AN ABSTRACT OF THE THESIS OF

Emily Modelski for the degree of Master of Arts in Applied Anthropology presented on March 10, 2016

Title: An Archaeological Analysis of the Architectural Artifacts and Features at the Robert Newell Homestead Site (35MA41).

Abstract approved:

_____

David R. Brauner

This thesis will explore the architectural material culture excavated at the Robert Newell Homestead (35MA41), currently located in Champoeg, Oregon. Specifically, the research focuses on the vernacular architecture or the features and construction methods used that both reflect the environment and the cultural traditions of the dwellings occupants. The Robert Newell homestead is a well preserved site that reflects the (1830s – 1860s) unique settlement history of Champoeg, Oregon, first settled by French Canadian fur trappers and slowly overcome by American homesteaders. As excavations took place at the site, it became clear that several periods of construction had occurred at the Robert Newell homestead reflecting both French Canadian and American cultural building traditions. These periods of construction are explored through a close examination of nails, bricks, window glass, and their frequency throughout the site as well as several well preserved architectural features. Many documents exploring cultural styles of construction, the history of the area and its growth, as well as the history of the homesteads occupants are also explored.

An Archaeological Analysis of the Architectural Artifacts and Features at the Robert Newell Homestead Site (35MA41)

by
Emily Modelski

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Arts

Presented March 10, 2016
Commencement June 2016

Master of Arts thesis of Emily Modelski presented on March 10, 2016

APPROVED:

_____

Major Professor, representing Applied Anthropology

_____

Director of the School of Language, Culture, and Society

_____

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

_____

Emily Modelski, Author

ACKNOWLEDGEMENTS

I want to say a huge thank you to everyone who was involved in creating this thesis. Completing such a task isn't possible without the help of those around you. First I want to thank my professor Dr. David Brauner who made this entire project possible and took a leap of faith taking me on as one of his only Graduate Students who completed their undergraduate outside of Oregon State University. I want to thank my committee members Dr. Leah Minc and Dr. Elaine Pedersen, both amazing professors and some of the strongest women I've ever met. I'd also like to thank my Committee Representative Dr. Marisa Chappell who really helped me out and was at my side during the final push.

I'd also like to thank my friends and family who stood by my side throughout everything. Particularly those Grad Students who I could I always commiserate with, Cayla Hill, Lindsey Stallard, Molly Kirkpatrick, Shane James, and Garrett Potter. Thank you to my Mom and Dad who provided strength and emotional support and to my sister Eve who I could always count on to cheer me up. And finally, I'd like to thank my boyfriend Justin for standing by me through the best of times and the worst of times throughout graduate school.

Some days it felt like Grad School would never end, and yet here I am on the other side. THANK GOD!

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

Figure Page

LIST OF FIGURES (Continued)

LIST OF FIGURES (Continued)

Figures Page

LIST OF TABLES

Ch 1. Introduction

Champoeg was the first town settled in the in the old Oregon country in 1829 (Gibson, 1985:131). What many people don't realize, is that this town was established by French Canadian fur trappers working under contract for the British Hudson's Bay Company (Winther, 1950:29; Hussey, 67:23). This early history is often overlooked by historians who focus instead on the establishment of the Oregon Trail and the mass exodus to Oregon by Americans into the Willamette Valley. However, the earlier history of the Willamette Valley has been discussed by some historians who focus on the early fur trade and, in particular, the Hudson's Bay Company (Winther, 1950; Hussey, 67; Gibson, 1985). This early period represents a very unique period in U.S. history as the territory was still mutually British and U.S. territory first occupied by the Northwest company and Astoria company and then by the Hudsons Bay Company, a British fur trading company who largely employed French Canadian men.

These men brought with them, their French Canadian heritage which greatly influenced the early settlement of the Willamette Valley. This can be seen not only in the French long lots which divided the land claims of these men, but also in the construction style in which they built their homes, now only evident in the archaeological record. Today, little remains of this early French Canadian heritage and nothing remains of the Champoeg town except for a State Park which marks the site and the archaeological sites which represent the early town and homes that stood there.

One site in particular, the Robert Newell homestead (35MA41), is the focus of the research discussed in this thesis. The Newell homestead site was originally discovered and identified in 1998 and has since undergone extensive excavations under the direction

of Dr. David Brauner directing the Oregon State University archaeological Field school. During these excavations, the entirety of the Newell home was excavated and thousands of artifacts associated with it. This has led to extensive research on the site including a settlement model and analysis of the domestic items at the site (Manion, 2006; Manion, 2014). During excavations, it was discovered that the site not only represented the Newell occupation but several before it and represented a 30 year period of occupations. Along with the artifacts, many features associated with the house were discovered, including post molds and a hearth. These features and the architectural artifacts associated with the structure of the house have not undergone the same detailed analysis many of the other artifacts have been afforded. It is the purpose of this thesis, to not only describe these architectural artifacts and features but to discuss the history and timeline of the house structure, and discuss how the cultures of the homes occupants are reflected in its construction.

1.1 Research Questions

Can we demonstrate that this structure conforms to a French Canadian style of architecture? What features and other structures have been excavated and what structures do we expect to find that support that this structure is French Canadian?

This is a multifaceted question which not only focuses on a general description of the house and it features, but largely focuses on the potential to understand the French Canadian culture reflected in the homes construction. Previous excavations at the site have already revealed what is believed to be a post in ground, or poteaux-en-terre construction style which is a well-known French Canadian building type (Hutslar,

1986:23). This style is not only seen in Eastern Canada where many of the Fur Trade Company men were hired, but is also evident at Fort Vancouver its self (Hebert, 2007:46; Mullaley, 2011:32). However, based on previous research and a developed settlement model, we know that the original occupant of the home was not of French Canadian descent and that most of the occupants at the site were not French Canadian (Manion, 2006:20). This means that not only is an explanation for why the post in ground construction style was used is necessary, but it also opens up the possibility that other features of the structure do not reflect French Canadian culture but other cultures represented in the other house occupants. This question will not only require a detailed understanding of housing construction, but how culture is reflected in construction and what construction styles represent specific cultures.

What materials were used in the construction of the structures and what does this reflect about material availability?

This question will require detailed descriptions of several architectural artifact types including nails, window glass, and bricks. This not only means understanding how each of these artifacts are manufactured and their chronologies, but understanding their availability in the Northwest. The Newell site represents one of the very earliest American occupation of the Willamette Valley and therefore represents a very remote existence in which goods would be difficult to come by and provided by only a few different sources. Not only will the artifacts themselves need to be analyzed, but primary and secondary sources will need to be analyzed in order to establish trade routes and sources for goods to be purchased.

1.2 Literature Review

One of the first elements an individual notes on the landscape is the built environment. There is a human draw to structures that recognizes the uses and the importance of manmade structures. 'Nothing reveals so much about an area and its civilization as the buildings that people construct for shelter, economic support, defense, and worship' (Noble, 1984:1). Beyond the utility of a structure, humans recognize the architectural design, the materials, and what a building says. This fascination must relate to the realization that 'built environments are a product of purposeful human activity, and of culture'(Rapoport, 1994:460). A structure not only reflects a purpose but has the ability to reflect a culture, a time period, and even an individual. It is a natural draw every human feels to a structure that draws the researcher to study and understand a structure as a reflection of a time period or culture.

Much can be learned about a time period or a culture from the structures they left behind. The building does not only reflect construction styles but the values of a culture and the places and spaces they required in their everyday lives. 'Any considerations of built environments must take into account not only the 'hardware' but also people, their activities, wants, needs, values, life-styles and other aspects of culture' (Rapoport, 1994:461). Commonly the greatest draw is to the masterpieces, the unique structures that defined a city or an architect, but it is in the common structures like the home that we learn the most about a culture. The study of these every day structures has come to be known as the study of the folk tradition or folk architecture (Rapoport, 1969; Marshall, 1981). It is also commonly referred to as vernacular architecture which is commonly used

synonymously to ‘local’ architecture. Marshall describes folk architecture as a structure that provides shelter for the everyday and resists change (Marshall, 1981). Cultures define ways of living that are passed from generation to generation including methods of settlement, construction of dwellings, and the spaces that need to be constructed into that dwelling for a proper way of life. It is the consistency in these practices that allow the researcher to study a culture and, beyond this, its movement across landscapes.

One such style of construction and a way of life that we see persist across the entire North American continent is that of the French Canadian. ‘Certain structures clearly are associated with different ethnic groups and thus provide a means for identification and study of those people’ (Noble, 1984:1). Many studies have been done throughout the Unites States looking at the influences of European cultures on the built environment as cultures migrated to North America during colonization. French Canada has been studied as much as the United States for similar reasons and different building styles have been connected with European cultures that first settled Eastern Canada (Noble, 1984; Ennals and Holdsworth, 1998; Herbert, 2002). French Canadian architecture is of particular interest because it was carried throughout North America with the French Canadian fur trappers working for the Hudson Bay Company. These French Canadian trappers were often responsible for construction of winter forts and eventually their own homes as they settled down in places such as the Willamette Valley.

The French Canadian influence on the Willamette Valley, though studied by some, isn’t well known to the American people, even those residing in the Willamette Valley. However, their impact is unmistakable. Even today many roads and towns carry

the names of some of these original settlers. Several historians, and as of late archaeologists, have studied the French Canadian history and influence in the Willamette Valley, but the history is buried in records of the Hudson Bay Company and in town and street names (Hussey, 1967; Moore, 1974; Winther, 1950; Speulda, 1988; Manion, 2006). Robert Hebert completed a thesis in 2007 examining the key features of a French Canadian home, including the design of these features. This thesis will provide part of the foundation for analysis that will allow for the researcher to say whether this homestead represents a French Canadian home or is influenced by the French Canadian culture of the inhabitants. Other thesis have been completed by Barbara Judge and Lou Ann Speulda, one examining two farmsteads in the area and what the artifacts can tell about the culture and lives of the occupants, and the other examining the community of French Canadian settlers who first settled the Willamette Valley (Judge, 1993; Speulda, 1988). These thesis provide not only a small history for the area, but also provide an understanding of what other farms in the area looked like during this period. These individuals who have written thesis and histories of the area have taken the time to look into the primary documents left in Hudson Bay Company records, journals, legal documents, and examined the artifacts left at the sites to better understand the history of the French Canadian settlers and piece together an image of their everyday lives. These are the documents that provide the beginning of research for this project.

Of particular interest to this projects, is the research completed by a former Masters and PhD student of the university, Mollie Manion. Dr.Manion completed her own research on the Robert Newell homestead, and with the help of Dr.Brauner, completed both her Master and PhD on the site. In her thesis, Dr.Manion completed an

analysis of the occupations of the site based on the archaeological data collected from the 2002 and 2003 field schools run by Oregon State University (Manion, 2006). She was able to locate through primary documents, several possible occupants of the site. The site was originally thought to have been occupied by Robert Newell's family alone, and it wasn't until excavations began it became clear that this was not the case and that several previous occupations may have occurred with Robert Newell being the last (Manion, 2006). Dr.Manion was able to construct a timeline and name John Ball as the first occupant and responsible for the original land claim and cabin construction, Nathaniel Wyeth as the second, William Johnson as the third, Walter Pomeroy as a possible fourth, Robert Newell as the fifth and last to live on the property, and Donald Manson as the sixth and final owner but never having occupied the site (Manion, 2006:20-37). Once this model was outlined, Dr.Manion continued researching the site for her PhD dissertation, focusing specifically on the women and children of the site. The material in this dissertation though not as fundamental for this particular project, has provided a greater breadth on the history of the site, as well as sources that may be used to find important information on the structure of the home (Manion, 2014). This project will therefore add to the previous research completed at the Robert Newell site.

Completing research on the architectural elements of this site will provide a description of an otherwise unknown structural style unique to the Northwest. Although it is hypothesized that the structure is built in a French Canadian style, it is also hypothesized that the environment and the occupants of the site over the years also influenced the construction. This project will examine the structural footprint, architectural artifacts including wood and nails to provide a description of the structure.

This structure can then be analyzed for cultural influences based on previous research and primary documentation for the area. The outcome will be a structural description of one of the first settlements in the Oregon Territory and the unique circumstances of constructing a dwelling in the Pacific Northwest in this early period of occupation.

Ch.2 Geographic and Historical Setting

2.1 Geographic Setting

The Robert Newell site is located in the Willamette Valley in the state of Oregon in the Pacific Northwest Region. This area is commonly referred to as French Prairie. The Valley is bordered by the Oregon Coast Range to the West and the Cascade Range to the East. The valley can be described as a large flat plain in which the Willamette River flows south to north causing seasonal flooding in the winter and spring. The area is best defined by a wet mild winter and a warm dry summer.

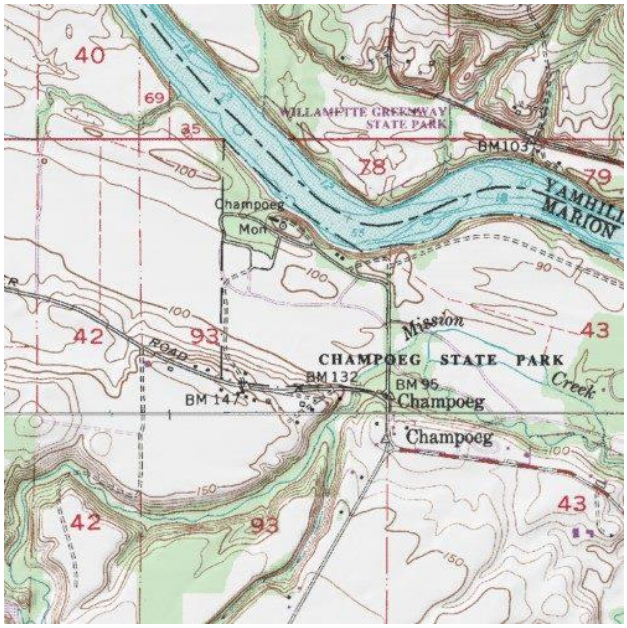

Figure 2.1 USGS Topographic map of Champoeg, Oregon

The Coast Range Mountains create a rain shadow over the Willamette Valley which creates differential rain fall from 40 to 70 inches per annum depending on location in the valley. This rainfall as well as seasonal snowmelt from the mountains in the spring cause seasonal flooding in the spring. This flooding has created a rich soil along the river and was once infamous with pioneers traveling to the area to establish farms (Edwards,

1842:11). The area, at the time of settlement could be described by open prairie and dense forests covering the foothills. This appearance was not natural to the area but one created by the slash and burn practices of the Natives in the area (Hussey, 1967:2).

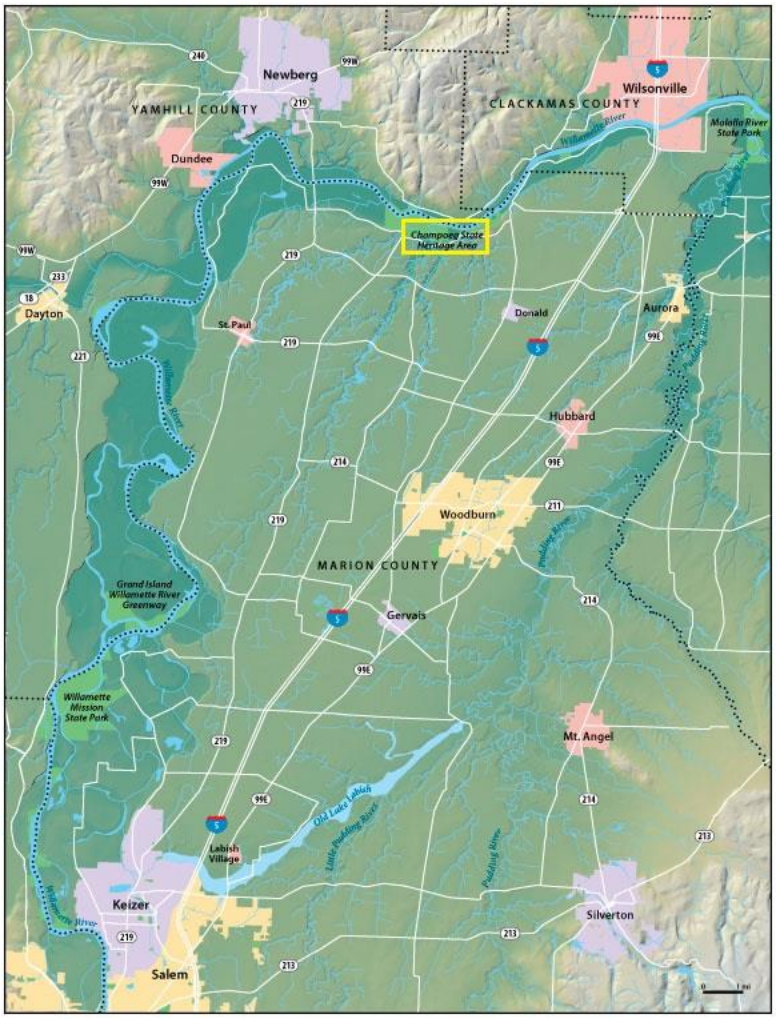

Figure 2.2 Modern map of Champoeg

The lowland was dominated by plants such as Douglas fir (*Pseudotsuga menziesii*), Oregon maple (*Acer macrophyllum*), vine maple (*Acer circinatum*), yew (*axus baccatta*), ash (*Fraxinus latifolia*), white oak (*Quercus alba*), alder (*alnus rubra*), willow (*salix*), and balm (Hussey, 1967:2). The foothills were dominated by douglas fir

(*Pseudotsuga menziesii*), pine (*pinus*), spruce (*Picea sitchensis*), hemlock (*Tsuga heterophylla*), cedar (*Cedrus deodara)*, larch (*Larix occidentalis*), and madrone (*Arbutus menziesii*). It was considered to be a very fertile area with a diversity of plantlife which could easily support a homesteader and provide the materials necessary for building a home.

Local animal life included mammals such as the Columbian white-tailed deer (*Odocoileus virginianus leucurus)*, the black-tailed deer (*Odocoileus columbianus columbianus)*, the Roosevelt elk (*Cervus Canadensis roosevelti*), the Gray Fox (*Urocyon cineroargenteus*), the Gray Wolf (*Canis lupus)*, the North American River Otter (*Lontra canadensis)*, the ermine (*Mustela* ermine), and the beaver (*Castor Canadensis*) among many others. Many of these animals are what originally drew settlers, particularly fur trappers to the area. The Willamette Valley also provided seasonal habitats for both migratory waterfowl including geese, as well as habitat for many species of fish in the Willamette and its many tributaries. All of these animals provided fishing and hunting to early homesteaders and made it possible to survive without the aid of imported farm animals.

2.2 Historical Setting

The American Northwest has long been settled by many Native tribes who not only occupied the area gathering wild plants and animals, but maintained the land through such practices as slash and burn agriculture. However, with the discovery of the area by European countries, diseases of which the natives had no prior immunities to grew rampant killing a majority of the population. This created the widespread opinion by Europeans that the New World, including the Northwest was open for the taking.

The West coast was first claimed by the old-world powers of Russia and Spain in the middle of the eighteenth century (Gibson, 1985:1) Russia quickly began to claim the north and establish forts along the coastline, while Spain claimed the south, however neither succeeded in maintaining their claim for long. Both had overextended their power in claiming these territories and Britain and the United States were close on their heels. In 1790, the Nootka Convention took place where Madrid yielded the coast North of Nootka to Britain, and Spain in 1819 yielded control of the land north of the 42nd parallel to the United States (Gibson, 1985:2). So began the struggle between Britain and the United States for the Northwest.

Britain and the United States were quick to explore the Northwest, first with Lewis in Clark from 1803-1806, followed by many others like Simon Fraser and David Thompson (Gibson, 1985; Winther, 1969; Hussey, 1967). The first settlement by either countries was completed by John Jacob Astor, an American, who established the Pacific Fur Company by building Fort Astoria located at the mouth of the Columbia in 1811(Gibson, 1985:3; Hussey, 1967:25). However, this occupation was short lived as the War of 1812 caused misfortune and Astor quickly sold his claim to the North West Company, a British organization, in 1813 and Fort Astoria was renamed Fort George (Gibson, 1953:3; Hussey, 1967:22).

The North West Company began to expand their enterprise by following the Columbia and Willamette rivers into the interior. In 1814 the Willamette Post was either established close to previous dwellings used by the Pacific Fur Company or was reestablished from the remains of a dwelling built by the Pacific Fur Company (Hussey, 1967:29). Records are unclear about this. However, this post was established 2 miles up

the river from the location where the town of Champoeg was later to be established and marks the first extensive occupation by Europeans of the Willamette Valley (Hussey, 1967:29). This occupation began the reputation of fertile and plentiful land that lead to the continued use and eventual settlement of the area.

