most part in Europe for the majority of the period, with zinc rolling mills appearing in Belgium in 1812, cast zinc architectural elements in 1832 Berlin, galvanized iron in 1837, and the commercial manufacture of zinc paints in 1840 in France (Downs 1976, 92). Interest in the development and use of zinc in the United States remained peripheral to other more lucrative ventures into other metals and technologies, though the 1850 discovery of the American Method of smelting the zinc ore with coal in a special furnace greatly improved the production of zinc oxide (Downs 1976, 87).

The use of wrought iron in buildings was limited to hardware, small connectors and decorative work until iron mills became capable of producing larger structural items such as rails, bulb tees and I-beams around 1850 (Gayle et al. 1980, 42). Cast iron architectural elements were first produced for decorative use in balconies, lintels, railings and window sills and were designed to look like and replace the use of select stone elements on the façade. Cast iron construction for commercial structures was popular for its perceived resistance to fire, the larger display windows and the open interiors that

were possible because the structural supports were much smaller in mass (Lee 1983, 102). The inherent structural capabilities of cast and wrought iron elements led to the practice between 1855 and 1890 of wrought iron beams in combination with cast iron columns because wrought iron had tensile strength while cast iron worked best in compression (Gayle et al. 1980, 48). An iron article which has been cast in a sand mold has a rough surface and complex forms have parting lines where the separate molds were joined together, unless the surface was smoothed by hand afterwards. Pieces which have been wrought, forged or forge welded have hammer marks on their surfaces, though the best workmanship would minimize the appearance of markings (Brown & Clifton 1976, 5-7).

Fasteners

The evolution of nail production from hand wrought to machine made has been extensively researched and documented, making nail identification an important dating method. If a building has undergone a number of changes over the years, the most likely place to find the earliest nails used to build the house is in the attic area flooring, since it was usually unchanged during renovations (Mercer 1976, 4).

The transition period from wrought nails to cut nails extends from the 1790s to the 1840s as nail cutting machinery gradually became capable of turning out the larger sizes of nails. A variety of cut nail machines were developed quickly and distributed on a wide scale early in the nineteenth century (Nelson 1968, 5), though earlier machines continued in use in many regions due to the expense of keeping up with the rapid leaps in technology of the latest improvements (Nelson 1968, 8). It would not be unusual for a building to contain large wrought nails and smaller cut nails dating from the same period (Ferro 1976, 15). Leather was sometimes placed under the heads of nails which were

clinched, or had their points bent over, so they would hold more tightly (Streeter 1973, 25). Wrought nails continued in use long after their replacement in most parts of construction by the cut nail because they performed better in work requiring clinching and finish trim work (Nelson 1968, 3).

A cut nail is rectangular in cross section with a tapering shaft and the head of the nail was handmade until nail heading machines were refined by 1825 (Howard 1989, 55). The iron fibers of the cut nails usually ran crosswise to the shaft of the nail until the 1830s, when manufacturers changed the production methods of the stock iron so that the fibers ran parallel to the shaft. The iron plates that the nails were cut from were flipped between each nail in certain methods of producing cut nails and the die would leave burr and shear marks on the common edges of the nail, while the marks would be found on the opposite corners of the nail for a plate which was not flipped over between each cut. Nails cut from the common side of the plate had hand-hammered heads between the 1790s and the 1820s and crude machine-made heads between 1815 and the 1830s. Cut nails from plates which were flipped had hand-hammered heads from 1810 to the 1820s, crude machine-made heads from the 1820s to the 1830s, and improved machine-made heads date from the late 1830s to the present day (Nelson 1968, 8).

When wire nails were widely produced for building construction in 1885 the same transition pattern as between wrought and cut nails was repeated (Ferro 1976, 15). Round shafted wire nails had been available in the form of brads and small nails in the furniture industry since 1850, but there was some limited usage of these wire nails in building construction (Howard 1989, 55). The heads for the early wire nails were

bulbous in shape and off center to the shaft due to manufacturing irregularities which were later refined (Nelson 1968, 11).

Screws were made on a manual threading machine and did not have a point prior to 1846, so holes had to be hand drilled when they were used to attach hardware (Ferro 1976, 15). The slots were usually off center because they were hand cut, so a screw can be dated without removal under some circumstances (Howard 1989, 96).

Trusses spanning greater than thirty feet would have U-straps reinforcing the joint connections of the timber members so they could not pull apart or twist under stress. The straps had holes punched through with a hot iron, creating a bulge of material, and either a spike would be driven into the wood or a slotted cotter pin would be inserted into a hole drilled completely through the timbers (Nelson 1996, 16). Machine-made bolts suitable for structural connections were developed roughly between 1800 and 1820 (Nelson 1996, 12). Large-sized threaded bolts were not in use until the nineteenth century, and nuts were generally square or rectangular instead of the hexagonal shape that is common today, which came into use after the 1850s (Nelson 1996, 18).