In 1821 the North West Company was absorbed by the Hudson's Bay Company, a very powerful British Fur Trading company headquartered in Eastern Canada. The company was formed in 1670 after exploration by French explorers Pierre Esprit Radisson and Medard Chouart had reported a rich land in furs to King Charles II (Winther, 1969:39). The company was given the rights and privileges of passing laws, to employ armed forces, as well as to build forts, giving the Hudson's Bay Company all the power of an acting government (Winther, 1969:39). However, at this time, Canada was in control of the French. It wasn't until 1763 when the French were driven from Canada that the Hudson's Bay Company really had the opportunity to expand as well as other groups like the North West Company lead by Montreal Frenchmen (Winter, 1969:40). Conflict was rampant between the two fur trade companies, often leading to death, until an agreement was made in 1821 and the North West Company was absorbed by the Hudson's Bay Company. This meant that while the Hudson's Bay Company was a British entity, a majority of the men who were contracted were French Canadian.

In the northwest, little information is known about the Hudson's Bay Company from 1821 to 1824 but it is likely that activity continued as it had before the merger with fur traders traveling up and down the Columbia River and throughout the Willamette Valley in search of furs. It is noted, that some of the trappers including Ettienne Lucier, Joseph Gervais and Donald McKenzie, all known Champoeg settlers, may have

established semi-permanent homes with their native wives along the Willamette in the upper valley during this time (Hussey, 1967:33). This could very well be the first settlements in what is later known as the town of Champoeg. For a time, it looked as though the Northwest was no longer a valuable commodity for the Hudson's Bay Company and these men would be left to settle the northwest. However, it was decided that the Columbia was too valuable as a central place for operations and George Simpson was sent to strengthen their position (Hussey, 1967:34). In 1825, under the direction of Simpson, Fort Vancouver was constructed along the Columbia, inland from Fort George, as the Hudson's Bay Company's northwest headquarters (Hussey, 1967:35).

The Hudson's Bay Company continued to operate in the Northwest, sending trappers both North and South, as well as East but never establishing structures south of the Columbia. It was commonly believed that the Northwest would be divided between the British and the United States along the Columbia River and so the company stayed north in their respective land. However, in 1827, an agreement between the United States and Great Britain extended joint occupation of Oregon for an indefinite period of time and the committee in London sent word to the Hudson's Bay Company that they needed to strengthen their position south of the Columbia (Hussey, 1967:39). For many of the fur traders, this was good news as they had sought to establish farms in the Willamette but had been continually denied this opportunity by Dr. John McLoughlin, the manager of the Columbia Department. The contracts signed by the fur traders stated that these men could not settle in the Northwest but had to return to their homelands, but many had native wives and children which they did not wish to abandon and who could not live normal lives at home with them. McLoughlin, not wanting the men to leave only to return

as American Fur trappers or free lancers decided to allow the men settlement in the valley, but keep them contracted to the Hudson's Bay Company as farmers who would supply the fort with excess grain (Gibson, 1985:131). This allowed not only for the happiness of many of the trappers but also the strengthened position of the Hudson's Bay Company south of the Columbia River.

It was the fur trappers who settled this region, as well as the consent of Dr.John McLoughlin which brings the first occupant of the Newell homestead to Champoeg and the Willamette Valley.

Figure 2.3 Map depicting the locations of Fur Trade Forts along the Pacific Coast of Canada and the Oregon Territory from 1790-1840 (Maritime Fur Trade, 2010)

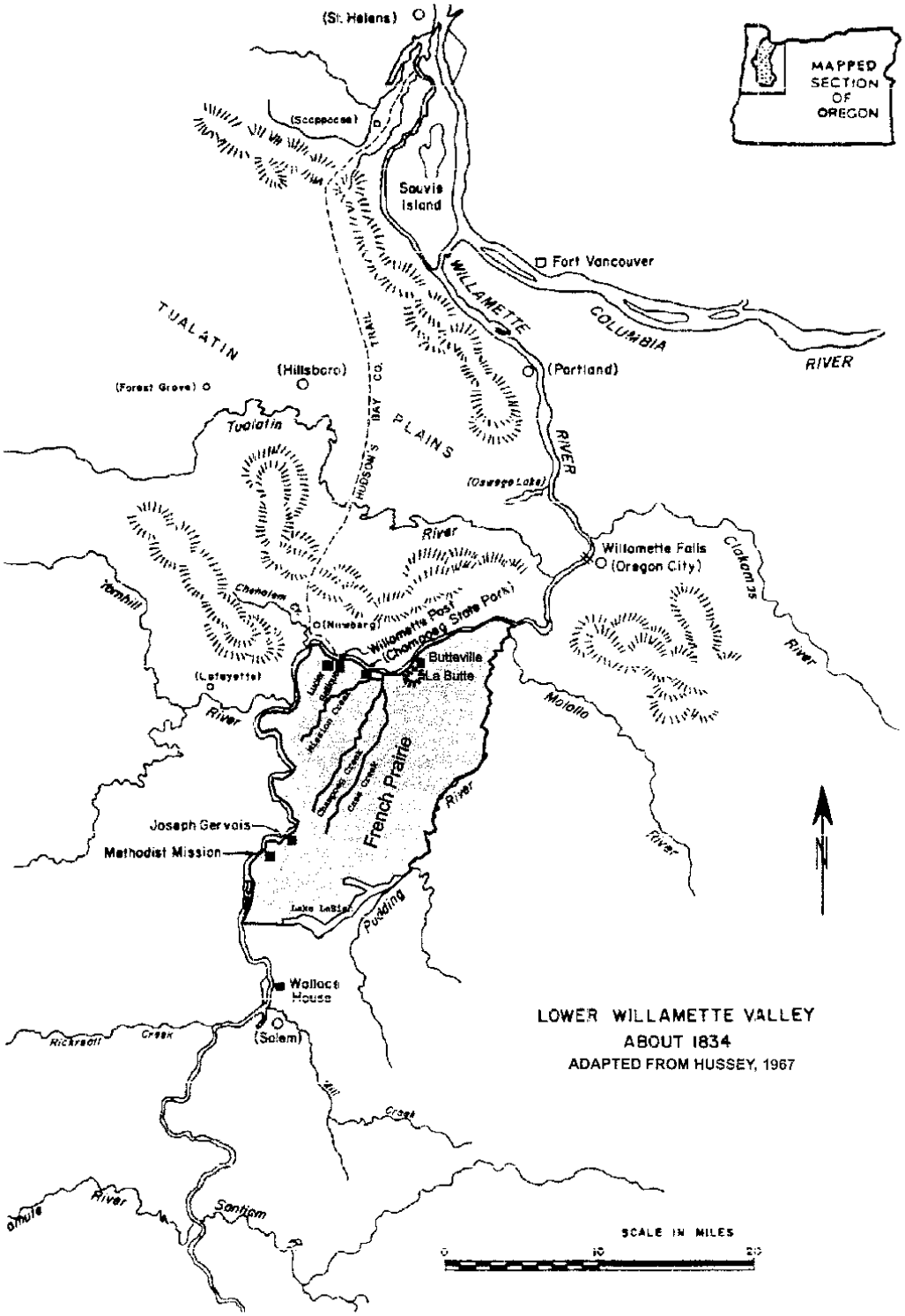

Figure 2.4 Lower Willamette Valley ca. 1834 (Hussey, 1967:42)

2.3 Occupants

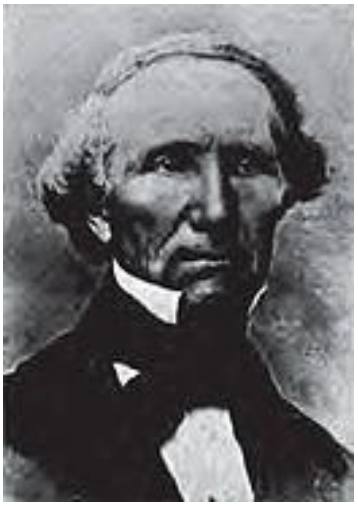

Figure 2.5 John Ball (Ball, 1925)

The first non-native settler at the site of 35MA41 was a gentleman by the name of John Ball. He was born in New Hampshire in November of 1792 (Ball 1925:3). Working on his family's farm as a child, Ball took every opportunity he could to become educated. His neighbors acted as his teachers, including a Sergeant John Ordway of the Lewis and Clark Expedition, who filled his head with grand adventures and pictures of the west (Hussey 1967:63). He not only attended a few schools in the area around his home, but he also taught several times throughout his youth. Eventually his education led him to Dartmouth College where he graduated in 1820 (Hussey 1967:63). Soon after, Ball decided to become a lawyer in profession and took the bar exam in New York in 1824 and established a law practice with his partner Walter Raleigh (Ball 1925:46). Only a few years later, John Ball received news that his brother-in-law has been in an accident of which he shortly died from later. Ball, in an effort to take care of his widowed sister, began to manage the oilcloth factory which had been left to her by her now deceased husband, eventually forcing him to close his law practice. By 1831 however, Ball had

paid off the debt of the oilcloth plant and was able to leave the plant in his sister's hands under the new name of D. Powers and Co. (Ball 1925:56). These circumstances had opened up the door for Ball to break all ties and fulfill his dream of heading west, so Ball headed to New York looking for a party. (Ball, 1925)

John Ball immediately sought out the men of Jacob Astor's Oregon Company and obtained information about Oregon. It was then that Ball learned about Nathaniel Wyeth, 'having become infected with the 'Oregon Fever' through the writings of Hall J. Kelley, was organizing a joint-stock company to proceed overland to the Columbia River' (Hussey 1967:63). Ball met up with Nathaniel Wyeth, the leader of the expedition west, and his men in Baltimore. They travelled by road and by steamboat from Baltimore to St. Louis (Ball 1925). St. Louis was known as the gateway to the west at this time as it was the last stop before entering the unclaimed west. 25 men began the journey in the Wyeth expedition that May in 1832, but only 11 made it to Fort Vancouver at the end of October (Hussey 1967:63). The journey was fraught with starvation, disease, desertion, and attacks.

On the 29th of October, 1832 the Nathaniel Wyeth party reached Fort Vancouver (Ball, 1925:90). Though the moment was relished, several of the men including John Ball felt that their journey wasn't over until they had reached the Pacific Ocean and so continued on by boat along the Columbia. "There to stand on the brink of the great Pacific, with the rolling waves washing its sands and seaweed to my feet! And there I stood on the shore of the Pacific enjoying the happiest hour of all my journey" (Ball 1925:92). Ball returned to Fort Vancouver where he and the others were graciously welcomed and given rooms in the fort.

John Ball remained at the Fort for some time but was not one to stay idle and did not believe in handouts and so asked Doctor McLoughlin if there was any way in which he could be of use. Dr. McLoughlin was eventually convinced to allow John Ball to teach his sons and the other young boys at the fort (Ball 1925:93). For this, John Ball is considered to be the first teacher in Oregon and even Dr. McLoughlin spoke of this as he said "Ball, anyway you will have the reputation of teaching the first Academy in Oregon" (Ball, 1925:93). In the spring, Nathaniel Wyeth and a few of his men returned east, while the rest took up contracts with the Hudson's Bay Company. It is after this, and with the belief that he may stay a while, that John Ball decided he would like to take up farming. (Ball, 1925).

Doctor McLoughlin was not accepting of this plan as proposed by John Ball initially, but with continual discussion and pressing, Dr. McLoughlin finally approved. Dr. McLoughlin lent Ball farming utensils, horses for sowing the ground, and seed to begin his new life in the Willamette valley. He landed in what today is Champoeg and claimed land next French Canadian J.B. Desportes McKay (Ball 1925:95). There he built a log cabin and in Ball's autobiography written years later, we get one of the only descriptions of the structure, "I drew out logs for a cabin, which when I had laid up and put up rafter to make the roof, I covered with bark peeled from cedar trees. And this bark covering was secured by poles across and tied with wood strings, withes, at the ends of the timbers below . . . so I dwelt in a house of fir and cedar" (Ball 1925:95).

Unfortunately with poor luck in farming and no Americans moving to Oregon, Ball did not remain long. John Ball had no company besides that of the Native Americans and the few French Canadian men in the area, though the French Canadian men were

always off on ventures of their own. Ball also became very sick during his short stay in Oregon, having to procure medicine from the fort and spending many days alone and feeble. Finally at the end of harvest, John Ball concluded to leave on the next ship. On September 20th, 1833 John Ball left his Champoeg home. (Ball, 1925)

Figure 2.6 Nathaniel Wyeth (Hussey, 1967:69)

The next owner of the property was Nathaniel Wyeth, the very same Nathaniel Wyeth with whom John Ball had originally travelled to Oregon (Manion 2006:26). Nathaniel Wyeth was born in January of 1802 in Cambridge, Massachusetts (Wyeth 1969). He was married to his cousin in 1824 and made his money shipping ice to the West Indies. He continued this until he met Hall Jackson Kelley "a rabid enthusiast on the subject of the Oregon country" (Wyeth 1969). Kelley was infamous for encouraging settlement of the Oregon territory by Americans and had not only obtained the signatures of those who had agreed to settle the west but also published numerous pamphlets on the subject (Wyeth, 1969). Though Kelley himself never successfully led settlers to the west,

he did encourage Wyeth to organize his own expedition, that of which John Ball was a part of.

After the expedition reached Fort Vancouver in the Oregon territory in October of 1832, Wyeth only remained at the fort for a few months. He and a few of his men returned to the east coast the following spring to organize a more successful journey to the west. On February 7th, 1834 Wyeth left St.Louis with a group of 20 men and successfully arrived at Fort Vancouver in September of that same year. Wyeth, upon arrival to Oregon, established two trading posts, Fort Hall in southern Oregon and Fort William on Sauvies Island. Unfortunately for Wyeth, his business seemed doomed from the beginning as they missed the salmon run in which they had hoped to obtain salmon for trade and also failed to compete with the Hudson's Bay Company in the trade of furs. (Wyeth 1969) Thankfully for Wyeth, an agreement was reached between him and Dr. McLoughlin "by which Wyeth pledged not to engage in the fur trade on the lower Columbia and McLoughlin promised not to interfere with Wyeth's salmon fishing and his dealings for horses needed to operate in the Snake country" (Hussey 1967:68). It was this agreement and Wyeth's final goal to farm the Willamette that kept Wyeth in Oregon. Wyeth was already aware of the lush and beautiful conditions of the Willamette Valley from his 1832 visit to the area. On September 22, 1834 Wyeth laid out his claim next to that of J.B. Desportes McKay, the previous neighbor of John Ball (Hussey 1967:70). Wyeth had returned to Oregon with this goal of farming already in mind and therefore had brought his own seeds and equipment to begin a farm without the help of Dr. McLoughlin.

Little is known about the farm after this period as it doesn't appear that Wyeth himself lived on the farm but instead hired two men and a foreman to set up and run it for him (Hussey 1967:70). Wyeth stayed in Oregon for a couple of years, continuing his trade with a growing focus on Sauvies Island. Eventually though, Wyeth writes home stating "that his business had not been successful in any of its branches and therefore would terminate soon" (Hussey 1967:71). In spring of 1836, Nathaniel Wyeth began his trip home to Boston.

William Johnson

William Johnson is the third occupant of the home with his Native wife, "brace" of boys, and "two young male Indian slaves" (Hussey, 1967:78). Johnson was born in the British Isles around 1790 and became a sailor at a young age (Hussey, 1967:77). His neighbors heard Johnson tell stories of his participation in the War of 1812 in which he joined the United States Navy and fought on the *Constitution* (Hussey, 1967:77). It was later noted by one of the visitors to his home, Lieutenant Charles Wilkes, that Johnson had a print of this very ship on the wall of his bedroom (Wilkes, 1974:104). In 1817, Johnson joined the North West Company and was transferred to the Hudson's Bay Company when the North West Company was absorbed into the HBC (Hussey, 1967:77). He is first mentioned in the company records as a settler of the Willamette Valley in 1837 though it is possible that he entered the area as early as 1834 (Hussey, 1967:77).

The property on which he lived matches descriptions of the properties which both Ball and Wyeth lived "near the mouth of Champoeg creek" (Hussey, 1967:77). Descriptions of the cabins design by Farnham also match the description of the cabin in which John Ball resided, "It was a hewn log structure about twenty feet square, with a

mud chimney, hearth, and fireplace" (Farnham, 1977:88). Farnham also notes that there were "fenced fields, many acres of what and oat-stubble, potato-fields, and garden-vegetables of all descriptions, and a barn well stored with the gathered harvest" (Farnham, 1977:88). This provides a more complete picture of the farm than previous descriptions.

Johnson is believed to have left the property by August of 1843 when records indicate that he had moved and was cultivating land in Portland (Hussey, 1967:78). This means Johnson occupied the site for at least 6 years making it the longest occupation to date.

Walter Pomeroy

Walter Pomeroy is credited with being a possible fourth occupant of the home though only local traditions puts him here. Pomeroy was an American man from Massachusetts who arrived in the Willamette valley in the fall of 1842 (Hussey, 1967:106). Little is known about him before his arrival in the area and record of him does not greatly improve during his occupation in Champoeg.

Through oral tradition, it is stated that Walter Pomeroy "obtained a land claim of 640 acres on the south bank of the Willamette immediately to the east of the present State park and that he soon sold or traded it to Robert Newell" (Hussey, 1967:106). We know that this description fits the description of the site and we know that Newell was the 5th occupant of the home. For what length of time Pomeroy owned the property is unknown as records on Newell indicate the property was purchased in March of 1943 but also that Newell was still occupying his Oregon city home in May of 1843 (Hussey, 1967:107).

Regardless, it seems that Walter Pomeroy only owned the property for a short period of time before trading and/or selling it to Robert Newell and moving to Oregon City.

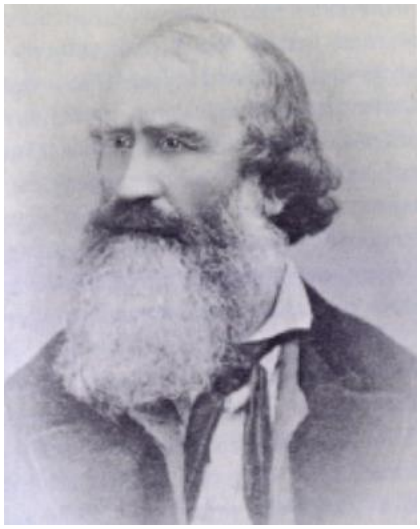

Figure 2.7 Robert Newell (Hussey, 1967:155)

Robert Newell is credited with being the last known occupant of the home, though not the last owner, and seems to be the largest contributor to the archaeological record along with his wives and children. Newell was born in Ohio in March of 1807 and received a basic education on the frontier (Hussey, 1967:192). His father died while Newell was young which led him to finding his own opportunities in Cincinnati as a saddler's apprentice as a boy and later in 1829 as a trapper in the Rocky's (Hussey, 1967:193). Newell spent the next eleven years of his life as a trapper, eventually leading his own small parties and marrying his wife Kitty, a Nez Pierce Indian, in 1834 (Hussey, 1967:193). In 1840, it is noted that Newell decided his trapping days were over as the fur trade was crumbling in the Rocky's and descriptions of Oregon and the Willamette Valley drew his attention as a place to settle (Hussey, 1967:193).

When arriving in Oregon, Newell settled two locations before settling in Champoeg, first at a location in the Tualatin Plans in 1840 and then in Oregon City in 1842 (Hussey, 1967:194). Newell promptly became involved in the Oregon Territory government which met in Champoeg and this involvement as well as the want for "a location upon a navigable stream" may have driven Newell to buying or trading his claim with Walter Pomeroy and moving to Champoeg (Hussey, 1967:195). It is noted that Newell, though not focused on farming, did participate in wheat agriculture and in growing apples as a means of supporting his family and providing them with a form of currency (Hussey, 1967:197). Instead, his main focus was on government and the laying out of half of the town of Champoeg (1844) in the hopes of being the founder of one of the future great cities of Oregon (Hussey, 1967:198).

Robert Newell was remarried in 1846 to Rebecca Newman, after the death of his original wife Kitty, who not only cared for his 5 preexisting children, but continued to have 11 more with Robert. In 1854 or slightly earlier, Newell began constructing a new home on a nearby hillside which better suited his goals of politician and outstanding citizen. His large family occupied the site until this second home was complete, sometime in 1854 and sold the old home and much of his agricultural land to Donald Manson (Hussey, 1967:206).

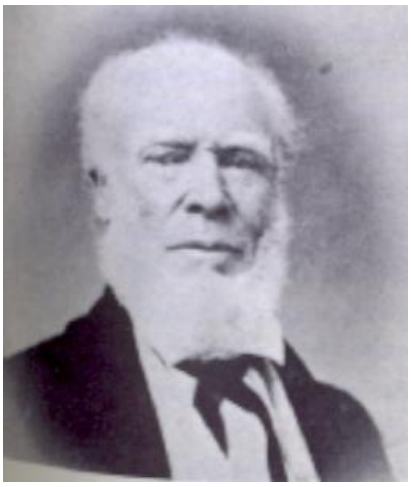

Figure 2.8 Donald Manson (Hussey, 1967:155)

The last known owner of the home, but also potentially the last occupant is Donald Manson. Manson was born in Scotland about 1798 and joined the Hudson's Bay Company in 1817 (Hussey, 1967:223). He spent his first eight years working in the Rockies before being transported to the Columbia Department in 1825 (Hussey, 1997:223). He worked in this department for 33 years, finally retiring in 1857 when it became clear that he was not eligible for further advancement in the company (Hussey, 1997:224).

Manson had become familiar with the Northwest while working for the Hudson's Bay Company and he wished to settle in the Willamette Valley at Champoeg where some of his fellow coworkers had settled. It is clear that at some point during 1857, Manson had bought the land from Robert Newell which included the house in question, but did not include the town plot which Newell had laid (Hussey, 1997:224). It is unclear whether Manson occupied the house when he moved to town or if he had a new one built on higher ground. The original home had survived the 1853 flood though it had likely been damaged. However, local tradition stated that Manson had moved into the original

home and had made many improvements to it, probably repairing flood damage, before the great 100 year flood of 1861 (Hussy, 1967:226). “His home down on the bottomland was carried away by the high waters. In consideration of this fact, Robert Newell and his wife on March 24, 1862, sold Manson for the token payment of one dollar a tract of four acres on the hillside adjoining the Scotsman’s farm” (Hussey, 1967:232).

Current interpretation of the Robert Newell home based on the archaeological record states that Manson never occupied the home as no artifacts date specifically to his occupation (Manion, 2006:98). However, this can possibly be explained by the short length of occupation as well the removal of many of the cultural material by the 1861 flood. So, while the archaeological record does not clearly support occupation by Manson and his family, it is difficult to say with certainty that he did not, as written record claims he did.

Once Manson moved to higher ground, the bottomlands were abandoned for living purposes and only used for agriculture. Even today, the park sublets the fields to local farmers who grow wheat in the area. It is fortunate that the park is willing to allow this area to maintain its historic purpose as it is the plowing of the fields which lead to the discovery of the site.

Ch. 3 Research Methods

3.1 Field Methods

As mentioned in the introduction, this site was first discovered in 1998 by Champoeg State Park Manager Dennis Wiley who identified a historical artifact scatter near, but not in the location of the historical townsite of Champoeg. The area was being used as an agricultural field by the park, as this was its historical use, and the observed artifacts had been raised by plowing. Dr. Brauner of Oregon State University, who had done previous work on the Champoeg townsite in 1990-1992, was notified of the potential site and research began immediately. It was quickly discovered from archival work and the site location that these artifacts likely represented the old Newell Farmstead dating 1843-1854.

Non-invasive subsurface testing began in the summer of 1998, when Kendall McDonald from Portland State University completed a cesium magnetometer survey on the site. This survey examined a grid measuring 114 meters long by 28 meters wide (McDonald, 1998:4). Three anomalies were identified which could represent sub-surface cultural features. With this information as well as maps of the farmstead and pedestrian survey locating concentrations of artifacts, a datum was set by the Oregon State University field school (Cromwell, Stone, Brauner, 2000:27). Soon after, in August of 1998, ground penetrating radar (GPR) was brought in by James Bell of Pacific Geophysical Surveys, inc. (Cromwell et al., 2000: 27). A grid was established based off the new datum and information provided by survey and maps, and 4 anomalies were identified, 2 of which matched those of the Cesium Magnetometer work completed by Kendall McDonald. Based on these non-intrusive sub-surface surveys, archival work, and

pedestrian survey, archaeological testing began in the summer of 1999 to verify the presence of cultural features and artifacts at the site.

Fieldwork began in 1999 by reestablishing the datum used by James Bell in 1998 for his GPR work. Five 100 by 100 foot grids were established based on the nonintrusive subsurface surveys as well as old maps of the site which contained general locations for the house and barn. Kendall McDonald was then brought back in to complete proton magnetometer surveys of these 5 grids and narrow down the focus of testing. Her results indicated 5 anomalies concentrated in Grid 1, as well as a few others in the other grids (Cromwell et al., 2000:29). Once this work was finished, a pedestrian survey was performed within all 5 grids as well as beyond in locations where surface artifacts were found to extend beyond the established area. Each surface artifact was flagged and later recorded and cataloged for future research. Based on the results of both the Proton Magnetometer work and the pedestrian survey, 6 test units labeled A-F were established. Four of these units were contained within the 100 by 100 foot Grid 1 (C-F). Unit B was placed in Grid 4 to investigate a linear anomaly and Unit A was placed in a low probability area as a control to primarily monitor sediment strata.

Test units A and C-E were each 2x1 meter units laid North to South, Unit B was never excavated, and Unit F was a 1x1 also laid North to South. Each of these units was excavated in 10cm arbitrary levels with the highest corner of the unit used as the surface elevation. Line levels were then used to measure cm below surface in each unit. Sharpened flat nosed shovels were used to remove sediment with the aid of trowels for more detailed work around artifacts and features, and all sediment removed from the units were screened through ¼ inch mesh. Recovered artifacts were recorded and placed

in level bags with the necessary provenience information recorded on each bag. These artifacts were later cleaned and cataloged.

Units E and C were both placed to test potential subsurface anomalies and both successfully recovered possible architectural remains of the Newell house. Unit F, also unearthed potential architectural remains, including large fragments of bricks and cut wood, but could not be completed because of time constraints. Overall, 364 artifacts were recovered with the most recovered from those test units located in Grid 1. Artifacts were concentrated around 48 cm of depth which was well below the sediment disturbed by farming activities, or the plow zone. These findings were also reaffirmed by those of the surface survey which also had the highest concentrations of artifacts in Grid 1. These results, showing both a rich collection of artifacts as well as intact subsurface cultural materials were just the beginning of what became a decade long excavation.

Field Map 35MA41 Magnetometer Survey Area and Anomalies, GPR Survey Areas, and Test Units

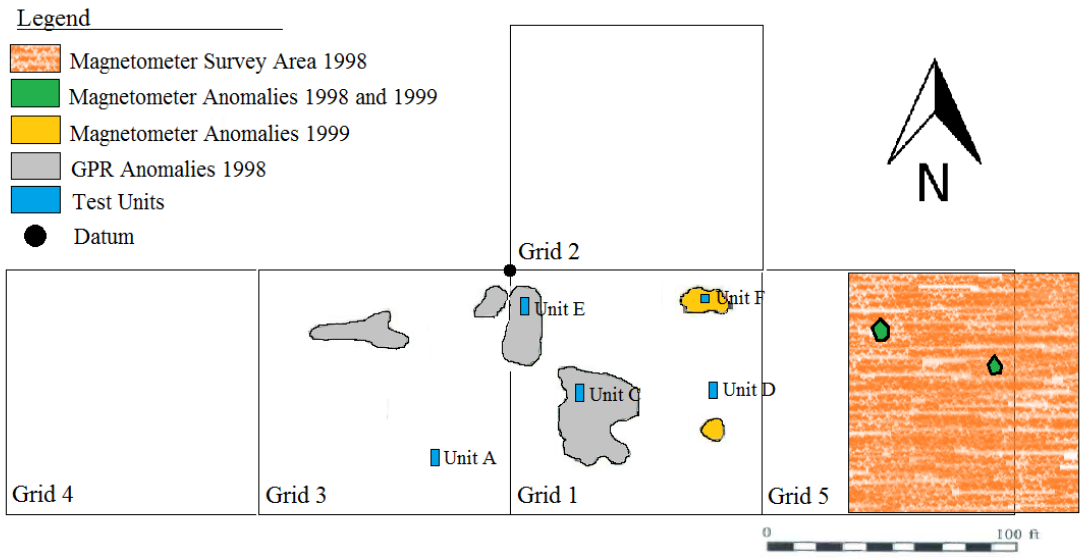

Figure 3.1 Site Map of Magnetometer and GPR testing and Test Units as adapted from the 2000 Site Report (Cromwell, Stone, Brauner, 2000:28)

After 1999, 8 more field schools were held at the site in 2000, 2002, 2003, 2009, 2011, 2012, 2013, and 2014. Excavations were continued in a manner similar to those used in the 1999 testing with a focus on Test Unit F which expanded throughout the summer seasons. In 2000, the datum was reestablished and a 30m grid laid out in preparation for block style excavations. Test unit G was laid out at this time, next to test unit F and test unit F was completed to 2 sterile levels. More testing was completed during 2002 and 2003 searching for other structures as well as continued excavations on what became the main excavation block (Test Unit F and Test Unit G). The end result was test units A through N, though unit B was never excavated. Several of these test units were eventually consumed by the overall block excavation of the site. Overall, 232 1x1m units were excavated as part of the Robert Newell farmstead excavation of which 208 of those units are contained within 1 continuous block of excavations. Each year at the end of excavations, a tarp layer was laid across the excavated floor and sediment backfilled to provide preservation for the site as well as a clear demarcation of where the site has been excavated for potential future research conducted there.

Figure 3.2 Students excavating at the Robert Newell site

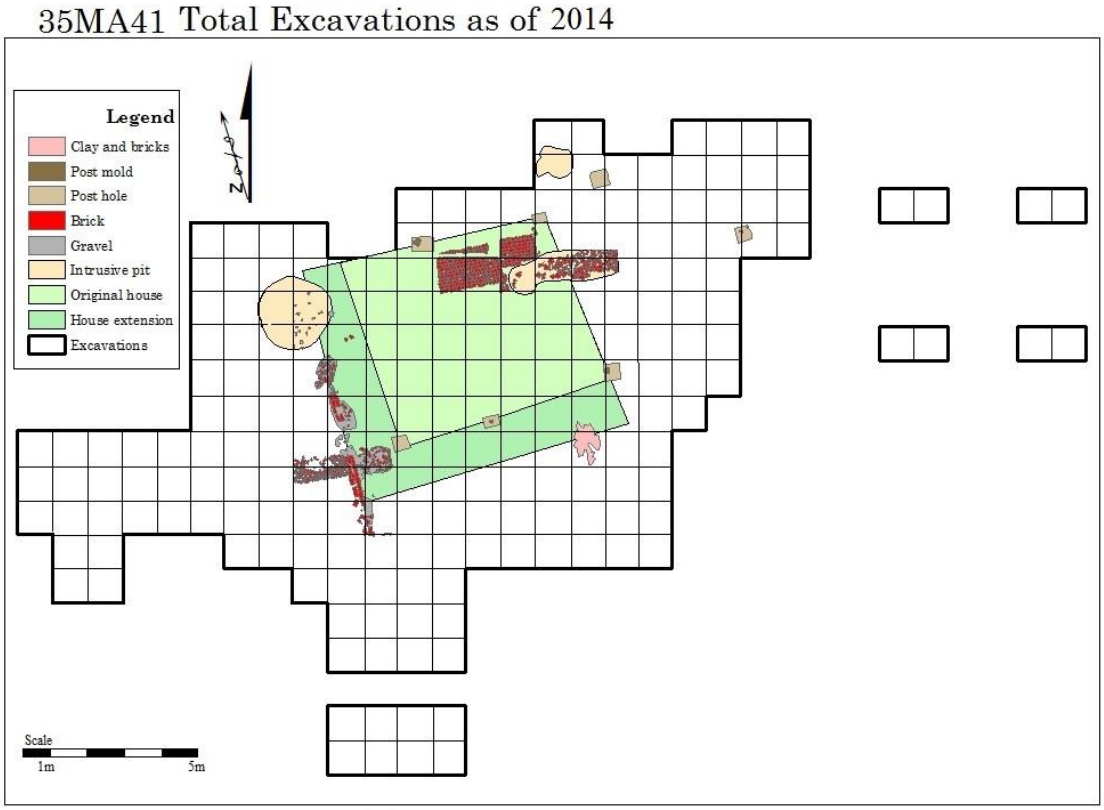

Figure 3.3 Map of complete excavations and features as adapted from Manion's 2013 excavation maps (Manion, 2014:128)

Throughout the 8 seasons of fieldwork, field methods were maintained. Units were laid out using the original 1998 datum with each unit facing true north. Each unit was excavated in 10cm arbitrary levels with artifacts primarily collected in situ and secondarily through screening. All excavated sediment was screened through ¼ inch mesh with those artifacts discovered through screening placed in level bags labeled with pertinent provenience information. Those artifacts which were collected in situ, were individually collected and placed in envelopes containing all pertinent provenience information including the x (north to south), y (east to west) and z (cm below datum) coordinates for future cataloging and mapping. All units were excavated to 2 sterile levels where possible with cultural features remaining intact. All units were photographed upon

completion of a level. Once excavations were completed in a level, all artifacts were then cleaned and labeled with an individual catalog number. The catalog number includes the site Smithsonian trinomial 35MA41, the year of the artifact recovery, and an individual number which represents how many artifacts up to that point in the season had been recovered. The number placed on the artifact can then be referenced through the catalog to recover all information associated with that artifact including location, description, date found, and who the excavators were. All of this archaeological information allows for future research on the site.

3.2 Lab Methods

All artifacts recovered from the archaeological site were brought back to Oregon State University, a certified state repository, for curation. All cataloging, cleaning, and labeling which had not been completed in the field was completed by graduate students and undergraduate lab students who continued to use the same protocol that was used in the field. All artifacts were cleaned as much as possible without damaging the durability of the items or any diagnostic details. Some artifacts then required further steps to ensure their preservation such as waxing the metal items to prevent further rusting and decay. All of these artifacts were then labeled with their unique catalog number as discussed previously. Once this had been finished, the catalog was edited for completion and accuracy.

When the catalog was initially filled out in the field, artifacts were described primarily by their physical description and not their function. This means, that within the architectural items, the initial descriptions included primarily metal, glass, and brick.

Once this initial material description had been completed, some of the artifacts received their functional description as well, but this was always secondary to the material description. The catalog description includes, catalog number, date, unit number, level (elevation), xyz coordinates for in situ find, description, comments, and excavator's names. It was then my responsibility as the researcher to not only look through these catalogs for a third time and edit them, but to also create digital copies of all the artifacts which fall into the architectural class. This not only allowed me the time to get a general sense of the collection with which I would be working, but the digital copy also allowed me to work with statistics and mapping programs while analyzing the collection.

This initial analysis of the collection through recording the information into a digital copy is not perfect as the descriptions of the artifacts can be rather basic. This means that an item may simply be listed as metal which may or may not have served an architectural purpose. Therefore, I was then required to find those artifacts in the collection and identify if their purpose was architectural or not. Beyond this simple designation though, this reanalysis allowed me to provide more details for all of the architectural artifacts.

Ch. 4 Artifact Descriptions

All artifacts which had been identified as potentially architectural artifacts were pulled from the collection to undergo further analysis. Unfortunately, over the years, small numbers of artifacts have been lost and others have degraded because of poor cleaning and preservation. This meant that most of the artifact classes had numbers which were higher than the number of artifacts that were examined by hand. This also meant that some of the artifacts which were simply labeled as metal or glass, were never confirmed as architectural or not and therefore were removed from the final architectural catalog. Only those artifacts which were confirmed as architectural or clearly labeled as an architectural item in the initial catalog were allowed to remain in the final architectural catalog. With this same level of scrutiny, only those artifacts which were examined by hand and therefore described in greater detail were included in the frequency maps below, as they are the only artifacts which the researcher knows with certainty exhibit the important traits required for dating and understanding patterns of use. Nails and window glass fall under the greatest scrutiny in this regards, though the high frequency of these artifact types and the analysis of a high majority of these artifact types has hopefully reduced any biases which this may create in their mapping.

The following sections describe in detail the architectural artifact types found at the Newell site. These descriptions include such information as numbers, unique traits, distribution maps, and potential time markers.

4.1 Nails

Nails represent 72% of the architectural artifacts. This is in part, because of the slow decay rate of metal and in part because of the nails predominance in construction.

The Robert Newell site has provided great preservation for many of the artifact classes and in particular, has provided nails well enough preserved to create a detailed description of the general nail use at the site. All of the nails in the collection were individually assessed for several characteristics as well as their identity as a nail. Those traits which were evaluated are traits which both reflect a general manufacturing date and use patterns of the nail. These traits have been identified and studied by many archaeologists in the hopes of revealing building patterns and use patterns for structures (Edwards and Wells, 1993; Nelson; Ball, 1999; Young, 1991; Adams, 2002). These traits are neatly laid out by Edward and Wells in their text *Historic Louisiana nails: aids to the dating of old buildings* as "Shape of the shaft-Taper… Shape of the shaft-crossection… Surface texture of the shaft….Neck Shape…Shape of the point…Burr…material . . . and head shape" among others (Edward and Wells, 1992:27-36). While this list of traits is very detailed and complete, the degradation of the artifacts usually limit those traits which we can really look at. Before we can discuss what specifically was done for this research, it is important to understand the history and manufacture of nails.

Nails have been in use for an unknown amount of time, popping up in historical literature and archaeology sites for thousands of years (Edward and Wells, 1993:6). Unfortunately the majority of the nails existence, until the late 18th century, is defined by the same technology throughout making it impossible to date on its own. It isn't until the invention of machine made nails and this industries advancement that we begin to see technological changes which can provide dates.

Handwrought nails were typically manufactured by individual blacksmiths and "show considerable morphological and metric variability" (Adams, 2002:67). The nails were drawn out from refined iron into a rod like shape, the shaft of the nail. The shaft was repeatedly turned and hammered creating 4 rough, sort of pitted surfaces which are indicative of handwrought nails (Wells, 1998:27). This explains why Wells included surface texture of the shaft as one of his traits. As the shaft was drawn out, all four sides begin to taper to a point, also indicative of a handwrought nail and why Wells included shape of the shaft as a trait to be recorded. The nail was then cut an appropriate length for its intended use. "Sometime before 1590, Belgians developed a way to make iron rods which were used as nail rods which could be cut into nails by a blacksmith developing a semi standardized nail (Edward and Wells, 1993:7). The shaft was then placed into a header or a type of vice which held the nail in place while the blacksmith hammered down to create the nailhead (Edward and Wells, 1993:7; Adams, 2002:67). However, not all nails were headed. "Sprigs are small, headless nails used in fine finished joinery such as mantles, base-boards and crown moldings" (Edwards and Wells, 1993:2). Many nail types existed for different purposes, even early in nail manufacturing, and it was this diversity that made it difficult to not only develop but develop efficiently, machine made nails.

The first nail machines were invented in the late eighteenth century in the United States and were nail cutting machines (Edward and Wells, 1993:9). At first, these nails were considered inferior to the handwrought nails as the manufacturing cut the iron across the grain, creating weak nails which broke along impurities and could not be clinched for purposes such as hanging windows and doors (Edward and Wells, 1993:10;

Adams, 2002:68; Nelson, 1968:3). For this reason, handwrought nails continued to be used for clinching purposes in particular. However, by 1830, a new process of rolling the iron and cutting the nails was developed so that the nails were now cult along the grain providing a stronger nails and the ability to clinch (Edward and Wells, 1993:12). This change from cutting across the grain to cutting along the grain does provide a dating marker for machine cut nails though the early machine cut nails are rarely found in sites in the Northwest. There was also a transition from handwrought heads to machine cut heads during this thirty year period in which machines were made to replicate techniques which were originally used by blacksmiths. Many of the more specialized T and L shaped heads took longer to manufacture by machine than the more simple square head. For this reason, some nails have a machine made shaft and a handwrought head which date to an earlier period than the completely machine made nails.

Once the machine made nail was perfected, so was a standard system of measurement. Early on, a general system which used price and weight was established and provided a semi-standard system but variations occurred as nails were produced by individual blacksmiths and not large corporations which used standard tools or machinery. “Under this pricing system, eight penny (or eight pence) nails referred to the price per 1000 nails and corresponded roughly to the length of the nails” (Young 1991:7). This old system was then used to produce the machine cut nails where the machine regulates the nails and creates a standard system. The system does not still hold to its original standards of weight or price, although we still refer to them by penny size, but instead standard lengths are used. Beyond being standardized, the nails also began to take on a unique shape because of the way they were cut. Large sheets of iron were rolled out

in order for the nails to be cut out, somewhat like using a cookie cutter, producing two parallel sides which are a straight rectangle shape with no tapering, and two parallel sides which are tapered to create the point of the nail (Edward and Wells, 1993:13). This unique shape differentiates the cut nail from the earlier handwrought nail and once again highlights the importance of the shape of the shaft. The rolling and cutting technique also created very smooth surfaces, very different from the pitted surfaces of the handwrought nail.