Hardware

Hardware is often replaced and shifted to new locations during renovations updating a house, and therefore should not be relied upon for solid evidence of dates and changes without supporting evidence. Iron ore was scarce and expensive to process until the nineteenth century, so eighteenth century hinges were light in weight in comparison to later hinges made of cheap iron ore (Streeter 1974, 23). The southern plantation culture with few fully trained blacksmiths was dependent upon trade with England to provide the majority of the hardware used during the colonial era (Streeter 1974, 8).

The simple construction needed to produce a strap hinge allowed much of the demand to be supplied by local smiths (Streeter 1974, 16). Wrought strap hinges continued in use on exterior doors and shutters for a number of years after they were phased out in favor of more fashionable hinge designs that were first used for interior doors (Mercer 1976, 13). The H hinge was frequently used because it spread out the nails that attached the hinge to the door and frame over a wide area so the wood would be less likely to split. The HL hinge was used on panel doors because the strap crossed both the rail and the stile (Streeter 1973, 23). The H and the HL hinges were replaced around 1815 by more fashionable hinge designs like the butt hinge, which was less visible (Howard 1989, 82).

Wrought iron and brass butt hinges were available for closet doors and fine furniture prior to 1776 (Mercer 1976, 14). The cast iron butt hinge, one of the first experimental designs in cast iron hardware, appeared in trade catalogs near the end of the eighteenth century (Streeter 1973, 42). The interchangeable parts of the cast iron butt hinge simplified the assembly process and also made them cheaper and easier to install on the door and frame (Streeter 1973, 47). The pins were at first cast as part of one of the halves of the hinge, but by the 1830s loose pin cast iron butt hinges were in use, and stamped butt hinges were introduced in 1850 (Howard 1989, 84).

Wrought iron hardware was supplemented by the use of brass and brass plated hardware during the eighteenth and nineteenth centuries, though the use of brass in certain applications varied according to fashion. Brass hardware was a popular decorative element during much of the second half of the nineteenth century (Howard 1989, 81). The wrought Suffolk latch does not have a back plate and was in use until

about 1825, though the Arts and Crafts movement revived a machine-made version. From 1800 to 1850, the Norfolk latch with a full back plate was the popular door hardware to use, especially on Greek Revival houses. The machinery which stamped the decorative back plates and forged or cast the iron handles cut down the amount of labor needed to produce the latch (Howard 1989, 84). Blake's Patent Latch, manufactured during the period between 1840 and 1920, is similar in form to the Suffolk latch except that it was cast iron instead of wrought iron, so it is thicker and clumsier in appearance than the earlier latch.

Locks with iron or brass knobs rather than latches were simpler to install so they became more common during the 1840s. Rim locks are mounted on the surface of the door and were used only in the fanciest houses throughout the eighteenth century until the 1840s, when their use became more widespread. A similar situation in the 1850s occurred with mortise locks, which are inserted into the door itself (Howard 1989, 97-98).

Flooring

The majority of floors in the first half of the nineteenth century were of bare random width softwood boards which were not finished with a stain or varnish like hardwood floors were at the end of the eighteenth century (Winkler & Moss 1986, 25). The boards typically extended the full length of the room without visible joints, which were often located underneath the door thresholds and wall partitions. These floors were typically covered with a floor cloth of some type for ease of cleaning, though sometimes 36 inch wide strips of grass or fiber matting were laid down or nailed to the floor along the edges as padding for good carpets. The popularity of matting persisted throughout the nineteenth century because it diminished drafts from a poorly built floor and it was

cheap and easy to replace (Winkler & Moss 1986, 30). By the last quarter of the nineteenth century hardwood floors overlaid by an oriental rug and edged by a decorative wood parquet border were a fashionable floor treatment (Winkler & Moss 1986, 145).

The need for sturdy flooring materials that wore well and were easily cleaned increased the use of encaustic or patterned tiles and geometric or colored tiles for floors. They were at first confined to vestibules, first floor hallways and verandas at the beginning of the second half of the nineteenth century before their use spread to other areas of the house (Winkler & Moss 1986, 80).

In 1863 Fredrick Walton invented linoleum flooring, a composition of dried linseed oil, gums, resins, ground cork, wood flour and pigments layered over a backing of coarse canvas. Before 1880, print or enameled linoleums were only made in solid colors, but after that date the manufacture of inlaid tile designs was perfected, and four years later complex floral designs were introduced (Carroll 1969, 10). Popular linoleum patterns imitated wood flooring and rug borders or ceramic tile patterns by the turn of the century (Winkler & Moss 1986, 198). Fragments of old flooring finishes can sometimes be found covered up by later finishes or features that were laid down to protect the flooring, such as a metal sheet located under a stove to deal with stray sparks (Carroll 1969, 9).

Wall Treatments

Plaster Walls

The lath for a plaster wall was hand split into irregularly edged boards until 1825 when the circular saw replaced the labor intensive method with easily produced regularly sized boards. The alternative accordion lath was a thin board cut partially through from alternate edges and spread out between the studs so the plaster coats could form keys and lock with the lath. Wire mesh lath was introduced after 1900 for fire proofing purposes

and rock lath and plasterboard increased in use after 1920, though the use of sawn wood lath continued in practice until the 1930s and 1940s (Howard 1989, 103-104). A minimum of two or three coats of plaster would cover a wall to even out construction irregularities and produce a smooth finish which could be whitewashed, painted or wallpapered as desired. A plaster wall is much thicker than a modern wall made of plaster boards, so when you knock on it a thud is produced versus the hollow echo of the drywall (Howard 1989, 102).

A variety of walling systems were experimented with at the beginning of the twentieth century to create a plaster wall look without the labor and time intensive difficulties associated with the wet plaster process. One of the earliest mass produced laminated wallboards was Beaver Board in 1903, which was 3/16" thick and 32 inches or 48 inches wide by 6 to 9 feet in height (Weaver 1997, 71-72). Beaver Board was flexible enough to be shaped over non-linear forms and the seams were covered with decorative wood battens (Weaver 1997, 73). Upson Board had a patented blue line which ran down the center of every board in 1910 and the company manufactured them in widths of 64 inches, as well as the same sizes of Beaver Board. The company produced a line of battens, moldings and rosettes to be used with their system, and in 1920 a five pronged steel fastener which would automatically lock the boards in place was developed (Weaver 1997, 75). In 1916 a fiberboard of newsprint and petroleum wax called Homasote was developed for use as insulation and as a structural board that had acoustic and fire dampening qualities. This versatile board did not need plastering and the exterior could be finished with veneers (Milley 1997, 58-59). During the late 1930s and early 1940s



Figure 6-1: A surviving portion of the main staircase of the Merrill House in Jacksonville, Florida portrays the configuration of the steps as well as a shadow line on the wood lathe showing that the area underneath the stairs was open and the wall was plastered.



Figure 6-2: A small door leads to a space under the stairs of the Haile Plantation house reveals that the interior framing of the walls and stairs is of mill-sawn lumber and the plaster keys between the lathe are visible.

Homasote was widely used for prefabricated houses, especially during the housing need of the war years (Milley 1997, 60).

Paint Finishes

Old paints are a mixture of pigments, either ground minerals or organic materials, and an oil medium which dried to create a covering to protect the painted surface. The linseed oil medium used in most old paints is unstable and discolors to a yellow brown tint when it is covered by later layers of paint or architectural elements, but the original paint color can often be discovered by bleaching the exposed paint layer with daylight or ultraviolet light (Phillips 1971, 40). Lead pigments were popular in paints because they effectively protected the materials they covered from deterioration, such as red lead as an anti-corrosive for iron and white lead against mold on the wooden elements of a house (Gayle et al. 1980, 11). The quality of imported paint pigments was uneven, causing color variations, so many houses were whitewashed using some formula concocted by the home owner or the professional painter that would protect the house from deterioration (Buchanan 1976, 54). Following the Civil War, paints which were pre-mixed and able to be immediately applied to the house by anyone with a brush were developed and sold to a wide market of homeowners (Moss 1981, 10). The numerous pattern books and trade catalogs circulated among the population developed a universal body of style characteristics which could be found practically everywhere in the United States (Moss 1981, 11).

All of the woodwork was typically painted to protect it unless it was made from one of the desirable hardwoods (Buchanan 1976, 71). The practice of painting woodwork and doors with graining or marbleized finishing techniques was popular during the first half of the nineteenth century (Winkler & Moss 1986, 22). The practice lost favor when

designers denounced the illusory effects that could be accomplished by some painters, so by the 1890s it was preferable for woodwork to be painted a color complementary to the rest of the design scheme (Winkler & Moss 1986, 194).