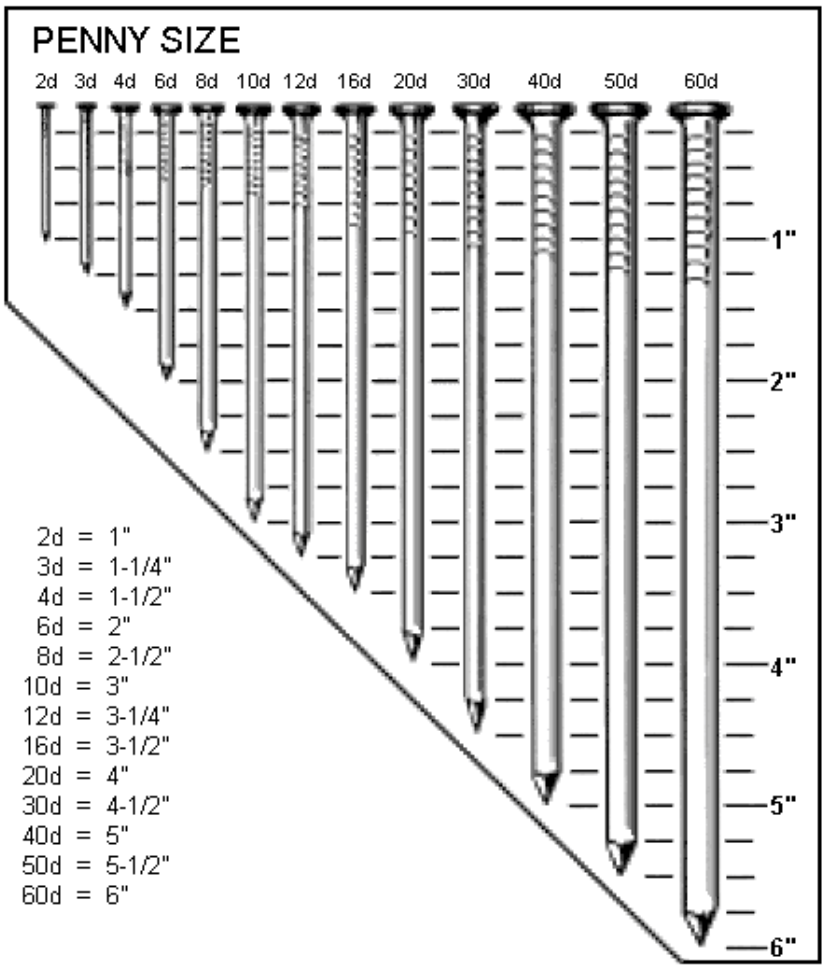

Figure 4.1 Standardized measurement size for nails measured in pennies (d) (How many nails per pound?)

Ca.1815 is the general date used by archaeologist for the introduction of the machine cut nail, but it is important to recognize that "the exact amount of time lag for durable goods will vary according to access to transportation networks, time period, wealth, and idiosyncrasy" and is likely later for the Pacific Northwest (Adams, 2002:66; Nelson, 1968). It is also important to note that, "While the transition from wrought nails to machine-made nails in the United States was in the 1820-1840 period, in Great Britain the transition came later, in the 1840-1860 period, apparently due to nail making trade unions' antimachinery policies" and that in areas influenced by British trade, it is possible that the machine cut nail wasn't introduced until this later period (Adams, 2002:70; Ross, 1980:1). This is important for the Willamette Valley and particularly Champoeg, as many of the founding settlers were Hudson's Bay Company men, a British entity. It is likely that Machine cut nails were not introduced to Champoeg until the early 1840s when the first group crossed the Oregon Trail in 1843 to the Willamette and began to establish homes and businesses. "In 1844, according to his own account, Francis W. Pettygrove, a merchant of Oregon City and one of the founders of Portland, built a granary and warehouse, the first in the place, at Champoic [sic]. This establishment, Pettygrove boasted, was a great thorn in the flesh of the Hudson's Bay Company, since it captured a large portion of the Catholic Mission trade." (Hussey, 1967:198). Previous to these instances, the Hudson's Bay Company would have provided most of the goods in the area and because their goods were brought from Britain, the machine cut nail would only have recently made its appearance. This transition is possibly seen in the construction of two HBC buildings in Champoeg, a grain warehouse built circa 1842 and clerk's house in 1843 (Brauner, 1987:15). The materials used to construct these structures were examined

during a salvage project at the park including what type of nails were used for each. It was found that the warehouse was constructed with handwrought nails, while the clerk's house, built only a year later, was constructed with machine cut nails (Brauner, 1987:16). This evidence, along with the historical records that detail nail production support the date of 1843 as the year machine cut nails were introduced to Champoeg.

The machine cut nail was used throughout the century and is still made today by specialty shops in the same manner as in the 19th century, but slowly a new type of nail, the wire nail, also commonly referred to as a modern nail, began to consume the market. Ironically, this nail was created within a couple decades of the machine cut nail but took much longer to infiltrate the market. "France issued patents for wire nails in 1806. Wire nails were first produced in France in 1819, according to Charles Fremont, much earlier than the early 1850s usually ascribed in the archaeological literature… Thus, one might expect that in French-settled portions of America, like Louisiana and Quebec, wire nails might be found in small quantities from 1819 onward. Similary [sic], neighboring areas supplied by those French areas would also have earlier access" (Adams, 2002:69). It is possible that some of these early nails made it to Champoeg with the French settlers but unlikely as most of them had worked for the Hudson's Bay Company for years previous to settlement and had only been supplied by British outfitters. Once the wire nail had been developed in France, patents began to appear in Britain in the 1850s and eventually the United States, but the nails were considered to be weak and easily removed (Adams, 2002:69). The narrow, round shaft of the wire nail provided less grip in the wood and while square nails became better affixed when the wood swelled from moisture, the wire nails would commonly begin to push out. However, in 1855 when Bessemer Steel was

developed, it wasn't long before wire nails began to be made of the material making them stronger, lighter, and cheaper (Edward and Wells, 1993:13). Once this transition occurred, it wasn't long before wire nails became the preferred nail. "From ca. 1851 to 1883, wire nails may begin to accumulate in sites in small numbers, but were probably not used in building structures simply because so few were produced. Structures built in the United States before 1883 were built entirely, or almost entirely, of machine cut nails or earlier types. On the other hand, structures built after about 1987 were most likely built using wire nails" (Adams, 2002:70).

Only a small number of wire nails were found at the site as the transition to wire nails occurred after the occupation of the site, but the few that we do find are easy to identify. Wire nails have a rounded shaft, unlike the square shaft of the machine cut and handwrought nails. The head of the nail is circular, rather than square and the point of the nail is sharp and prominent where the points of the machine cut nails and most of the handmade nails are dull. It is likely that most of these wire nails were not used for construction but a map of the artifacts may tell us more.

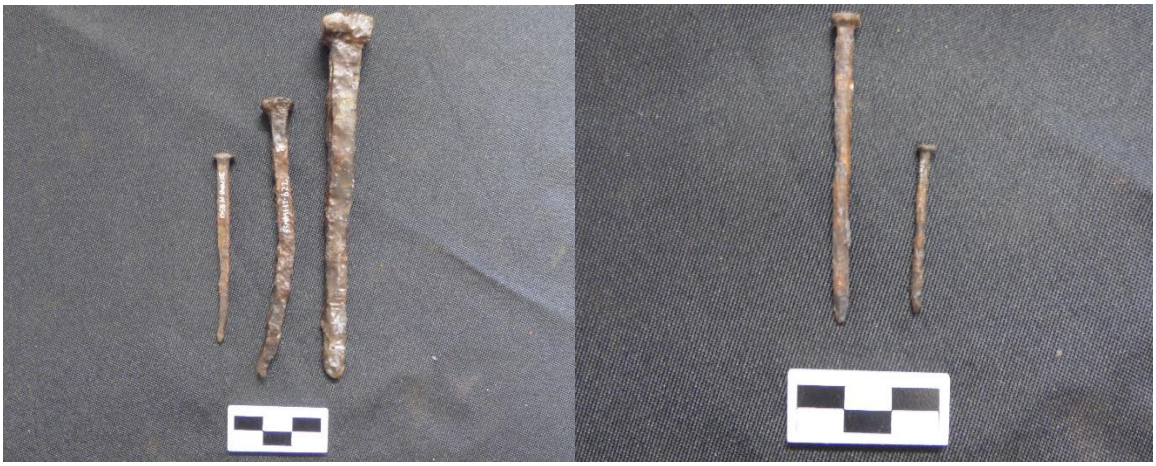

Figure 4.2 Handwrought nails (left); wire nails (right)

Figure 4.3 Machine cut square nails from site, left to right 60d, 40d, 30d, 20d, 16d, 12d, 10d, 9d, 8d, 7d, 6d, 5d, 4d, 3d, 2d

Once we understand the manufacture of nails and its timeline, we can begin to examine those traits which provide us with important information. Several traits of the Newell site nails were evaluated with Edward and Wells characteristics in mind, as well as similar characteristics laid out by other archaeologists (Edward and Wells, 1992:27; Nelson, 1968:8). The first trait to be evaluated was the manufacture of the nail. This broke the nails into three classes, handwrought, machine cut, and wire nails. When evaluating this trait, the taper of the shaft, the texture of the shaft, and the shape of the shafts cross-section was taken into account. The next trait to be recorded was the head of the nail. This included, first if the nail had a head, and second the shape of the head

including square, circular, rosehead, and L heads. It was also noted in this section that the head was handwrought if the shaft was machine cut, otherwise it is assumed that the head manufacture matches the shaft manufacture. The third characteristic was the condition of the nail as pulled, clinched, or unaltered (straight). These classes give us an indication of what the nail may have been used for or if the nail was pulled for secondary use. Lastly, the size of those nails which were complete were recorded using the standardized penny size. This meant that the length of the nail was measured to determine the penny size and not the weight of the nail as the weight is no longer a valid measurement as discussed before. Only those nails with heads were recorded for size, because although complete nails without heads do exist, it was impossible to distinguish which nails were meant to have no head and which of those had lost theirs. Now that this information has been recorded, the nails can be mapped according to such traits as their manufacture type, shape, and size. As Nelson notes, once the different manufacture classes are mapped, "they can be a good indication that (1) the building was built entirely at a given time, or (2) the building has been subjected to additions, alterations, or simple maintenance measures." (Nelson, 1968:1). Young also believes that the nails can provide information about the "1) construction and use; 2) repair; 3) remodeling (and modernizing) and/or redefined use; 4) abandonment and deterioration; and 5) destruction" of the dwelling, particularly by noting the shape and size of the nails (Young, 1991:5).

Figure 4.4 Clinched (left) and pulled (right) nails

Young has done studies which indicate that nail collections from homesteads look different from that of disposal sites based on the frequency of the shapes of the nails, and that certain types of construction can be identified by the numbers of different nail sizes in the collection (Young, 1991). The models which she have created are not perfect, but they begin to look beyond the general information which nails can provide. Thankfully, based on documentation, we know the Newell site was a homestead which was expanded upon and likely remodeled and not a disposal site. However, the frequency of pulled and clinched nails may give us some indication of how much work was done on the home. Young believes that a higher frequency of pulled and clinched nails indicates a disposal site because the nails were removed, while a high frequency of unaltered nails indicates the building of a site as well as the natural deterioration of the wood (Young, 1991:19). Perhaps the Newell house survived the flood better than we expected and the high

frequency of straight nails and clinched nails may indicate that much of the wood rotted in place.

Young also believed penny size could provide information about the construction of the house, even determine what type of construction was used based on frequency of nail type, but this runs into several problems. The first is that no pattern exists for the French style of Post in Ground construction and that if the style was completed with a tied down roof and likely no windows and a simple door like Ball described it, then no nails were needed in the original construction (Ball 1925:95). Second, we know that the house underwent additions and possible remodeling throughout its life and as it is unlikely that these remodels were done in the same construction style, no pattern could be identified. Remodeling would also increase the number of nails found at the site though all of these nails were never all part of the structure at any one time. We also have to consider those nails which were not part of the construction of the house. Ball refers to these nails as "static" nails and notes "Throughout the years, this reader has visited a number of both log cabins and 'plain folks' frame homes (both long abandoned and still occupied) which… readily displayed 100, or 200, or less or more nails at odd places on walls, mantles, door frames, and rafters used to store/hang clothes, belts, hats, canes, shotguns, dried string beans and peppers, farm equipment, and a myriad of other household related items." (Ball, 1999:4). This points to another problem in that nails are not always used for their intended purpose. Builders guides and pamphlets were often printed with suggested nail types and sizes for specific jobs such as flooring, siding, roofing, etc. but just as is common today, whatever nails were around were used and often less in number than asked for because of frugality. Unfortunately, there is only so

much that can be done in order to remove these biases. Ironically, nail size can help to remove some.

It is important to understand what the different penny sizes and head types were used for, ideally, as this can clear up which nails were likely used for construction and which were used for things like furniture and decorations. “Sprigs are small, headless nails used in fine finished joinery such as mantles, base-boards and crown moldings. Brads are small tapered nails with very small heads or with short l-shaped projections which function as heads. They are used in finishing work such as flooring, where the nail heads are driven into the surface of the wood. All headed nails, including spikes, are Common nails. Their heads project from the shaft on all sides… Spikes are 20 penny or larger (at least four inches long, according to today’s standard)” (Edwards and Wells, 1993:2). We know from analysis that both L shaped heads and standard square headed nails are found at the site as well as tacks, nails sized 2d (2 penny) to 20d and larger. While many of the nails do not have heads, it is difficult to say which are intentional, and so while it is likely that sprigs exist at the site, it is near impossible to identify them. For common nails, those which are machine cut with a square head, Young has developed a system which notes what the primary uses of each size was or their common uses in construction: “4d roofing; 6d light framing; 8d siding, trimming, and light framing; 10d flooring; 10d+ heavy framing” (Young, 1991:32). This gives us a general sense of what nail sizes we would expect and with what frequency. The 8d nail is by far the most versatile and therefore expected in the largest numbers. What we don’t see included in this system are smaller nails such as tacks, finishing nails and 2d nails. This is likely because these nails were not large enough to provide use in construction and were often

incorporate in such things as furniture, wooden chests and boxes and other non-structural items (LeFever, 2008:63). Knowing this, it is possible to eliminate these smaller nails from the collection. It is also likely that the modern wire nails can also be eliminated from the collection for similar reasons, but we will know with more certainty once the wire nails have been mapped if they are structural or not.

6,672 nails, of the 8,371 nails recorded at the site were reexamined and characterized for this study. These 6,672 nails were simply those nails which were found available in the collection and had not disintegrated with time or lost their catalog numbers over years of handling. Of these 6,672 nails, 41 (.006%) were handwrought, 6,598 (98.88%) were machine cute, and 33 (.005%) were modern wire nails. These numbers confirm that most of the improvements, using nails, occurred in the later occupations of the site, likely in the 1840s when machine cut nails would have been available through local merchants and trade. Of these 6,673 nails, 6 were L heads (1 handwrought), 4 were roseheads (all handwrought nails), 4,571 were square heads (32 handwrought and 2 hand applied), and 2,062 (4 handwrought) had no heads and were described as shanks. This tells us only a little about the actual use of the nails. We know that L head nails were typically used for joint work and floorboards but as only 6 were found in the collection, it is likely that square nails were used for many of these purposes. Square nails represent 69% of the nails characterized, with the second largest number being shanks. Square nails were not only the easiest to produce and the first to be produced by machines, but they would also have been the cheapest and most widely available and therefore the preferred nail at the site. Looking at the shape of these nails, 366 (5%) of the nails were pulled and 271 (4%) clinched. These are very low numbers

when looking at the number of nails found at the site and according to Young, this would indicate that the site was a building site and not a dump site, which we also know from the records and overall site archaeology. This also indicates that clinched nails were only used for a small number of tasks though it is possible that this number is biased as most clinched nails would have been carried away with the structure of the home. The pulled nails on the other hand represent nails which have been removed and based on the small number found at the site, it can be said that very little deconstruction of the house was done when adding to the home. This confirms that construction focused on adding to the structure and not deconstructing or rebuilding of the existing structure.

	Head Type					
Manufacture Type (column)	Square	L-head	Rosehead	Circular	Shank	Total
Handwrought	32	1	4	0	4	**41**
Machine Cut	4539 (2 hand applied)	5	0	0	2054	**6598**
Wire	0	0	0	29	4	**33**
Total	**4571**	**6**	**4**	**29**	**2062**	**6672**

Table 4.1 Nail Manufacture and head type counts

The distribution of the nails can also add to our understanding of how the nails were used. We expect that nails were used in additions to the structure as well as adding siding and possibly a roof to the home. This would require a large number of nails that would be seen around the exterior of the home. Looking at the distributions in a

frequency map, it can be seen that this expectation is somewhat met, but that overall the entire site can be characterized by a high number of nails (Figure 4.1.4). The frequency of the nails is more easily evaluated when a scale is applied to the nail frequencies (Figure 4.1.5). A low nail count, below 20 nails, were found particularly within the boundaries of what was once the original house structure. This reflects the original construction of the log cabin in a style that did not utilize nails. There is also an area in the northeast section of the excavation which also has a low frequency of nails which may reflect an outbuilding previously unidentified but a more in-depth analysis of the artifacts found there and possibly further excavations north of the location would need to be completed to confirm this. Most of the excavation area has a moderate frequency of between 21 and 50 nails. These areas reflect a working yard and the use of thousands of nails in construction. A few areas have a higher frequency of nails between 51 and 100. This frequency is concentrated more in the southwest section of the excavation and may reflect an area associated with a workshop or storage building. We also find in this area, a few units which contain an even higher frequency of nails, between 101 and 200. The only other place we see this same frequency is in the unit associated with what was believed to be a small storage space within the house. Finally, we see very high frequencies of nails, above 200, in the area of the well. These high frequencies likely reflect the dumping period in the late 1860s when what remained of the house and any outbuildings were leveled and much of the remaining material used to fill the deep well. The wood decayed, leaving the many nails that once held together the structure in these two units. Overall, the nail frequencies do not provide much new information but help to support what was already hypothesized. It is possible, based on the nail distribution, that

a new outbuilding has been identified in the northeast section of the excavation. However, this can merely be hypothesized for future study. The frequencies do support however that the additions and changes made to the original structure were focused on the exterior of the original structure as seen by the low frequencies within the structure. The frequencies also help to identify the structure in the southwest section of the excavation as a possible work area and storage space for the farm. Unfortunately, with the low frequency of handwrought and specialized nails, or those with unique head types, mapping their placement does not provide information that other sites with higher frequencies might provide such as preference for use.