Wallpaper

Prior to the 1840s wallpaper was composed of individual sheets of paper glued together to produce the rolls on which the pattern was printed (Bradbury 1984, 58). The pattern was hand applied with carved woodblocks, which left a smooth continuous block of color for the design. Machine production began in the 1830s with a cylinder that pressed a repeating design upon the rolls of paper as they passed underneath, but the uneven application of color to the pattern cylinder would give the pigment area a mottled look (Bradbury 1984, 57). The cylinder was rarely larger than six inches in diameter, so the pattern repeat was smaller than the repeat size of earlier printing methods. The fine lines of detail that were able to be created as well as the rapid drying time allowed the use of multiple colors to create the patterns for even the less expensive papers. Beginning in the 1850s wood pulp papers were used for manufacturing many wallpapers, but it was found to become brown and brittle as it aged and made the pigments of the pattern discolor (Winkler & Moss 1986, 69). The arts and crafts movement revived the production of woodblock printed wallpaper on a limited scale between 1870 and 1900 (Bradbury 1984, 57). Silk screening was a common method of inexpensively imitating the look of a woodblock pattern, though a close inspection would reveal a fabric mesh texture and serrated edges within blocks of color (Bradbury 1984, 57). A variety of textured papers were used during the last quarter of the nineteenth century, among them embossed Lincrusta-Walton paper, invented in 1877 and in production in the United States within five years (Winkler & Moss 1986, 121).

The designs and color palettes applied to wallpaper reflected the current architectural styles and interior decorative fashions during the periods of production. Border wallpapers were an essential part of wall designs between the 1830s and 1850s, in part because irregularities from measuring the main wallpaper pattern could be covered up. A narrow three inch border that was a darker shade than the wallpaper color and had flocking, a velvet-like pattern, was popular during the 1840s (Winkler & Moss 1986, 18). Between the 1850s and the early 1870s, small floral elements and flocking were rendered in bright blues, warm greys, oranges and purples (Bradbury 1984, 58). Design experts at the time recommended hardwood wainscoting and chair rails paired with wallpaper for select rooms of the house (Winkler & Moss 1986, 76). Charles Eastlake and his numerous admirers in the next decades promoted wainscoting of 36 inches to 42 inches in height in all the rooms, and a frieze or cornice above framing the field of color or wallpaper in between (Winkler & Moss 1986, 117). Gothic and Japanese designs for wallpaper were popular throughout the late 1870s and into the 1880s in muddy shades of ochre, olive, umber, russet, teal blue and metallic gold. The 1890s were dominated by of rococo designs of large cabbage roses and swirls executed with rich gold, copper and silver glitters on oatmeal papers (Bradbury 1984, 58). Wall treatments were also simpler overall in that wainscoting was rarely found together with a dado (Winkler & Moss 1986, 186).

Moldings and Woodwork

A molding profile could be very complex depending upon the skill of the carpenter responsible for the finish woodwork of a room. Current styles in architecture affected the forms chosen and how they were organized. Between the eighteenth century and the first quarter of the nineteenth century, molding profiles were composed of

combinations of small circular shapes. The gothic bead in contrast was constructed of two intersecting segments without regard to a geometrical proportioning system (Gilmore 1978, 101), and molding profiles between 1820 and 1850 incorporated elongated ellipses into the design (Gilmore 1978, 105). The first machines designed to cut moldings entered the United States in the 1840s, and the cutter left marks perpendicular to the length of the molding piece rather than at a forty-five degree angle like those left behind by a hand plane (Howard 1989, 95). Planing mills after 1850 turned out large quantities of machine made pieces of molding, beginning with large, simple circular forms which progressed to more complex forms over the following decades as the capabilities of plane molding machines improved (Gilmore 1978, 105).

Before the American Revolution, it was common for the panels of doors and shutters to be carved with simple ovolo, or convex, moldings, but a growing taste for elaboration in design meant the addition of one or two beads, quirks or an ogee pattern to the molding profile of the panels. Moldings on panel doors were carved as part of the rails and stiles with hand planes until 1835, when moldings for machine made door panels were applied along the edges with nails (Mercer 1976, 16). Finish woodwork was installed prior to plastering the walls before the 1800s, when screeds or guide strips began to be used to gauge the depth of the plaster coats and the woodwork could be the final element installed in the room (Ferro 1976, 14). Changing furniture styles in the nineteenth century lowered the placement of the chair rail or board, which protected the plaster walls from damage, from its usual height around 36 inches to that of 24 inches to 30 inches above the floor (Buchanan 1976, 71). The presence of partitions to create new closet and bathroom spaces changes the spatial characteristics of many house designs,

which were often designed by proportions, and the style and placement of moldings and other woodwork may show evidence of where these interruptions occur (Howard 1989, 27).

Ceilings

Ceilings were typically painted a lighter shade than the walls of the room, following the design practice of placing the darkest colors at the floor level and the lightest at the ceiling. A white ceiling was acceptable only if the rest of the room was white as well, but a varied palette of pale colors usually was dominant for ceilings. Three dimensional ornaments composed of wood, plaster of Paris or paper-mache highlighted light fixtures suspended from center medallions, as well as ornate cornices and corner detailing in the elegant public rooms of the house (Winkler & Moss 1986, 123). Many ceilings were further decorated in elaborate installations with wallpaper or stencil painting towards the end of the nineteenth century (Winkler & Moss 1986, 191).