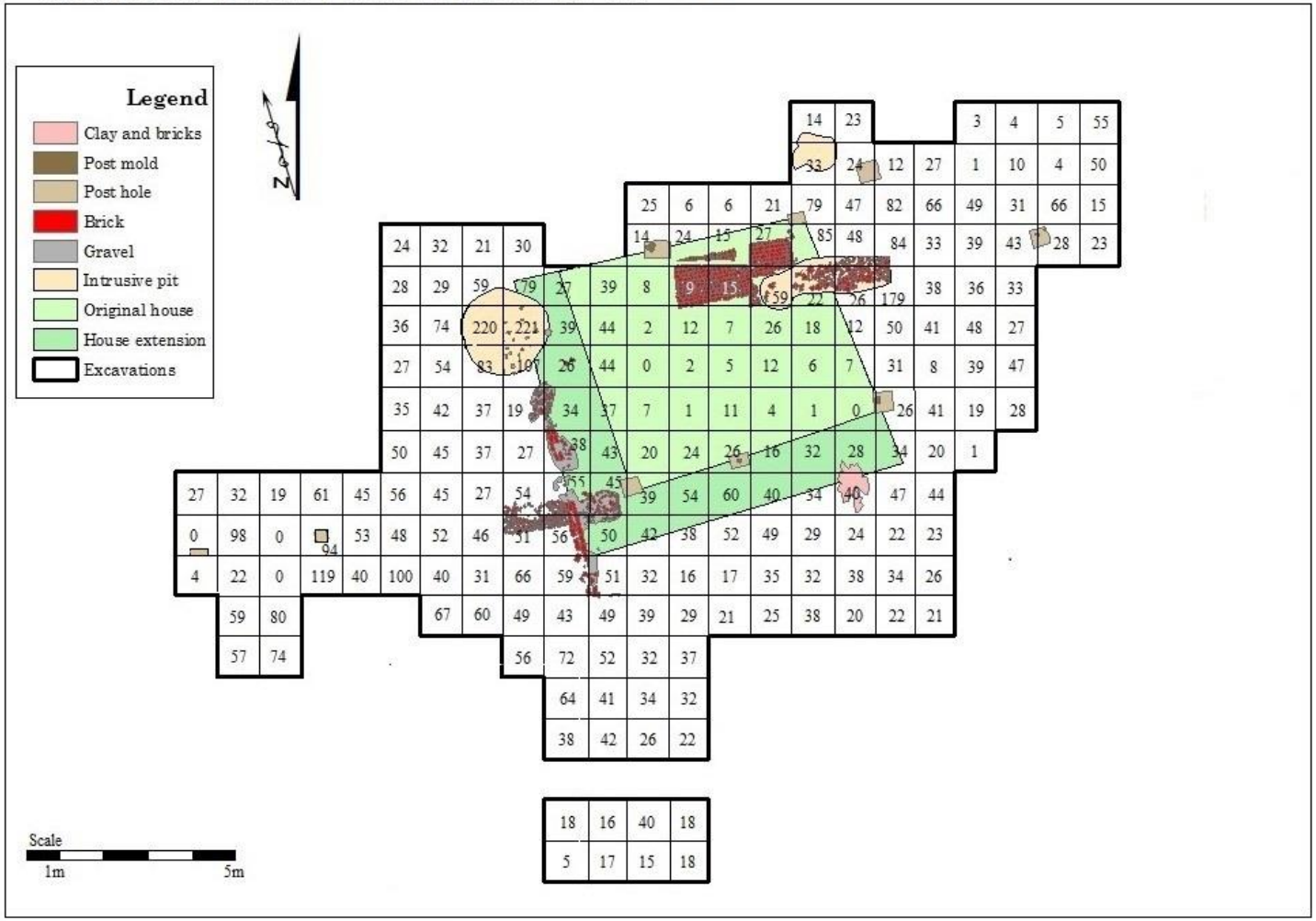

Figure 4.5 Nail Frequency in each 1x1m unit

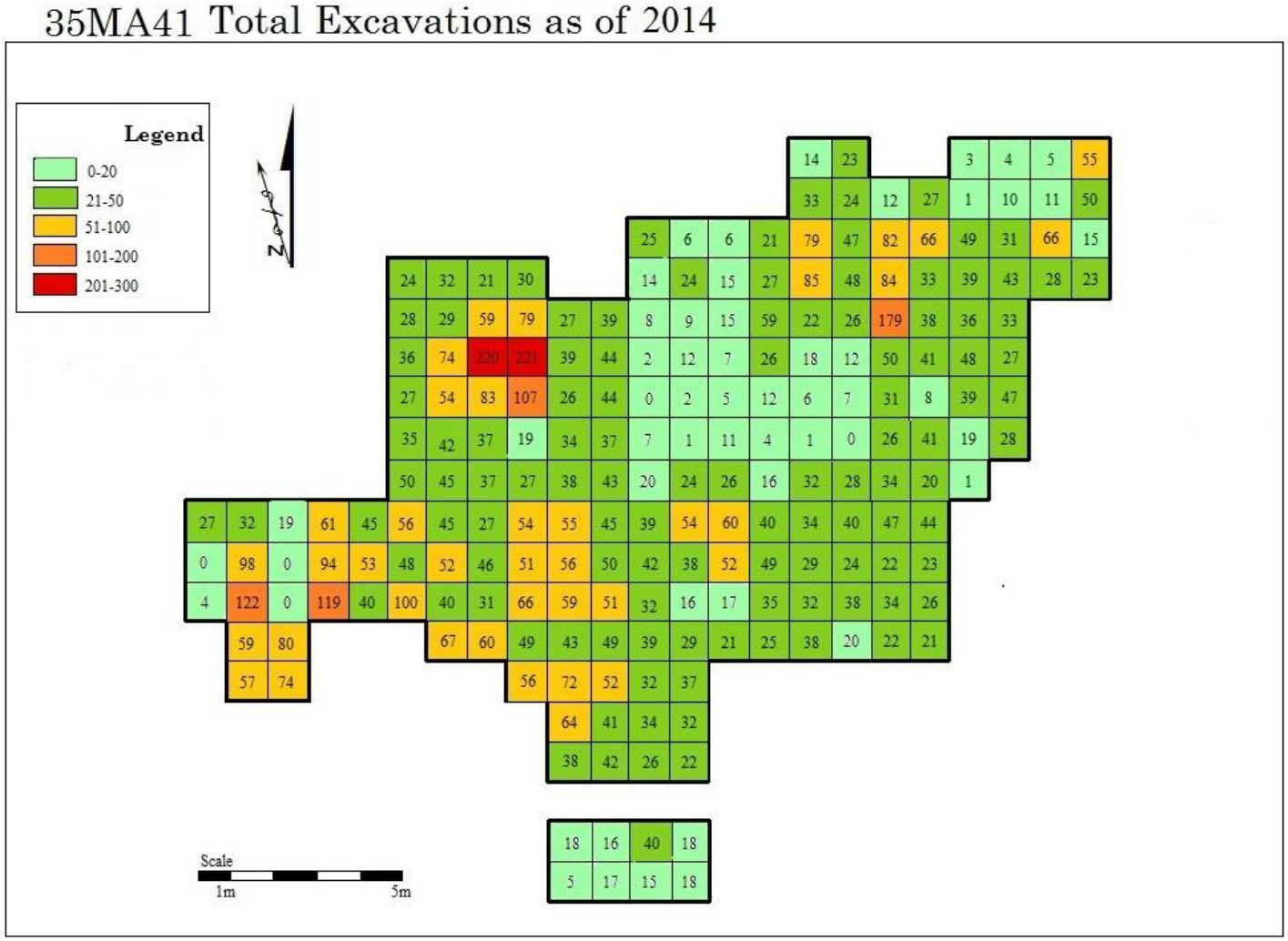

Figure 4.6 Nail frequency with color coded scale

4.2 Bricks

Bricks represent the second largest, if not the first largest group of artifacts at the site. Unfortunately, brick is an underappreciated artifact, similar to nails, which is found at many historical sites but largely left unrecorded. In the case of Champoeg, those bricks which are in the features are loosely recorded and those bricks which were near complete or had markings of interest on them were recorded, but those bricks which did not fall into these categories were largely ignored and no final brick count for the site was ever completed. This was done in part because of the large number of bricks and broken bricks at the site, and in part because not much information is typically gleaned from this artifact type. Some archaeologists have attempted to change this and bricks are more and more an artifact of greater interest, but they are still not as cherished as ceramics or even nails which can often provide better dates for a site and a greater breadth of information. However, looking at both the history of bricks as a building material and its introduction into the Willamette Valley, we can draw some conclusions about the structure and occupants who utilized bricks as a structural material.

Brick arrived in the Northwest as early as 1791-2 as part of large European exploration and supply ships and were eventually a part of the regular supply ships going to Fort Vancouver from Britain (Gurcke, 1987:40-41). This means that the first bricks in the Northwest were not local. The exact time in which local bricks began to be produced is unknown but it was likely sometime before 1841 as written accounts like Charles Wilkes, observed brick kilns in the area and by 1842 or 1843, the first brick house was built by a man named George Gay (Gurcke, 1987:41). Oregon city boasted the first brick

store in 1844 and the St. Paul Catholic Church was built of bricks in 1846 (Gurcke 1987:42; Converse, 2002:42) Eventually, brick making became a lucrative business in the Willamette Valley and brickyards begin to sprout up in all the major towns. The first brickyard was built in Oregon City in 1845 and many more followed in Portland, Salem, and many of the smaller towns (Converse, 2002:73).

Before many of these larger brickyards begin to develop and supply tens of thousands of bricks each year to the Willamette Valley and nearby regions however, smaller, temporary brick kilns were responsible for many of the early brick structures in the area. W. Walters states, "the use of homemade bricks burned at the site of an early dwelling have frequently been pointed to with curiosity by historians, but the oddity would have been for those bricks to have been manufactured at some other location before the development of a nearby railroad line. The builder's problem was weight" (Walters, 1982:125). The early Willamette Valley had little in the ways of transportation except for the rivers and streams making transportation difficult, particularly for a heavy product like bricks. It made more sense instead for the early brickmaker to travel from build site to build site making temporary kilns (Converse, 2002:46). It is unknown how the bricks arrived at the Newell homestead though evidence for a nearby kiln, on the property may be the answer. In a quick description of the town, Hussey notes "From scattered fragments of information, however, it is clear that by 1860 the place presented quite a developed appearance. By 1857, and probably at least as early as 1852, the village boasted a schoolhouse. Out in Newell's field near a slough of Mission Creek was a brickyard." (Hussey, 1987:215) Newell was a man of many trades, always looking for a means of profit, and it likely that this brickyard was one of his many trades. It is also

possible however that Newell had some of the bricks shipped to Champoeg via boat as "the first boat that ever navigated Willamette River above the falls was built by Dr.Newell; a keelboat, in 1845. It ran from Oregon City to Champoeg, the principal town above Oregon City." (Hussey, 1967:202) We know that Oregon City had just completed its first brickyard in the same year and Newell may have profited from shipping bricks to Champoeg though weight would be a problem, and it is also possible that it wasn't as profitable to ship bricks as other, lighter items for sale. Another possibility is that Newell scavenged the bricks from a local build site, the St.Paul church which was not only close to Champoeg but was also the first brick building in the Willamette Valley. Inevitably, extra bricks as well as fragmented bricks were likely left over from the construction of the church and it is possible Newell scavenged these extra bricks for use in his home. It is difficult to say precisely where the bricks at the Newell site were made, but the late date of brick production in the Willamette makes it likely that Newell was responsible for the brick at the site, and it is possible to say more once we look at how these bricks were made.

Brickyards have existed in Europe for some time before settlement of the America's and therefore it is possible that brickmaking begin as soon as settlement did. As long as the minimal materials were available, bricks could be made by a settler with the knowledge to. "There are five basic steps in making a brick: 1. Mining-frequently called "winning"; 2. Preparation: 3. Molding-sometimes referred to as "forming"; 4. Drying; 5. Firing-frequently referred to as "burning". A sixth step may be added which includes the grading or sorting of the finished product prior to sale." (Gurcke, 1987:4). First the clay which forms the brick must be collected. There are four types of clays of

which “river-deposited or alluvial clays (fluviatile), which are formed either by floods or by the settling out of sediments, as in the bend or a river where the speed of the water is reduced” is one (Gurcke, 1987:3). This is the most likely deposit found in the Willamette Valley, particularly around Champoeg which is in the floodplain of the Willamette. Once the clay has been collected, it undergoes the process of weathering in which it is left exposed to the elements throughout the winter allowing for the breakdown of harder lumps of clay (Gurcke, 1987:7). Once this step has been completed preparation begins. First the clay is pushed through screens or the larger materials such as rocks are simply removed by hand. “Early brickmakers tolerate more stones in their clay than would later be the case because screening was both slow and expensive. These stones would often expand or explode when heated to create the small cavities” (Walters, 1982:126). The clay is then tempered, a process in which other materials are added to the clay to create the appropriate consistency and color (Gurcke, 1987:7). This often includes adding or reducing the amount of water in the clay. This process is commonly completed by machinery in brickyards, the earliest machine being the Pug-mill, an animal powered stirring mechanism. Once this is complete, the clay is brought to the molder. The molder sits at a table near the pug mill with his clay, water, sand, molds, and a striker. Molds are commonly a simple wooden box without a top or bottom, but they can also have handles, metal sides, and multiple holes in a more complex operation (Gurcke, 1987:15). The molder grabs a chunk of clay which he knows to be the relative size of the mold from repeated practice, loosely shapes it and then throws it into the mold with enough force to fill most of the empty spaces. He then massages the clay into the remaining spaces, such as corners, before striking the excess clay from the top with his striker. “As the blade was

pushed across the struck surface it tended to cut through the clay, leaving small gouges rather than small parallel lines" (Gurcke, 1987:103). The molds are sometimes lubricated with water or sand before placing the clay to allow for easier removal later on, leaving evidence on the completed brick. "Sand gives the brick a rough granular texture on all sides except the struck one…Water, in contrast, often leaves small ripples or 'water marks' on the bottom and sides of the brick" (Gurcke, 1987:103-106). Then the bricks are removed from the molds and laid out to dry. In situations where the kilns were temporary and located at the build site, the bricks were simply laid in the yard and "accidental impression-animal tracks, fingerprints, and the ubiquitous human graffiti" were common (Gurcke, 1987:124). It typically took 2-3 weeks for the bricks to dry to the point that they were ready to be fired, though the weather was a big factor in this drying period and so temporary kilns and building was most commonly done in the warm spring and summer months (Gurcke, 1987:26). Once the bricks are dried, they are placed in the kiln. However, temporary kilns, also known as scove or field kilns, were made of the green bricks being fired themselves (Gurcke, 1987:29). "The inefficient up-draft kilns produced bricks in a wide assortment of colors, sizes, and shapes from the same burn, without a deliberate attempt by the brickmaker to make bricks in that variety. Even the most efficient tunnel kilns produced some variation, which necessitated the final step, sorting and grading of the product." (Gurcke, 1987:35) In the case of a kiln on site though, this variation in color was expected and while sorting could create a firebox or a hearth of generally one color, all of the bricks were used regardless, creating a mosaic of colors in many homes. Not all bricks survived the firing either and are called culls because they are

typically culled from the production run in large brickyards, but what becomes of them in temporary kilns (Gurcke, 1987:103)?

Figure 4.7 Top of Brick showing striations created during striking

Figure 4.8 Bottom of brick showing remnants of the sand used during striking

Looking at the bricks recovered from the Newell site, we can draw some conclusions based on what we know of brick production. First, those bricks which are nearly complete measure 4”x8”x2”. “Bricks come in a tremendous number of sizes, and

quite a few different shapes too. The reason for these variations vary themselves, and often they are not very clear." (Gurcke, 1987:116) Size depends on the mold, shrinking or expansion during drying and firing, the handling of the bricks, and placement in the kiln (Gurcke, 1987:116) Based on this knowledge, we can estimate that the mold was likely similar in size and measured to 4"x8"x2". We also know that the bricks were sand struck based on the textures of the 5 unstruck sides of the brick. "A typical nineteenth century hand-molded brick is known as a 5:1 brick because five sides are identical and the sixth has distinctly different markings" (Walters, 1982:128). It is difficult to say if this indicates bricks from different manufacturers or simply two different brick molders with different preferences but at the same site. If two of the features are of different periods, like the brick foundation and brick path as discussed later, it is possible these represent two different building periods. We also can support the idea of a temporary kiln at, or near the build site based on the marks found on the bricks such as leaves, chicken feet, dog or cat paws, and fingerprints from the brick makers. Lastly, we can say some things about the brick firing. The variation in color indicates that the kiln was likely temporary or at least primitive and that the bricks were not bought from a large brickyard where a sorting process would have reduced the variation. We also know that some of the bricks had inclusions or air bubbles which created breaking during the firing process. This is an indication of poor screening and tempering, a common case of early brickmaking and minimal tools at hand. As noted previously, these bricks would be removed from production in the case of a large brickyard, but in the case of a temporary kiln located at the build site, what would happen to these bricks? It is possible that they were utilized. Bricks were very expensive, particularly early in the Willamette Valley and if time or

money were running short, a second batch of bricks would not be possible. It could then be said that Newell used these cull bricks for his hearth which we see today as a mosaic of multi colored broken bricks. This supports the likelihood that the kilns, noted on his property by historical accounts, are responsible for the bricks found in the hearth and foundation and that Newell strategically used the bricks based on their hardness and completion for different features around the home.

Figure 4.9 Fragments of brick showing variation in color found in the site caused by inconsistent kiln temperatures, common with temporary kilns

Beyond looking only at the obvious physical traits of the bricks, new methods with the use of technology can help to provide more information about the origin of the bricks. Kristin Converse completed her thesis looking at the elemental composition of

bricks from around the Willamette Valley, one of which was from the hearth located at the Newell site, in an attempt to pair them with 50 different clay sources from Western Oregon and 17 samples from Washington (Converse, 2002). The elemental analysis for both the bricks and the clay sources were evaluated using Instrumental Neutron Activation Analysis (INAA). Kristin explains the process as follows:

> "To determine an archaeological samples elemental composition utilizing INAA, the sample is first irradiated in a nuclear reactor. In the reactor, the sample is bombarded with neutrons, which collide with and are captured by the nuclei of elements present in the sample, creating a series of radioactive isotopes. The resultant radioactive nuclei decay by emitting alpha, beta, and/or gamma particles in order to return to a more stable state. This decay can be monitored by a high purity germanium detector that counts the quantity and measures the energy intensity of the particles emitted by nuclei. The particles from various elements can be differentiated because each element's rate of decay, or half-life, is unique and well-known, and because each element's radioactive decay has a characteristic energy signal" (Converse, 2002:107).

Converse found that the 50 clay sources which she had collected from Oregon could be categorized into 4 general clay sources, the Portland Basin clay, the Tualatin Basin clay, the Northern Willamette Valley clay, and the Southern Willamette Valley clay (Converse, 2002:155). These four groups are the result of geomorphological processes in the region which create large areas of nearly homogenous clay. Converse then compared the elemental composition of each brick with those of the clay sources and found that "the historical brick recovered from the Newell homestead clustered with the clays from Champoeg" (Converse, 2002:168). This supports the idea that the bricks from the Newell site were produced in the kilns located on Newell's property. However, only one brick was tested from the site and it is possible that some of the bricks were bought from other locations, particularly those which are not part of the firebox feature where the

brick was sampled from. More testing would need to be completed before it could be said for certain that the bricks are all from the Champoeg location.

4.3 Window Glass

Window Glass is the third largest artifact type in the architectural category and represents 10% of the architectural artifacts. This number is relatively small for the amount of excavation completed and the long occupation of the site, likely meaning that window glass was a late addition to the structure. We can say this for more certainty once we look at the manufacturing used for the window glass and the thickness of the glass.

The first type of window glass was crown glass developed at early as the 4th century AD (Roenke, 1978:5). The glass was blown through a multi-step process which was used and perfected by the English until the mid-19th century when other methods began to become more prominent. The glass had a slight rippled appearance to it, which created some distortion, and could only be produced in limited sizes (Roenke, 1978:6). The second type of window glass was cylinder glass which was also a blown glass style but utilized the flat bed of an oven (Roenke, 1978:6). This process, developed as early as 2700-2600 BC, and was more popular in Europe and not readily replaced by Crown glass as in England (Roenke, 1978:7). The cylinder glass could be produced in much larger panes than the Crown glass but it was less brilliant from exposure to multiple surfaces and commonly included air bubbles and other imperfections (Roenke, 1978:7). The third type of window glass, most common in the United States, was plate glass. This process was developed in 1688 by either an Italian born glassmaker, Bernard Perrot, or a French glass manufacturer, Abram Thevart (Roenke, 1978:9). In this process, molten glass was poured onto a heavy metal table called a casting table where large metal roller would roll

out the glass to a consistent thickness as set by raised flange (Roenke, 1978:9). The glass was dull when hardened and referred to as “rough plate” which was sold for some purposes like skylights, but a “polished plate” was developed through grinding and smoothing of the rough plate for a higher cost (Roenke, 1978:10). This glass could be produced in large panes and provided at least two types of glass to be purchased by the consumer. We find only pane glass at the Robert Newell site.

During the 19th century, many glass manufacturers developed along the east coast, particularly in New England, but none were developed in the west. “Since there was no glasshouses in the Pacific Northwest during the nineteenth century, window glass had to be shipped principally by sea from the eastern United States or Europe and transported up the Columbia drainage system. The principal supplier of goods in the early years of the 1800s and until about the 1850s or 1860s was the Hudson’s Bay Company” (Roenke, 1978:45). It is likely that until other merchants, such as Francis W. Pettygrove opened their doors in the mid-1840s, that window glass in Champoeg was purchased from the Hudson’s Bay Company (Hussey, 1967:198). This glass would be of British origin, and even after other sources of glass became available, imported glass was cheaper and of better quality from 1820-1860 than glass produced on the east coast. This means that at least some of the glass at the site is likely of British origin, depending on the date and the type of glass, while some of the glass dating to the second half of the nineteenth century may be of U.S. origin. Unfortunately, it is difficult to know the origin of the glass though guesses can be made based on the manufacture type. Crown glass is likely to be from England, while plate glass is likely from the United States, or possibly of European origin. The texture of the glass will be the greatest indicator for the manufacture type and

possibly clarity but the poor condition of the glass after being in the ground for over a century make this an unlikely marker.

Figure 4.10 Photo showing the general size of window glass fragments at the site

In the last half a century, several methods have been developed to provide dates for window glass found at archaeological sites. These dates are based on the thickness of the glass as window glass gradually became thicker throughout the 19th century (Weiland, 2009:29; Roenke, 1978:35). Two types of methods were developed to evaluate the thickness of the glass, "Modal methods utilize a histogram compiled by assigning each sample to a mode determined by a range of thicknesses; each mode then correlates with a range of dates. The mean methods insert the mean value of all viable samples into a regression formula and produce a number that represents a relative date for site construction" (Weiland, 2009:30). These methods could then be further divided by

region. Two methods have been developed for the Northwest. The first by Chance and Chance looking at Kanaka Village, and the second by Roenke who looked at 13 sites in Washington and 2 in the Idaho pan-handle (Chance and Chance, 1976; Roenke, 1978). Both methods used a modal method to evaluate the thickness of glass and the work of Roenke built off the work of Chance and Chance producing similar dates and window thicknesses. For this reason, Roenke's table of dates and glass thickness has been used for the evaluation of window dates at the Newell site.