Metal ceilings were in catalogues by 1868 but the public was slow to adopt the product until the end of the century, when their popularity peaked between 1895 and 1915 (Dierickx 1975, 83). Not many metal ceilings were installed in private homes and elaborate buildings were the only ones able to afford the expense of ceilings stamped out of expensive bronze, copper or zinc metal sheets rather than the usual iron or steel (Dierickx 1975, 85). In 1884 decoratively stamped metal ceiling elements were produced in addition to the earlier corrugated metal ceilings, and they were promoted as ideal replacement materials for covering up an unsightly falling plaster ceiling (Dierickx 1975, 84). Die patterns for stamping the metal sheets were expensive to produce, so old patterns would be offered as standard stock even as newer patterns derived from the latest architectural styles supplemented them (Dierickx 1975, 87).

Services

Heating

The early fireplaces were large open affairs which sent smoke but little heat into the room because the poorly designed chimneys had a weak draft (Edgerton 1971, 15). Fireplaces and ovens in Virginia had two flues parged or sealed with a thin coat of brick mortar as they were constructed if they were more than 4 feet in width, the practice in New England where one flue served for any size fireplace (Buchanan 1976, 60). A smaller chimney was needed for buildings heated by furnaces and stoves, which replaced the early large fireplaces during the 1830s (Howard 1989, 36). Fireplaces which have been removed or covered over often left traces of their framing and hearths as evidence of their existence (Howard 1989, 64). Stoves greatly improved heating efficiency and their detailing reflected popular architectural motifs (Edgerton 1971, 63). During the Greek Revival a decorative niche was incorporated into floor plans to contain the stove that heated the room and disguise the vent pipes for the smoke (Edgerton 1971, 65).

The first half of the nineteenth century was busy with experiments with central heating systems in public, institutional and commercial buildings as people began to consider the economical and practical aspects of heating large spaces (Walbert 1971, 76). The practice of piping steam throughout the building for heat was one of several methods employed, but high pressure steam was not attempted until after 1842 when improvements in metallurgy increased the safety of such a system (Walbert 1971, 80). By the 1880s, central furnaces to heat a building, served by a single flue, were commonly installed in regions of the country that had long cold winters (McAlester & McAlester 1984, 28).

Mantel designs and configurations reflected current decorating styles and tastes, as when traditional paneled walls surrounded eighteenth century fireplaces. The early nineteenth century opened with delicate pilasters and detailing from the Adamesque style, which were succeeded by the bold columns and entablatures of the Greek Revival. Arched mantels were popular from the 1850s to the 1870s, and later in the Victorian era elaborate galleried over mantels were typically installed (Howard 1989, 66).

Lighting

Before gas and electric powered lighting, which leaves distinctive evidence of supply lines and fixed lamps, light was provided mainly by portable lamps which left little trace of their existence unless hooks or nails were driven into the wall or ceiling to support them near a workspace. Evidence of later lighting technology is found in capped gas pipes, surface mounted electrical fixtures and surviving fixtures in less public areas of the house which escaped updating (Moss 1988, 20).

As early as 1817 gas lighting was familiar to a limited segment of the population of the United States, but it was mainly confined to street lighting and a few large commercial and public buildings within the range of the city's gas generating plants (Moss 1988, 99). When gas was refined during production to eliminate the strong odor and distribution lines spread, it became a commonplace lighting source in more residences in the form of gas chandeliers or gasoliers with multiple burners in the main rooms, wall brackets next to windows, a lantern or pendant hanging in the hallway and a newel lamp at the foot of the stairs (Moss 1988, 101).

By the late 1880s, the electrification of residential neighborhoods was becoming more widespread as the distribution systems were expanded into new areas and power production increased (Kraus 1984, 2). Combination gas and electric fixtures were



Figure 6-3



Figure 6-4



Figure 6-5

Figure 6-3: A portable lamp suspended on a rope and pulley in a schoolhouse located at Morningside Park, Gainesville, Florida.

Figure 6-4: An electrified candle chandelier with plaster ceiling medallions and molding located in the Housing Authority Building, Gainesville, Florida.

Figure 6-5: Gas/electric chandeliers and wall sconce in the State Capitol Building, Tallahassee, Florida.

installed during the 1880s because of the unreliability of electric power in the early years, but by 1910 houses were wired solely for electricity unless there was no access nearby (Moss 1988, 127). The wiring was left exposed and the luminaires were portable in simple electrical installations, but more elaborate installations hid the wiring from sight and mounted the luminaires in place along with receptacles and switches that were aesthetically compatible with the style of the room (Kraus 1984, 60). New construction was planned so the wiring necessary for the electrical systems was hidden from sight, and buildings retrofitted for the new power source generally had exposed wiring on the walls and ceilings unless the installation occurred at the same time as a major renovation which involved refinishing the interior (Kraus 1984, 1).

The earliest lamp and lighting control designs copied many of the details of gas lighting, with which electricity coexisted for a time until replacing gas completely. A handle switch that rotated a quarter turn into an on or off position was one example of the adaptation of control fixtures such as gas cocks. The push button invented in 1891 was the most popular switch design by the beginning of the twentieth century, and the toggle switch that is commonly used today was not in use until the 1920s (Kraus 1984, 28). A wide variety of wall switches were intensely developed during the 1890s, while the development of plugs and receptacles to power portable devices occurred sporadically over time (Kraus 1984, 11). Variations using wall-mounted lamp sockets were the usual methods to plug in cords until the slotted wall receptacle for a cord with two prongs became universal after 1910 (Kraus 1984, 30-31).

Analysis

An analysis of the interior fabric of the house yields a different level of information than that examined in earlier chapters. Cut nails with stamped heads were

used throughout the majority of the house, with the exception of the hand split lath, which was attached with wire nails. The hardware used to furnish the house, which was a Northern import, was mounted with a mixture of flat and pointed screws (Bellamy et al. 1977, Part 2). The walls and ceilings were covered with a fine plaster finish and painted white before becoming covered with the notes and musings of the Haile family and their friends over the years (SouthArc 1997, 11).

CHAPTER 7 CONCLUSION

In 1971 Peter Priess authored an article citing the need of archeologists and preservationists alike for a regional nail chronology that would take into account rural and urban locations, the initial introduction and how often an item was utilized by builders in an area (Priess 1971, 35). The scope of the work should be expanded to include a plethora of materials that can be identified from a house because the presence of one item and its accompanying ‘date’ does not provide enough support for an overall construction date. The focus of much historical research has been the development and origination of a specific aspect of building technology. Regional preservationists should apply this collective knowledge gleaned from literature and experience to an inclusive chronology covering a wide range of research topics, and then begin to adapt the standard to localized areas based on the spread of building traditions and technologies.

The rise and fall of the economies and populations of many towns or settlements in Alachua County can be linked to their locations in relation to major transportation routes throughout the region. The construction of roads and waterways, and later railroads, dictated where many settlements would be located, and which communities would decline. The strategic location of many towns and plantations on these routes was necessary for the people to exchange the products they made for manufactured goods and the latest building materials and techniques. People living on the fringes of the area served by the newer transportation routes built houses using different methods and

simpler forms than those living directly on the routes to compensate for the scarcity of manufactured goods.

Final Analysis

The history of the Haile Plantation house has been traced through a combined analysis of the physical fabric and family documents. Little changed since its initial construction in 1854, the house is a fine example of the vernacular architecture built by the wealthy planters who settled Alachua County. A summary of the information already gathered follows.

Haile Plantation House and Family Chronology

1850s	The Haile family moved to Alachua County
1854	The plantation house is built with the help of slave craftsmen
1870s	Kanapaha plantation suffers a series of bad cotton crops
1900	Full-time occupation of the house ends

Haile Plantation House Description

Symmetrical one-and-one-half story Georgian central hall plan with matching rear wings and porches, raised foundations and large windows for cooling
 Hand hewn framing timbers, small boards cut with up-and-down saw
 Rafter purlins for wood shingle roof, later supported a metal roof
 Mill-manufactured doors and window sashes

Building Technology Chronology

Pre 1825	Hand split lath
Late 1830s	Cut nails with stamped heads
1840s	Rim locks
1846	Mixture of flat and pointed screws

1850s	Mortise locks
1850	Small sized wire nails
Pre Civil War	Northern hardware

Review

The Haile family moved to Alachua County during a period of economic prosperity, but a series of financial setbacks from the Civil War and failed crop investments diminished the wealth of the family so that extensive modern building improvements and additions would be impracticable. Every possible design advantage for cooling a house was incorporated into its construction, and a noticeable drop in temperature occurs as one enters the house. Circular saws were in use for cutting small boards as early as the 1830s and were capable of handling larger timbers by the 1860s. Evidence from the practice of hand hewing the major timbers, the up-and-down sawn boards and the hand split lath, which was normally cut with circular saws after 1825, suggests a few reasons for the mixture of construction technologies within the timeline. Sawmills in Alachua County may not have been equipped with the latest technologies at the time or the isolated site of the plantation may have made it less expensive for the skilled slave craftsmen to shape the wood with the techniques they were familiar with. The family was able to bring stylish hardware to furnish the mill-manufactured doors and windows used in the house, though decorative details were kept simple throughout the house. Pointed screws and small wire nails were the latest developments in building technology at the time. A mixture of old and new techniques were used to construct the Haile Plantation house, showing a unique blending of building traditions that can be interpreted more clearly through the lens of historical context at a regional scale.