Dates	Approximate Primary mode of Single Strength Glass	Possible Primary Mode of Double Strength Glass
1830-1840	0.045	0.065
1835-1845	0.055	0.085
1840-1850	0.065	0.095
1850-1860	0.075	0.115
1855-1885	0.085	0.125
1870-1900	0.095	0.145

Table 4.2 adaptation of Roenke's "Suggested Age Ranges For Primary Modes of Single and Double Strength Window Glass Thickness In Use In The Pacific Northwest During the Nineteenth Century" (Roenke, 1978:72)

1,660 pieces of window glass from the site were measured for thickness in inches in order to evaluate the age of the glass based on Roenke's method. Unfortunately, in measuring each of these pieces, a continuous range from .019 inches to .099 inches resulted. Looking at Roenke's method however, this continuum does not fit with his model. It isn't possible to say what range of thickness should be used for each date range and so instead, a table of thickness frequencies has been created in order to see which thicknesses are most frequent (Figure 4.8). The three most frequent thicknesses are .046 inches, .052 inches, and .062 inches. If we then refer to Roenke's dating table (table 4.2),

we see that these three thicknesses fall between the 1830-1840 .045 inch thickness and the 1840-1850 .065 inch thickness. This age range only eliminates one occupant, Donald Manson, from purchasing the window glass and gives a 20 year period for when the window glass was purchased. However, these dates do support the theory that both Johnson, as early as 1837, and Newell as late as the 1850s purchased window glass for the home. Mapping the glass in a distribution map may provide more information regarding dates and the placement of the windows.

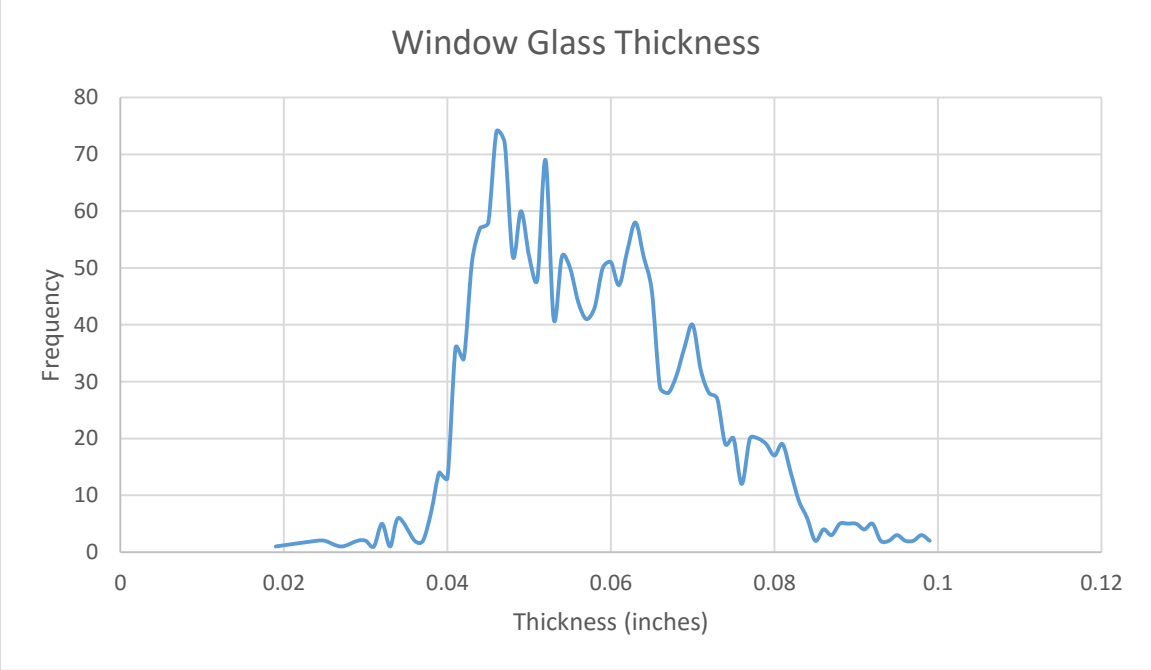

Figure 4.11 Frequency of window glass thickness at the Newell site

Originally, only those pieces of glass that were measured for their thickness were mapped into the distribution map (Figure 4.3.3). However, not all of the pieces could be mapped because of discrepancies between the catalog numbers on the artifacts and those listed in the catalog as flat glass. This is possibly because of inconsistencies in how artifacts were labeled from year to year and some may simply be errors in labeling. In the

end, only 20% of the window glass could be mapped with both its correct coordinates and window glass thickness. When these artifacts were mapped, a color scale was used to show three different ranges of thickness that correlated with specific date ranges in Roenke's table (Table 4.2). The first was glass less than .055 inches thick and represented glass from sometime before 1845. The second category was glass from .056 inches thick to .075 inches and represented glass from 1840 to 1860. And last was glass thicker than .075 inches which represented post 1855. Unfortunately there is some overlap in the dates as the sites Roenke use to create his scale had some overlap. Once this distribution map was complete, certain areas had far greater glass than others but this was not because the glass was reflecting window placement. Unfortunately, most of the window glass that could be measured and matched with its coordinates were from specific years of excavation and so the window glass placement really reflects which units were excavated in those years. Once this was realized, the coordinates for all of the clear flat glass mapped without glass thickness to get a sense of the general window glass trend (Figure 4.3.4). This isn't a perfect system as some of the clear flat glass may have been from window glass or paneled bottles, but because these items are usually identified as such in the catalog, it can be stated that a large majority of the clear flat glass in the catalog is indeed window glass. This distribution shows a very homogenous scatter of window glass throughout the site, with the exception of the original house structure and to the east where a slightly less dense scatter of glass is seen. This is possibly explained by housekeeping practices, it is also possible that the windows were concentrated on the south and west exterior walls, but the distribution map does not reflect this with certainty.

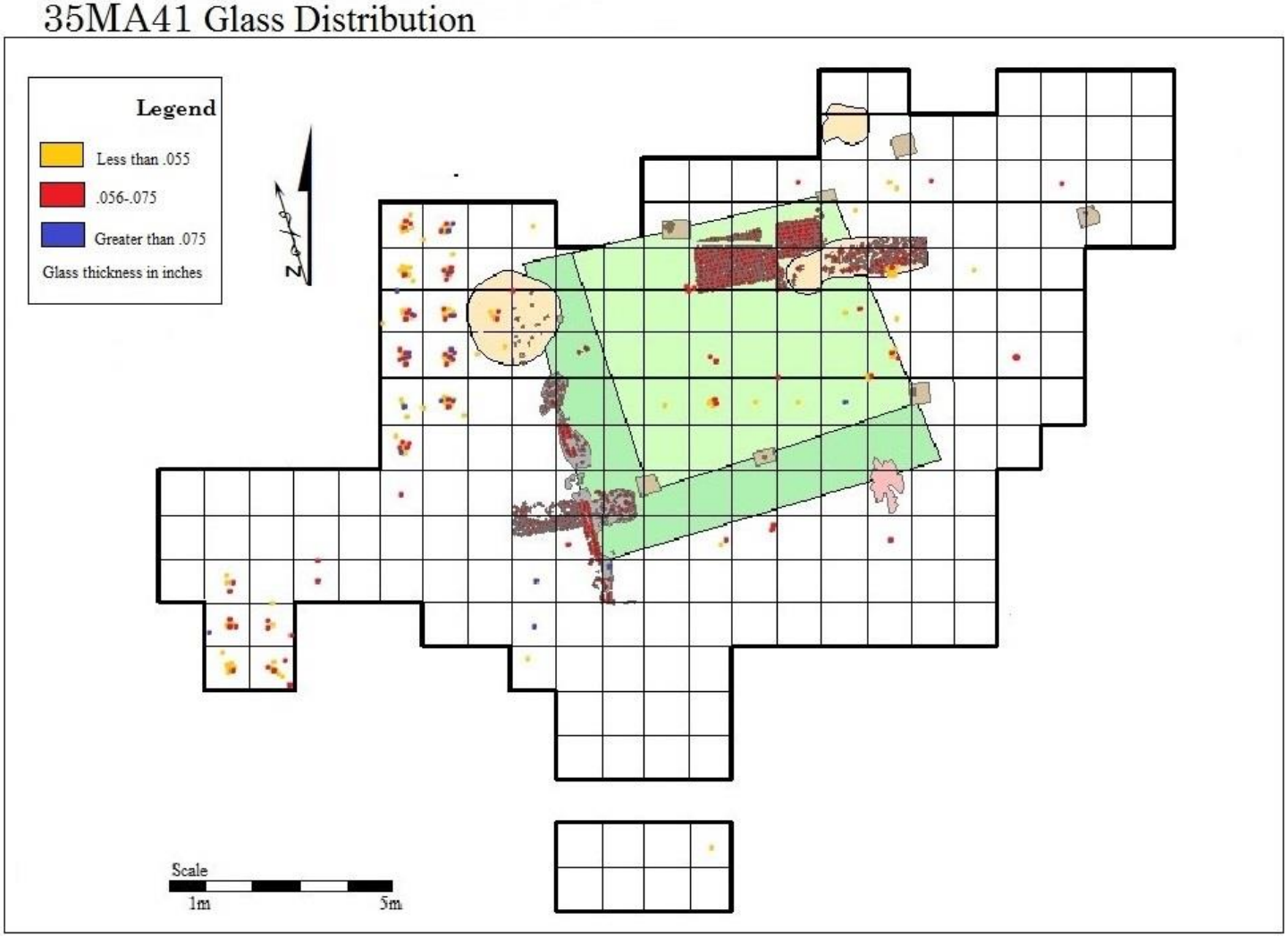

Figure 4.12 Window Glass distribution with thickness scale

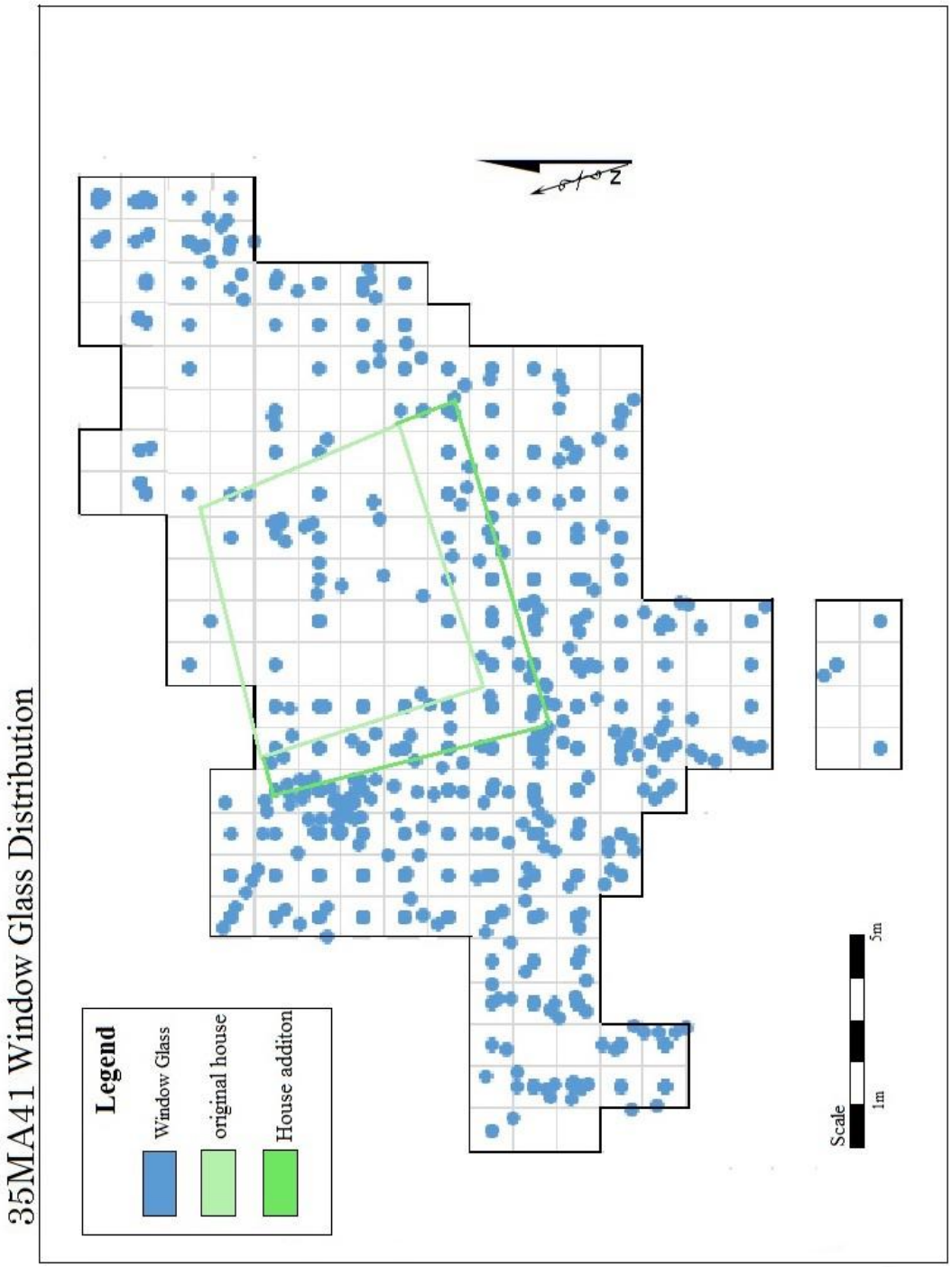

Figure 4.13 Distribution of window glass

4.3 Wood

Wood is not an abundant source at the site, but it does provide interesting information about the site. Wood is a rare artifact type in the archaeological record because it decays much quicker than materials such as metal or brick. It is only in favorable conditions that wood is recovered. Thankfully, the Champoeg site has provided great conditions in which to preserve artifacts, including some instances of wood. We find wood in at least four different contexts. The first is that of the posts of the house. Several posts have been found throughout the site, a few which are indicated by soil changes, but a few which also have the preserved wood. In a similar situation, fence posts have also been found around the site where wood is also preserved. We also see wood cribbing in an area next to the hearth which served as a cold storage pit and also in the well. The well in particular has created great preservation for wood because of the higher water content. Evidence for planks and beams were found throughout the well and are believed to be associated with the structure of the house. Many of these samples provide us with information simply based upon their context, but more information can be discovered with a close examination of the wood by trained professionals.

Four different wood samples from the Newell site have been researched by the Oregon Wood Innovation Center (OWIC) located at Oregon State University. These samples included one post which was looked at by the center in the early 2000s, and three samples from the well, two which looked to be structural and one unique piece, which were looked at in Fall of 2014. Dr. Scott Leavengood, the director of OWIC offered to look at the three well samples for free as a fellow Oregon State researcher and identify what species of wood each of the samples were. This work is completed by looking at a

think section sliced from the wood through a microscope in order to analyze the cellular makeup of the wood. The general composition and patterning of the cells are then compared to a library of known woods. This can be a large task but knowing information such as geographic information and function can greatly reduce the number of possibilities. In the case of the Champoeg samples, we knew where the wood was found and therefore its likely geographical region and we had a guess as to the function. Dr. Scott Leavengood was able to identify two of the well samples as Douglas Fir which we know from John Balls account was the main building material for his cabin (Ball 1925:95). The third sample was only identified as a hard wood. However, we do know that the post sample which had been identified in previous years, was that of a locust tree, a hardwood. It is possible that the third sample from the well was also of the locust tree and maybe represents another post or part of the post which was sampled. It is thought that early settlers from the east coast brought Locust trees with them to the west because of the woods rot resistant qualities which made it a preferred building material (Manion, 2006:52). We can say with some certainty then that the particular post which was tested is likely from a later building addition made by Newell or Manson, and not the original cabin John Ball built as the locust tree would not be available to Ball. It is also possible that the third sample from the well is from a fruit tree which are also hard woods. Newell was known to have planted an apple orchard on his property which he received a good profit from during the gold rush (Hussey, 1967:197). Perhaps this sample is evidence of the Newell's apple orchard. Unfortunately, the decaying state of these archaeological wood samples sometimes makes more precise identification difficult.

Figure 4.14 Example of wood plank found in well feature

4.5 Screws

Screws make up only a small number of the artifacts in the collection, 29 of the 11,678 artifacts to be exact. Unfortunately, the history of the screw and knowledge about how it was manufactured throughout history is very limited and therefore makes interpretation very difficult. One author, Rybczynski has taken on the task of tracing the history of the screw and has been able to find some helpful information which allows us to interpret these screws.

Screws have been around since at least the sixteenth century as it appears in two different texts of the time, the first Agostino Ramelli's "Le diverse et artificiose machine" published in 1588 and Georg Bauer's "De Re Metallica" published in 1556 (Rybczynski, 2000:47-51). This early technology was used to screw large machinery to the floor and eventually for gun flintlocks as the threads of the screw kept the screw from working its way out of place because of repeated vibration (Rybczynski, 2000:59). It took some time for the screw to be recognized as useful for different purposes. In part, this was because of the expensive price and tedious work required to make the screw. "A blank was

forged, pointed, and headed, much like a nail, but round instead of square, then a slot was cut into the head with a hacksaw. Finally, the thread was laboriously filed by hand" (Rybczynski, 2000:71). However, screws did become more popular early on for small objects like clocks and furniture, and eventually for fastening hinges to both doors and cupboards, particularly with the invention of the butt hinge in the late 18th century (Rybczynski, 2000:74). A butt hinge was "not mounted on the surface but mortised into the thick end-the butt-of the door" (Rybczynski, 2000:74). This required a screw to hold the hinge in place but also be out of the way of the door closing. Nails would slowly work their way out of the door because of the repeated movement from closing and opening the door. Thankfully, two brothers, Job and William Wyatt, were able to patent a screw making machine in 1760 which revolutionized how screws were made (Rybczynski, 2000:75). The operation of the machine was automatic and what was once a tedious task of threading a screw, was now quick and easy and an entire screw could be made in a matter of seconds. By the 1800s, screws were available in abundance and very affordable. However, these new screws created both positive and negative changes. The positive change was that with the more consistent and deeper threads created by the machine, the screw now had a stronger holding power than the earlier handmade screws. The negative change was that the automatic process did not allow for the screw to have a pointed end and therefore holes had to be drilled before the screw could be used (Rybczynski, 2000:77). This remained true until the second half of the 19th century when Cullen Whipple invented a machine that could create a pointed screw (Rybczynski, 2000:78). One trait which remained the same until the 1900s was the single slot in the head. It wasn't until 1907 that a socket head was patented by Peter Robertson's and not

until 1936 that the cruciform shape was added to the socket head by Henry F. Phillips (Rybczynski, 2000:83). These changes give us temporal markers which we can use to date the relative manufacture of the screws. However, it is likely that most of the screws were never structural and were instead incorporated into such things as furniture.

Figure 4.15 Example of types of screws found at site

Looking at the screws found at the site, we see all 3 types of screw which would have spanned the 19th century. These screws follow a similar pattern to the nails with only a few of the screws showing signs of being completely handmade with sharp ends, threading which is a bit inconsistent and shallow, and a rounded handmade head. Most of the screws are machine made screws with a blunt end as consistent with the first machine made screws. These each have more consistent and deeper threading. Finally, there are

also found some more modern screws at the site which are machine made with consistent and deep threading which comes to a point, a manufacturing development of the second half of the 19th century. All of the screws have round heads, though deterioration may have made some of the heads which were originally octagonal appear round, and all but one has a single groove in the top consistent with screws until the beginning of the 20th century. This one screw with the crucifix groove or phillips head is likely a modern screw left behind during farming activities.

4.6 Hinges

Four separate hinges are found in the collection, one of which is complete while the other three only represent part of a hinge. The one complete hinge is a brass hinge which measures 4" (10.16 cm) in height and 2.5" (6.35 cm) wide when completely open. This hinge, because it is of a ferrous metal, was likely used on the interior of the home and though it may have been attached to a door, was more likely attached to a piece of furniture. The second hinge is the only part of the bracket which would have been used to attach the hinge to the door. It is made of iron and measures 3 1/8" (8cm) in height and 1" (2.5 cm) wide. The third hinges is also made of cast iron while the fourth is part of a bracket that may have been associated to a hinge system. These were not measured as the dimensions would be meaningless. These 4 hinges represent only part of this artifact class as hinges were not only part of doors but cabinets and furniture of which there were likely many, though only a few of the larger and stronger hinges would represent doors or an architectural purpose.

Figure 4.16 (left) A brass hinge, iron bracket for hinge, and iron door latch (right) a cast iron hinge fragment and a cast iron bracket fragment

4.7 Doorlatch

One cast iron bracket which would have served as the locking place for a bolt was found at the site. This bolt could have been attached to any item which required locking including a window or door. It is a simple cast iron bolt and probably represented an architectural purpose though it too could have served as a lock on a piece of furniture. The bracket measures 3” (7.75cm) long and 1” (2.5cm) wide. The latch which would have served as the second half of this locking mechanism was not found.

4.8 Escutcheon

The escutcheon, or the keyhole, may have represented the other side of the lock on the front door. This cast iron key hole is a very simple design which indicated where the key was to be placed in order to lock or unlock the door. It was common for these escutcheon’s to be decorative, sometimes very ornate, to add a decorative element to the home. The one found at the site though is very simple and utilitarian. It measure 1.5” (4.5cm) in height and 1.2” (3cm) wide.

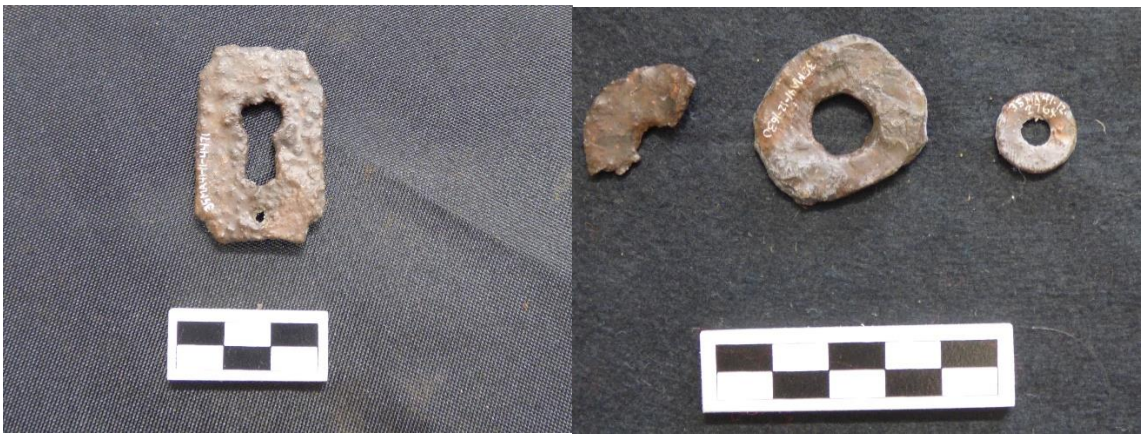

Figure 4.17 (left) escutcheon, (right) Washers

4.9 Washers

Three washer were found at the site, 2 complete and 1 partial. All three of the washers are of iron but of different sizes. It is difficult to say exactly what their purposes may have been though they were likely not architectural. Washers, particularly the smaller of the three, were more likely to have been used on items such as furniture and fine woodwork which required the protection of the washer from the screw.

4.10 Lockplate

One iron lockplate was found near the brick path and likely where the front door of the home would have been. This lockplate would have performed the function of keyhole and lock for the front door. The artifact is cast iron and measures 3” (8 cm) in height and 3.5” (9 cm) wide though the lockplate is incomplete. If the keyhole is assumed the middle of the lockplate, then it would measure 4.5” wide whole. This lockplate is typical of an early lock used on the front door of the home. It is possible that other lockplates were used but they would only be found on exterior doors typically and while it is likely that the front door changed position on at least one occasion, the lockplate

could have been removed and reused or this lockplate was simply the only found. It is also possible that the original house did not have a lockplate and a simple system utilizing a string and a lever were used as a locking system.

Figure 4.18 Lockplate

4. 11 Wattle and Daub

The artifact collection includes one example of wattle and daub which was found in association to the firebox. This artifact type, and the placement to the firebox indicates that this artifact was once part of a wattle and daub fireplace. Wattle and daub is simply a concoction of clay, sticks, and twigs which is packed between support beams to create the walls of a fireplace or chimney. The clay is then baked into a hard mass with the repeated firing and heating of the fireplace. Unfortunately, the original wattle and daub fireplace does not still exist at the site and the organic material, once reintroduced into the earth, would slowly decay leaving little evidence for what once was. The

structure of the wattle and daub fireplace is discussed further in the Features chapter of this thesis.

Figure 4.19 Wattle and Daub found at site

4.12 Oven Door

One oven door was found in association with the brick hearth. Made of cast iron, this artifact reiterates the large scale of the firebox and provides more detail as to how the firebox was likely designed. The door measures 7” (17.8cm) in height and 14.5” (36.8cm) wide.

4.13 Fireplace Hook

One large cast iron hook was found, also in association with the hearth. This hook would have been used in association with a fireplace crane which pots could be hung on. The crane would then be pushed in and out of the firebox, over the fire, in order to cook. This too gives us a clearer picture of the design of the fireplace.

Figure 4.20 (left) Cast Iron oven door, (right) Cast iron hook for cooking

Ch. 5 House Features and General Structure

Beyond those artifacts which serve an architectural purpose, many original features of the home still exist *in situ*. These features have the potential to not only provide a footprint of the original structure, but also have the ability to reflect the construction style, the floor plan, and tell us more about the materials used in the construction, the gradual growth of the home, and possibly a bit more about the men who lived at the site. One of the research questions for this study, directly refers to the potential for these features to reflect the culture of the previous occupants, particularly French Canadian culture. In order to understand what features can be expected from a French Canadian home and which of the features at the site reflect French Canadian culture, a quick understanding of what a French Canadian home looks like can be expected

5.1 Expected Features in a French Canadian Home

Many books have been written on the topic of French Canadian architecture in the past with most focusing on architecture in Eastern Canada and a few which follow its spread to other regions in the United States with the fur trade (Hebert, 2007;). Almost none have followed its spread to western United States with the exception of research completed at Fort Vancouver, the former residents of the French Canadian men who established Champoeg. Regardless of the region on which each of these texts focus though, all provide important information and support for understanding the architecture at the Newell site. There is no need to completely recap what each of these texts state, but below will be highlighted a few key features of the architecture which we may expect to find at the site if the architecture is indeed French Canadian.

Two main styles of constructing the frame of the house were used by the French Canadians. The first was to build *le solage*, the foundation, and place *le sole*, or the sill log as a foundation for the home (Hebert, 2007:27). From there, columns of wood or *coulisse* were fixed vertically with *le sole* supporting the base and *la sablièr*, or top sill, supporting the top of the column (Hebert, 2007:31). This allowed for the construction of the walls. The columns were placed according to where windows and doors were to be placed and intermittently for support. Traditionally, between these columns, a *colombage* mixture consisting of clay, sticks and other organics, or lime (Hebert, 2007:31). Eventually though, with the abundance of wood in the New World, builders began to build the walls completely of wood, removing the *colombage* from the structure (Hebert, 2007:33). At first, the columns remained vertical, but eventually a new style of construction was developed called *pièce-sur-pièce* which used horizontally placed logs between the vertical support columns (Hebert 2007:35). This style of construction provided a dryer and better insulated home which was unique to French Canada and the metis culture.

When looking at this style of construction in the archaeological record, we would expect to find evidence for a foundation and maybe the preserved wood from a sill log. It would be relatively impossible to identify the style of construction for the exterior walls unless a sill log remained which showed evidence for the placement of the wood columns or if the fill material used for the earlier styles of construction were evident. However, both of these situations are unlikely and we can only hypothesize what style of exterior walls would have been seen in the structure.

Another style of construction for the frame of the structure that was used by the French Canadian was the *poteaux-en-terre* or post in ground style of construction (Hebert, 2007:44). This style was considered to be a quick style of construction not used in a permanent structure. This style skipped the laying of a foundation or sill log and instead affixed the wood columns into the ground by digging holes for each. From here, the exterior walls could then be constructed. As can be guessed, this allowed for water and mold to directly access the structure without the protection of a foundation and decay quickly ensued. However, this style was much quicker to construct than the foundation and sill style and was commonly used for outbuildings or first time cabins that were simply meant to provide shelter for a relatively short period while a larger and better home was constructed (Hebert, 2007:46).

This style of construction is much easier to identify in the archaeological record as the posts leave behind post molds. In cases of good preservation, the wood may still remain. It is also possible to ascertain a better idea of what the walls may have looked like. It would be expected that if the walls were a continuous construction of vertical posts that instead of a post mold, a trench would be found. However, if post molds are discovered with spacing between, then either small sills were used between with *colombage* filling the rest of the space, or a *pièce-sur-pièce* style of construction was used. With either the foundation and sill style of construction or the post in ground style, it is likely that the walls were either completely constructed of vertical columns or horizontal logs as the abundance of wood in the area made this style easily obtainable.

Another feature which might be expected in a French Canadian home is *la cave*, or the cellar (Hebert, 2007:66). The cellar was usually dug below the house and simply

used for storage of food such as vegetables and grains as well as other household items and sometimes valuable. The cellar was "often simply a pit dug into the earthen surface below the floor of the house (in many cases no more than 4 pieds deep [52 inches or just over 4 feet]) with boards or logs reinforcing the earthen walls" (Hebert, 2007:66). In the archaeological record, this feature would look like a square pit differentiated by a change in the soil from the surrounding stratum. It is possible that the wood cribbing would still remain but only in sites with conditions favorable to good preservation of organics.

Outside of the structure of the home, a few key structures may also define a French Canadian home including a summer kitchen, or *fournil* which meant bakehouse (Hebert, 2007:70). This was a separate structure that was commonly of a more simple build than the home, without a floor, and contained an oven for baking and cooking. This same structure was later added as an annex to the home and called a cuisine d'été, literally meaning summer kitchen and took on a new function as not only a place for cooking but a social gathering place for family and friends (Hebert, 2007:71). This space functioned as a more open and airy space for cooking during the summer and created a reprieve from the stuffy home. Archaeologically, this space may look similar to a small dwelling as many cooking items and a hearth typically associated with a dwelling would also be found in this space. It would typically be smaller as a separate structure, but as an annex to the home, it may simply be viewed as the kitchen.

There are many other defining features to a French Canadian home including the attic space above, the unique curved roof and features such as a bread oven but many of these would not be found in the archaeological record. This is simply because they do no create a lasting imprint or any imprint in the ground and it is only through historical

descriptions or photographs that one could expect to know more intimate details about the structure.

In a farming community, particularly those like Champoeg, one of the more identifiable characteristics of a French Canadian community isn't the structure of the home but the land on which these structures stand. The French Canadian have a very unique way of plotting the land in what is referred to as the French Longlot. These lots are narrow and long, as can be guessed by the name, rather than the square plot typically seen in North America. These lots are laid out this way in order to access as many different resources as possible. Commonly, one end of a plot would sit along a river allowing access to water, fish, and transportation and then spread across, fields, marshes, and forests to optimize on the resources found in all these ecological zones. Each farm becomes more independent as it does not rely on trade with neighbors for access to resources. These lots are easily identifiable in historical records, not as much in the archaeological record though surveying stones may provide some information.

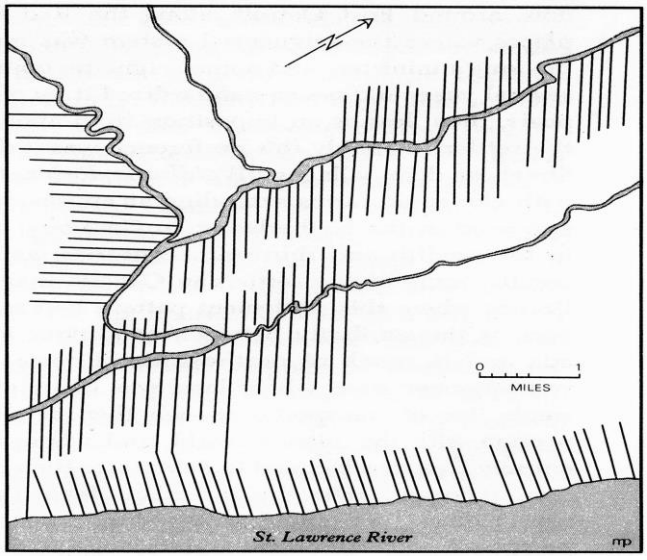

Figure 5.1 French long lots along interior waterways (Harris and Warkentin, 1991:39)

Thankfully, the floodplain environment of the archaeological site has provided conditions in which several features of the home have been well preserved and therefore analyzed and described. Most of these features consist of brick or are identifiable because of soil changes, but a couple also contain wood. “One difficulty the archeologist faces in interpreting ancient cultures is that wood is perishable, and only under certain favorable climatic conditions can he expect to find log dwellings *in situ*” (Weslager, 1969:86). It is these wood features which provide us with some of the best structural information at the site and allow us to evaluate what French Canadian features were present in the structure.

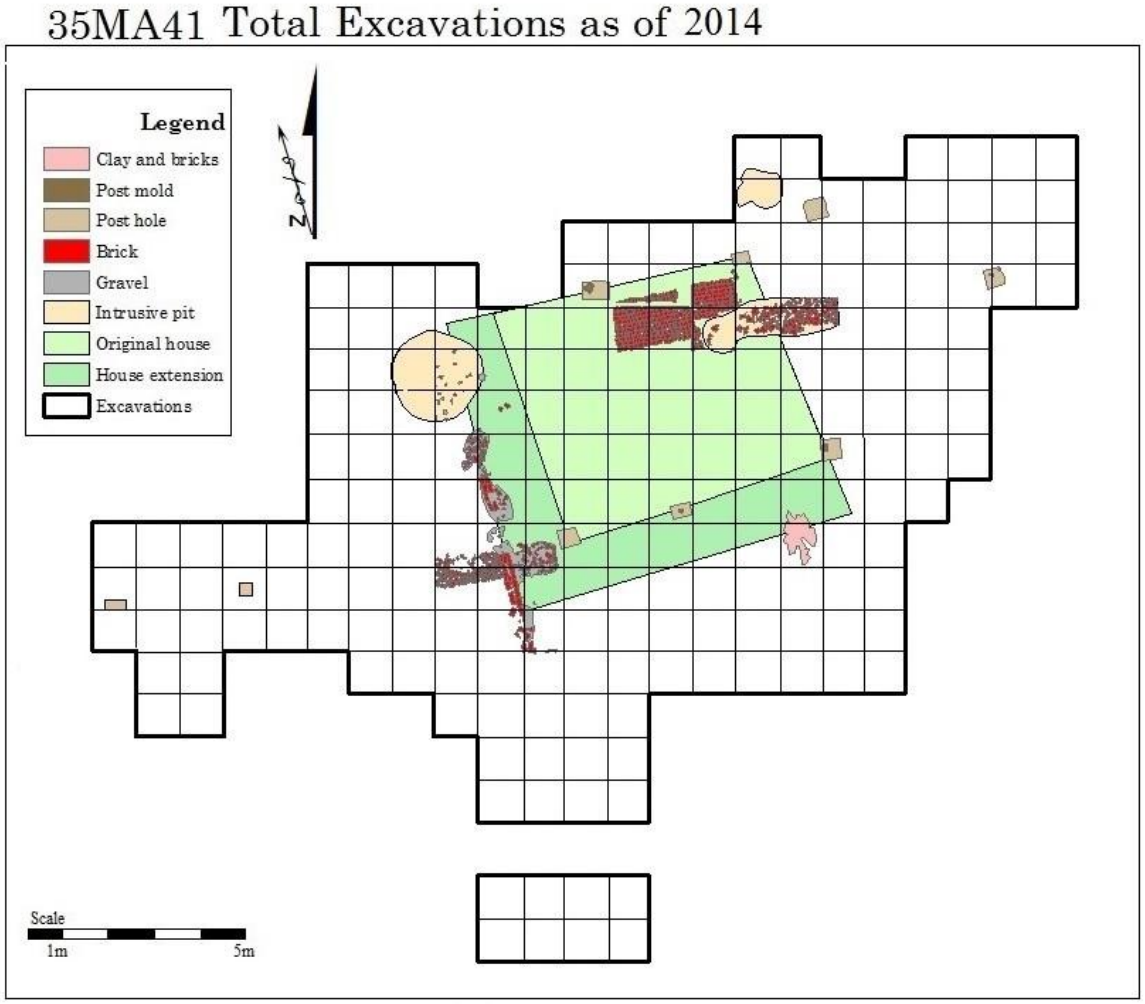

Figure 5.2 Excavation grid with architectural features as adapted from Manion, 2014:128

5.2 Poteaux-en-terre

Several post molds, some with the wood from the posts still remaining, have been found throughout the site. These molds not only provide us with a general idea of the floor plan for the house, but also provides us with a sense of the construction style used. [Several of these posts are circular, while others are square and it may be possible to identify additions to the home based on these differences. Although it is also possible that the circular impressions are caused by the decay of the posts and not the original placement of them, however the soil which has filled in the post holes as the wood has decayed may provide better evidence than the wood for what the original shape of these posts were.] Based on these posts, we know the home had "walls composed of vertical logs set in the ground. This style, termed *poteaux-en-terre,* existed in France as late as the nineteenth century, and was used in French settlements in the New World well into the twentieth century" (Hutslar, 1986:23). Many of the New World settlements which were known to have used this style of construction were associated with French fur traders like those in the Hudson's Bay Company. These are the very men who also settled the Willamette Valley. We know that John Ball was the original occupant of the cabin and therefore the builder of the original cabin but as a lawyer from the East coast, it is likely that he had no previous experience building and would have looked to his neighbors for help. "Constructing even a simple log building requires several workers, especially to raise the wall and roof logs, and requires more than a single tool. Work parties were a necessary part of putting up a log building" (Attebery, p. 26). We also know, that John Ball stayed with his French Canadian neighbor J.B. Desportes McKay while building his home and it is likely that McKay and several other French Canadian men were

responsible for the construction of his cabin (Ball 1925:95). Poteaux-en-terre is a construction style which know was used at the Hudson's Bay Company fort, Fort Vancouver, and would have been a familiar or traditional style of construction for the French Canadian HBC men (Mullaley, 2011:32).

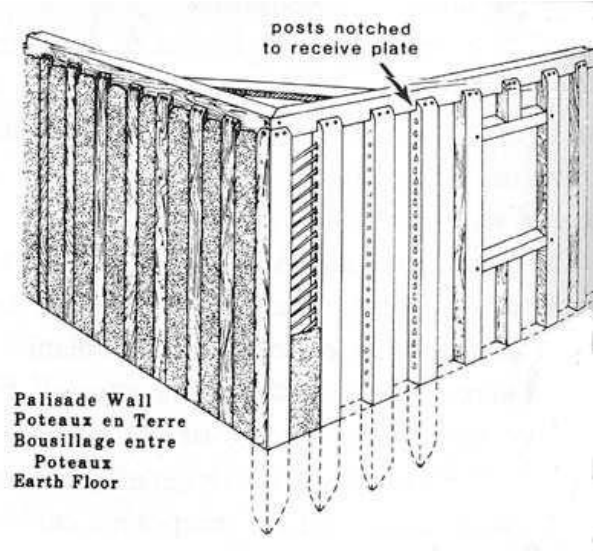

Figure 5.3 Poteaux-en-terre architecture (Hebert, 2007:45)

Poteaux-en-terre construction is one of the only commonly known styles of log cabin construction which did not have a foundation and did not use a sill log. This creates a unique building footprint which we see at the site. Many different styles of log cabins existed throughout the United States, particularly early on in American settlement. "As people from the various European countries came to the New World they brought with them as part of their cultural ethnocentricity the traits of their native lands, and those from Scandinavia, Germany, and Switzerland built log cabins when they arrived. Those living in countries where log dwellings did not then exist built the types of houses with which they were familiar when they planted their roots in American soil" (Weslager, 1969:93). Those cultures which brought with them log cabin styles of construction

brought with them the typical notched, horizontally tiered log cabins with a sill log and a foundation (Weslager, 1969). These styles of construction were then adopted by those cultures which were not familiar with dwellings made of wood, as wood was the most abundant resource in North America. This acculturation continued to occur until "an American log cabin finally emerged, incorporating basic Scandinavian and German traits, with modifications by the Scotch-Irish and others, and a point in time was eventually reached when it became utterly impossible to identify a log cabin during the postpioneer period in nationalistic terms" (Weslager, 1969:238). The exception to this was the French style of construction which was not widely adopted by other nationalities but only existed in those populations where direct French influence existed.

We know from these French Canadian and French American populations that while the poteaux-en-terre style of construction was used, the similar poteaux-sur-sole style was more common. This was simply because the poteaux-sur-sole style incorporated a sill log and foundation which protected the structure from decay more effectively than the poteaux-en-terre style (Hebert, 2007:46). It is thought that the poteaux-en-terre style was used for expedient construction meant as a temporary dwelling. It was very common during the settlement era for families to build temporary homes which were commonly log dwellings of little cost and made of local material in which they would live while they built a second home. "The first business of each settler was to make a little clearing and erect a log cabin, which was built with unhewed logs, poles, clapboards, puncheons, and in those days, wooden pins instead of nails." (Hutslar, 1986:105). The family would then pour their money into their second home which was commonly much larger, of hewn wood, with one or more stone or brick fireplaces, glass

windows, and metal finishings. It is likely that when Ball built his cabin, that it was meant simply as a temporary dwelling until he could establish himself as a farmer and build a more expensive and time consuming home. However, Ball left before this was to become a reality and it seems a few other individuals occupied the small cabin before any improvements were made.

Figure 5.4 Excavated Post Mold

Beyond the construction style of the cabin, the posts also tell us the general size of the cabin () and that the building was aligned with magnetic north. “The alignment of a cabin or house “north and south” was a general practice, particularly when there were no roads or topographic features to suggest a different position. The main reason for building a residence to face south was to get as much sunlight as possible into the structure-through the windows, if any, and the door.” (Hutslar, 1986:114). This is likely why Ball’s cabin was built north to south and it is likely that his neighbors’ homes were built

similarly. We also know that at some point in time, a main road was built east to west which passed the property and into town (Hussey, 1967:222). If the road already existed when the house was built, this too may have had an influence on the facing and placement of the home. However, this is merely speculation.