An important idea to keep in mind when researching a building is that although the historical background of Alachua County aided in an analysis of the Haile Plantation house, the analysis in turn revealed a deeper understanding of the region. The occurrence of manufactured building materials reflects that a demand for certain prestige items by a segment of the population was able to be filled with the transportation networks then in existence, though they may have been available for a higher price than in other regions. The continued use of building technologies that were considered outdated in those other regions suggests the influence of area craftsmen determined to perpetuate older and more trusted traditions of construction, as well as the inability of the region to economically support the necessary investment in equipment and training for the new technologies.

Research Opportunities

Further avenues of exploration include the building technology associated with the construction of commercial, public and other large scale structures, as well as focusing on other geographical areas to create regional chronologies. A close investigation of the history behind the manufacture of building materials within the county would provide a level of accuracy in a dating chronology specifically for materials identified as originating within the area. Patterns in the timeline show periods of intense development to improve methods of constructing buildings, and it would be interesting to explore the influence major historical events such as the American Revolution had on builders. The proximity to transportation networks is only one of many factors to be explored which affects the availability of certain building materials in an area. An alternative set of building techniques would have been available for a less

well-to-do family living on the frontier in contrast to the wealthy Haile family on their plantation supported by slave man-power.

APPENDIX

TIMELINE OF BUILDING TECHNOLOGY

- Dates cited are of first appearance and roughly when popularity of a practice was at its highest.
- Style periods are highlighted in **bold** type.

1565-1820s	Spanish colonial style
1603-1800s	English medieval/cat slide style
18 th Century	<p>Paneled walls surrounding fireplace</p> <p>Panes almost square in form, became more vertically oriented</p> <p>Sash patterns: 8/12, 12/12, 9/9</p> <p>Double hung sash replaced stationary and casement early on</p>
1720s-1800s	Georgian style
1750s	Palladian window paired with Georgian style
Pre Revolution	<p>Thick muntins 1 1/4" to 1 5/8" wide</p> <p>Wrought iron and brass butt hinges for closets and furniture</p>
1770s-1820s	Federal/Adamesque style
1790s-1820s	Cut nails, common side with hammered head
1790s-1840s	Transition from wrought to cut nails
19 th century	Pressed glass patterns and textures, curved glass
Start of 19 th century	<p>Cast iron butt hinges with fixed pins</p> <p>Iron hardware heavier weight</p> <p>Large size threaded bolts</p> <p>Plastering screeds allowed woodwork installation to come last</p> <p>Tin roof sheets of 10"x13 3/4"</p> <p>Terne plate made, common by 1840s</p> <p>Four panel doors replace six panel in popularity, battens exiled</p> <p>Changing furniture styles lowered chair rail from 36" to 24"-30"</p> <p>Lead pipes made from sheets succeeded by extruded pipes</p> <p>Adamesque style mantels with delicate detailing</p> <p>Beveled meeting rail between double hung sashes</p>

First ½ 19 th century	Bare softwood floors, covered by floor cloths and matting
1800-1820	Machine-made bolts for structural connections
1800-1850	Norfolk latches popular
1810-1820s	Cut nails, opposite side with hammered head
1812	Belgium zinc rolling mills
1815	H and HL hinges out of fashion
1815-1830s	Cut nails, common side with crude machine-made head
1817	Limited gas lighting for streets, commercial and public buildings
1820s-1830s	Cut nails, opposite side with crude machine-made head
1820s-1850s	Molding profiles with elongated elliptical shapes
1820s-1860s	Greek Revival style
1820s	Zinc roofing
Pre 1825	Molding profiles with small circular shapes Scarfe joint at ends of clapboards
1825	Machine-headed cut nails Suffolk latches out of fashion Lath hand split or riven
1828	First machine planer
1830s	Machine production of wallpaper Circular saws for lathe and shingles Smaller chimneys to vent stoves and furnaces Cast iron butt hinges with loose hinges Before most cut nail iron fibers crosswise to shank, now parallel Tin roofing sheets sized 10"x14" and 20"x14" Greek Revival mantels with bold columns and entablature Spring operated roller blinds available but expensive, rare
1830s-1850s	Narrow 3" borders, flocked and darker shade than main wallpaper
1830	Classical/Grecian windows (squared heads) Clapboard siding lengthens from previous 4'-6'

1832	Cast zinc architectural elements in Berlin Chicago balloon framing with heavy timber sills
1835	Movable louvered blinds Machine-made door and shutter panels with nailed on moldings
late 1830s-present	Cut nails, opposite side with perfected machine-made head
1836	Galvanized iron sheets
1840s	Machine-made moldings Blake's Patent Latch, rim locks Composition roofing saturated with pine pitch Picturesque styles called for color palette of nature, no green
1840s-1880s	Gothic style Italianate Bracket style
1840s-1900	Shutters and sash painted darker color than trim
1840	Zinc paint developed in France Continuous rolls of wallpaper
1842	High pressure steam heating
1846	Screws with points Promotion of balloon framing with only nails
1848	Picturesque/Italian Villa windows (round & shallow arched)
Pre 1850s	Sub-roof boards not square edged
1850s	Hexagonal nuts for bolts Window sash weights Decorative shingles courtesy of steam-powered machinery Most mills machine-planing boards Mortise locks Wood pulp paper used in wallpapers Limited use of encaustic and geometric tiles for flooring
1850s-early 1870s	Wallpaper: small florals, flocking, blues, grays, orange & purple
1850s-1870s	Arched mantels Hardwood wainscoting and chair rails in select rooms

1850	American Method of smelting zinc ore Machine-made molding, large circular shapes Small size wire nails Stamped butt hinges Mills capable of rolling out wrought iron structural members
1853	Composition roofing saturated with coal tar
1855-1890	Wrought iron beams and cast iron columns used in combination
1858	First U.S. factory producing spring operated roller blinds
1860s	Circular saw preferred by mills Stamped metal shingles developed in Europe
1860s-1890s	Second Empire style Stick style
1863	Linoleum invented: solid colors
post Civil War	Ready-mixed paints developed and marketed
1868	Metal ceilings introduced
1870s	Portland cement Balloon framing reaches the East Tin roofing sheets 20"x28" U.S. begins production of stamped metal shingles Fashion of hardwood floors, parquet borders and oriental rugs
1870-1890	Victorian dark rich and muddy colors
1870-1900	Revival of woodblock wallpaper printing Queen Anne style
1874-1887	Chicago balloon framing lost favor
late 1870s-1880s	Wallpaper: gothic & Japanese patterns, muddy color palette
1876	Colonial/Palladian windows
1877	Terra cotta becomes popular Lincrusta-Walton textured paper

1880s	Rising popularity of stamped metal roofing, larger sized shingles Central furnaces with single flue common in colder regions Combination gas/electric fixtures
1880s-1900s	Shingle style
1880	Linoleum: inlaid tile designs Glass no longer handmade, stained glass popular
1884	Linoleum: complex floral designs Stamped decorative metal ceilings
1885	Wire nails Colored terra cotta Terra cotta blocks built as part of the wall structure
1890s	Wallpaper: rococo, metallic Wide variety of wall switches developed Graining and marbleizing woodwork out of fashion
1890s-present	Colonial Revival style
1890-1920	Colonial Revival white and pastel colors
1890	Yellow terra cotta paired with limestone
1891	Push button switch invented
1894	Glazed terra cotta cladding
End of 19 th Century	Metal window sashes & frames Shutters had shapes cut in them Lead pipes out of fashion, discovered poisonous qualities
Start of 20 th Century	White Portland cement Sub-flooring and sheathing laid diagonally Large size stamped metal shingles resembling terra cotta tiles Push button switch highly popular Steel and bronze casement, pivot, stationary windows, & kalomein Spring balance replaces sash weights in double hung sashes Standard size glass panes in 2" increments
1900-1920	Prairie School style
1900	Wire mesh lath Millwork of sashes and panel doors changed to blind joints

1903-1930	Bungalow style
1903	Beaver Board invented
1910	Slotted wall receptacle for two prong cord universal New construction wired for electric Upson Board invented
1916	Homasote invented
Post WWI	Fiber sheathing required diagonal braces Platform framing replaces balloon framing Industry standardizes on 8' module
1920s	Toggle switch in use Brick or stone veneer techniques perfected and popular
1920	Rock lath and plasterboard Upson Board 5 pronged steel fastener invented
1930s	Terra cotta goes out of fashion Stamped metal roofing goes out of fashion Aluminum windows Attached garages became standard
1941	Manufacture of stamped metal roofing ends
Post WWII	2x4s planed smaller dimensions Aluminum windows popular

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BIOGRAPHICAL SKETCH

Lisa Greco first came to the University of Florida in 1999 to study architecture, but she soon switched her major to history and received her bachelor's degree in 2003. To combine her love of architecture and history, she enrolled in the graduate historic preservation program and participated in the Preservation Institute: Nantucket 2003 summer program. This thesis is a continuation of her curiosity sparked from the numerous fieldtrips to sites with preservation professionals describing the research that had gone into the proper preservation of the structures.