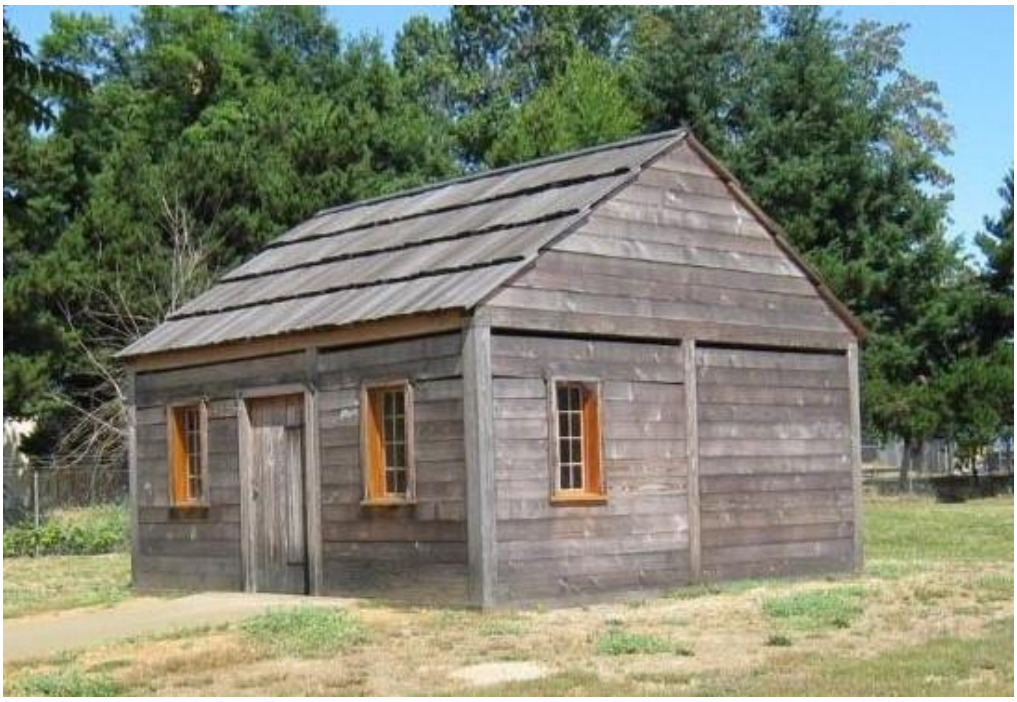

Figure 5.5 Fort Vancouver poteaux-en-terre reconstruction

5. 3 Brick Foundation

In 2009, a large feature was discovered along the east side of the house which not only represents a possible brick path, but a brick foundation. A double row of bricks runs magnetic north to south, over the brick path, indicating a later date. These bricks represent a later addition to the home which used a different building method than the post in ground method used for the original structure. This method instead used a brick foundation on which a sill log would rest and the rest of the structure was built up from. It is possible that this structure originally represented a porch which was later included

into the house, a common practice in early homes (Noble, 1984:24). Unfortunately, it isn't possible to say exactly what type of construction was used for this addition as most types of house construction began with a foundation and a sill log. The bricks used for the foundation represent some of the more complete and uniformly fired bricks found at the site and were likely chosen as the foundation bricks for this exact reason. These bricks represented some of the stronger, more uniform bricks which could withstand the weight of the new addition.

5.4 Brick Rubble Path

Along with the brick foundation was found a brick rubble path. This path is made of broken and fragmented bricks which seem to represent a path from the original front door and into the yard of the homestead. The path leaves the house from the southwest corner of the home and leads to the west measuring approximately 50cm across and 3m long (Manion, 2014:106). This path would have minimized the amount of mud and grime brought into the house by the family as they accessed resources outside. The path consists of broken and fragmented bricks which seem to represent an earlier period than those bricks used for the foundation and potentially the firebox. Along this path were found a lock plate which would have been attached to the front door and artifacts which predated the Newell occupation. The path would only have been used with the original structure and maybe for a short period after the first addition represented by the brick foundation.

Figure 5.6 Brick foundation overlaying brick rubble path

5.5 Well

The well was one of the last features to be found at the site and likely associated with the original construction of the cabin. It was found located west of the original structure, within a few meters of features associated with the structure of the house. This close placement is typical of most early homes as it was in the yard of the house where many activities occurred and easily accessible (source). As accessibility to water was important for any household, it was probably dug by John ball with the help of his neighbors. Even before the well had been successfully located at the site, it existence was never questioned. Partially because no home was complete without a well and also

because a clay floor found in the original structure could not have been developed without a deep sediment source.

The well was first identified in 2012 as an intrusive pit when a circular pattern appeared as the sediment was allowed to dry (Manion, 2014). At first, there was speculation that this feature was associated with a cellar. As digging continued, the pit began to reveal a matrix of bricks with a small number of other artifacts which had worked their way down between the bricks. Eventually, the theory of a cellar was abandoned in favor of a well.

The well was approximately 2 meters across when the feature was first noted and 1.5 meters across at the conclusion of the excavation, some 4.4 meters below the surface. The well was filled with bricks for the entirety of the excavation, and continued to be when excavations were completed, but the water table eventually made excavation impossible without specialized equipment. It was hypothesized by Dr.Brauner that cribbing may have existed on the outer edges of the well as a support system, similar to cribbing seen at the St.Paul St. Xavier School for boys excavation in 1986, also located in the Willamette Valley (Poet, 1995). However, while wood was noted during excavations in the Newell well, the random placement and large size of the wood meant that it was likely structural wood from the house and not cribbing for the well. The well was also round which would have made cribbing difficult, where the well at St.Paul was square. It was also hypothesized that the well may have been brick lined and that some of the bricks contained in the well may have originally served a structural purpose. This hypothesis was also disproven as the bricks were randomly placed and no remnants of a brick wall were noted anywhere between the surface and the water table. It seems instead, that the

well was filled with the bricks from the fireplace and chimney when the area was leveled for agriculture. Ultimately, it was concluded that the Newell well didn't need any help beyond the natural clay sediment to maintain its shape. This same clay made it easy to demarcate the walls of the well during excavation.

Figure 5.7 (Left) Well strata showing Brick layer (Manion, 2014:126); (Right) Extent of final Well excavation

Originally, it was thought that when the well was found, that a treasure trove of artifacts would be found within it. However, only a small number of artifacts beyond bricks were discovered in the well but the excavation of the well did provide the answers to a couple of other question. It had been hypothesized that not only was there a deep hole on the property which would have provided clay for the floors, but that a large collection of bricks, which would have made up the firebox and chimney, were also hidden on the property somewhere. It seems that the well provided the answers to both of these theories and while no treasure trove of artifacts was found, we now know that the well was likely covered by a wood cover with a pump and wouldn't have been exposed for artifacts or trash to be thrown in.

5.6 Clay Floor

A clay floor was noted during excavations in what is believed to be the original cabin of John Ball. While not complete, the clay floor was reached at about 40 cm below surface around the area of the hearth (Manion, 2006:44). This floor would have been maintained throughout its use with several layers of clay added during maintenance. "Clay floors were not unknown in log houses, though most frequently used in cabins: A clay floor was made by filling up the bottom, as high as the lower log, with clay; and to make a good one the clay was mixed with water and an ox or a horse led through it for hours at a time, to tramp the clay into a paste, and when thus prepared it was pounded with a piece of plank and leveled up to suit. The clay floor was thus even with the lower log . . . This kind of floor kept the wind from blowing under the cabin, added to its warmth, and was easily repaired." (Hutslar, p. 214). From Lang, William. "History of Seneca County" Springfield, Ohio: Transcript Printing Co., 1880. Eventually though, it is believed that this clay floor was covered by a wooden floor, likely added when updates were made to the house. Artifacts found within and on the clay floor dated from the early 1830s to the early 1840s and likely represent the first three occupations of Ball, Wyeth, and Johnson (Manion, 2006:63). This means that the wood floor was installed by Newell who, as a wealthier individual with a larger family, is thought to have made many improvements to the home.

5.7 Hearth and Firebox

Most of the bricks found in the well were most likely from a large firebox, hearth, and chimney added to the house. The hearth to this fireplace can still be seen *in situ* at the site. However, before this large fireplace was added to the home, a more simple wattle

and daub fireplace which would have matched the simple construction of the cabin would have been in place. Ball provides no description of his fireplace in his diaries, but based on what we know from the Fort Vancouver structures, similar poteaux-en-terre and poteaux-sur-sole structures, and the artifacts, we can hypothesize what it would have looked like (Mulalley, 2011:40; Hebert, 2007:49). Hustlar notes that "There are perhaps four variants that could be used in cabin or house: (1) an open fire on a dirt floor with a smoke hole in the roof; (2) an enclosed wooden firebox lined with clay, mortar, brick, stone or some combination thereof; (3) a brick firebox; and (4) a stone firebox. The last three categories might be found with one of three types of chimneys: (1) stick and clay, in common jargon "cat-and-daub" or "wattle-and-daub"; (2) brick; and (3) stone." (Hutslar, 1986:109). We do not know for certain if Ball would have had an open fire with a hole in the roof or a clay fireplace, but because the Northwest is known for its very wet winters, of which Ball experienced for himself, it is likely that he would have had a clay fireplace at the least because of the protection it provided. Also, wattle and daub was found at the site, in close association with the brick hearth which means that at some point before the brick fireplace, a wattle and daub fireplace was utilized.

Wattle and daub was a very common material used for fireplaces, particularly for small wood cabins which were meant as a temporary homes. They were simple to build and the materials required were available almost everywhere. The French term for this style of fireplace is *cheminée à quatre baton* and was a common style anywhere that stone or bricks were not available (Hebert, 2007:50). The following is a description by Strickland as how a *cheminée à quatre baton* would have been constructed. "Four upright poles are placed in the corner of the shanty, where the fire-place is intended to be built:

these poles are bored with an auger about a foot apart. Rings or steps, like those of a ladder, connect those poles together: a space is left open on the front side of this four-sided ladder from the floor, three feet upwards, leaving sufficient space for the fire-place. The clay-cats are then kneaded strongly round the rings and all the interstices well filled up; some well-tempered clay is plastered inside the chimney, which, as the work progresses, soon hardens and reddens inside by the heat of the fire. This kind of chimney draws well and throws out a great heat" (Strickland, 1853: 181). This description provides a general idea of how Ball, or one of his French Canadian neighbors would have built his fireplace. We cannot be certain if the original fireplace would have been placed in the corner of the structure as described above. However, the location of what now is an intrusive pit feature located to the east of the brick hearth and in the corner of the structure may have been the original location of the fireplace. This is the same location as the wattle and daub samples found during excavation as well as large samples of charcoal (Manion and Brauner, 2011:22). Once the new brick firebox was built, the old wattle and daub fireplace may have been removed and a storage pit dug in its place. It is also possible though that the wattle and daub fireplace existed in the same location that the brick hearth is now as this would have reduce damage to the structures wall and roof and the intrusive pit always functioned as a storage pit. Regardless, both the original fireplace and the new brick fireplace which replaced it, were built on the north wall of the original structure.

Figure 5.8 Wattle and Daub Firebox and Chimney (Hebert, 2007:141)

It is difficult to say why this exact position was originally chosen as it is well established that no one place was the preferred place for fireplaces and that not only the placement, but the number of chimneys varied from house to house (Hebert, 2007:49; Mulalley, 2011:40). We do know that the firebox was built on the exterior of the house structure instead of contained within the home based on excavations. This was common practice in wood structures particularly because it allowed easy access to the chimney in cases of unwanted fires (sources). It is possible that the well also played a role in deciding the location of the chimney or vice versa. If this is true, then Ball would not only have had quick access to water in case of emergencies, but he also would have had access to quality clay to build the original *cheminée à quatre baton*. It is also possible that the door to the cabin determined the location of the fireplace as this would allow for the least heat to escape the cabin. As discussed previously, cabins were favored to face

north and south with the door and windows on the south side to let in light, and therefore the fireplace would be placed on the north wall.

It is difficult to say exactly how long the wattle and daub fireplace would have remained before the brick hearth and firebox would have replaced it, but based on the other improvements made to the home and what we know about the bricks themselves, we can make an estimate.

The brick hearth was the first feature to be discovered at the site in 2002, as directed by the cesium magnetometer work completed by Kendall McDonald (McDonald, 2002). The hearth was completely unearthed the following field season and measures approximately 2 meters by 3 meters (Manion, 2006:47). The hearth does not contain any complete bricks, but is instead composed of only fragmented bricks which are placed together in a kind of mosaic. The hearth contains 17 courses of brick fragments and is oriented to magnetic north like the posts of the structure (Manion, 2006:47). This means that the hearth was aligned with the north wall of the structure and as the hearth is flush with what is thought to be the wall of the house, based on the placement of the posts, we know that the actual firebox and chimney were built outside of the house structure, attached to the north wall.

It is unclear why the hearth does not contain any complete bricks, but it does indicate that the material was not only scarce, but likely expensive. It is possible that some of the brick had been salvaged from another project in the Willamette Valley or that the fragmented bricks were cheaper than the whole ones. More complete fragments of bricks were discovered in both the storage pit east of the hearth and in the well. This may indicate, as hypothesized by Manion in her 2006 thesis, that the more complete bricks

were used to build the firebox and chimney, as they would have created a more sound structure, whereas the bricks for the hearth were supported by the floor and did not need the same structural integrity (Manion, 2006:57).

Figure 5.9 View of the Brick hearth facing North

Nothing of the firebox structure or chimney still exist within the archaeological record but based on other early examples of these at places like Fort Vancouver and based on what is required of a domestic fireplace, we have a good idea. “A cooking fireplace required a deep hearth for a work area, for the kettles and skillets required varying degrees of heat which could be achieved only by their careful positioning or by manipulation of the fire itself; when needed, a small quantity of coals could be scraped from the fire onto the hearth” (Hutslar, p. 112). We have some evidence for this type of use in the artifact collection (an oven door and a large metal oven hook), and we also

have evidence of coal remnants around the hearth, including in the cold storage pit east of the hearth.

5.8 Cold Storage Pit

Figure 5.10 Cold Storage Pit with remnants of wood cribbing exposed (Miller, 2013)

The cold storage pit was originally discovered in the 2009 field school season directly east of the hearth (Manion and Brauner, 2011:24). At first, unclear what the pit was for, it was hypothesized that it represented a well or a cellar. The pit was lined with the remnants of wood boards along the east and north wall which created a cribbed support system to keep the pit from collapsing as well as protecting the space from rodents. The pit measured about one meter squared, and upon completion of excavations was less than a meter deep. Upon discovering this, it was clear that the feature was more likely a storage pit or a *cave* rather than a well. The feature was aligned to magnetic north like the structure of the house, indicating that the feature was original to the house and

likely served as a food storage pit easily accessible from the hearth where meals would be prepared. It was also a convenient location, tucked into a corner of the home and out of the way. During excavations of the feature, dark stained organic soil was noted, likely the remnants of previously stored food items which were never recovered when the house was abandoned.

5.9 Burned Clay Anomaly

Also in the 2009 field season, a burned clay anomaly was found along the southern façade of the house (Manion, 2014:119). It is unclear what exactly the feature represents but it includes both hardened clay and pieces of fragmented brick. This anomaly would not have formed without a heat source which would have baked the clay into its present form. It is possible that this feature represents a brick kiln which was used to form the bricks which we see in the sidewalk, thought to predate Newell. It is also possible that the feature represents an oven, like the French bread oven or *Le four a pain*, thought to be a necessity for every Frenchman's home, but this seems unlikely (Hebert, 2007:86). This type of oven, while likely appreciated by Ball's French Canadian neighbors, would not have been a priority for his home. Unfortunately, it is not possible to say exactly what this feature once was. If similar feature had been found around the façade of the home, maybe we could say it represented an architectural purpose such as a foundation, but it is unique in the site.

Figure 5.11 Burned Clay Anomaly (Manion, 2014:119)

5.10 Burn Feature

In 2014, in search of a possible privy, a burn feature measuring about one meter squared was found to the west of the original house structure. This feature was represented by sediment which had been exposed to repeated fire or heat, oxidizing the sediment and baking it into a hard red surface with some crystallization. What had originally led to the excavation of the area was the discovery of a post and rich artifact assemblage in previous years, thought to represent a possible structure like a privy. However, on the last day of excavations for the 2014 season, another post was located in the same vicinity as the original post and burn feature leading this researcher to believe that this area represented an addition to the original house rather than a separate structure and that the burn feature represented the location of a cast iron stove. The original front door to the home would then lead into this extension, a much needed space for the very large Newell family. The burn feature represents the sediment underneath the cast iron stove which would have been exposed to repeated heating and cooling and the rich

artifact assemblage represents the activities such as boiling water and such which would have occurred in association with the stove. This theory will be explored more in the section discussing the development of the house.

Figure 5.12 Burn feature

5.11 House Construction, remodeling, and additions

Looking at a map of the different features and the artifacts associated with the houses construction, we can begin to piece together not only what the house would have looked like but a general timeline for remodeling and additions to the home.

We know from an excerpt in John Ball's journal a general idea of what the original log cabin, built in 1832, looked like. "I drew out logs for a cabin, which when I had laid up and put up rafter to make the roof, I covered with bark peeled from cedar trees. And this bark covering was secured by poles across and tied with wood strings,

withes, at the ends of the timbers below . . . so I dwelt in a house of fir and cedar" (Ball 1925:95). We have confirmed that the house was at least partially constructed from fir with those samples tested by OWIC. We also know that this log cabin was likely built in a post in ground or poteaux-en-terre French log cabin style brought to the Willamette Valley by French Canadian fur trappers like John Ball neighbor Desportes McKay. Based on these posts, we can state that the original cabin measure about 20ft x 20ft. From the artifact collection, we know that the fireplace at this time was likely in the same spot as the hearth now, the north wall of the cabin, and was a simple wattle and daub fireplace. The door, as located by the brick path, was on the west wall in the southern corner but the brick path would not have been installed until after John Ball's occupation. It is likely that this first cabin did not have windows and we know that the floor was a simple clay floor. The well was dug just to the west of the cabin, near to the firebox and on the same side as the door. The cabin was very simple and quickly built, but as we know, John Ball didn't even make it a year in the cabin before he moved back to the east coast and other tenants picked up where he left off (Ball, 1925)

The next tenant to the home was Nathaniel Wyeth, and while Wyeth's goal was to farm the Willamette Valley, it seems likely that he hired two farmhands to do most of the work and spent little time at the cabin himself. This makes it unlikely that he made any improvements to the home itself. Wyeth only maintained the cabin for a few years and in 1836 abandoned the property much the same as John Ball (Hussey 1967:71).

Johnson is the third occupant of the home and from a description written by a visitor in 1839, we get a second glimpse at the cabin. "It was a hewn log structure about twenty feet square, with a mud chimney, hearth, and fireplace" (Farnham, 1977:88).

Farnham also notes that there were “fenced fields, many acres of what and oat-stubble, potato-fields, and garden-vegetables of all descriptions, and a barn well stored with the gathered harvest” (Farnham, 1977:88). This cabin sounds very similar to the original cabin built by John Ball and it is likely that Johnson didn’t make any drastic changes to the home. One change which we might attribute to Johnson though is the brick path leading from the front door. This path is composed of many broken up bricks and is overlaid by the much nicer bricks which later form the foundation of the house. It is possible that with the help of his boys or Indian slaves that Johnson built a kiln which was not very successful and which we see the remnants of in the brick anomaly to the south of the house. It is possible that he intended to use the bricks for another purpose, but with the complete melt down of the temporary kiln, he may only have been able to salvage the bricks for a simple purpose as the path. Johnson lived at the home for between 1836 and 1843, 7 years, and this path would have reduced the mud tracked into the home by his “brace” of boys and allowed access to likely the barn and the garden, both which Farnham mentions, and the well (Hussey, 1967:78). Johnson may have also had glass windows installed in the home. The task of cutting the holes for the windows would have been generally simple and the glass was likely purchased from the Hudson’s Bay Company. This would explain the earlier period of glass found in the archaeological record. One large change that likely occurred during Johnson’s occupation however was the addition of an extant structure, another small dwelling, to the property. This dwelling may be evident in the archaeological record as two posts and a burn feature to the west of the original cabin. This second dwelling is mentioned by Purser William A. Slacum, a Navy buddy of Johnson’s, in 1837 when he visited the site and states the farm had “two

'good' houses" (Hussey, 1967:76). It isn't possible to say with certainty whether this second home stood so close to the second, but as this second structure is also a post-in-ground construction style, one that would have been familiar to Johnson, a former HBC member, and as Johnson had 2 slave boys and later a teacher staying at the home, he would have needed this extra space. This structure would have remained extant until after the Johnson occupation. Johnson finally moved from the "well developed" property in 1843 (Hussey, 1967:78).

Walter Pomeroy is considered to be the next owner of the property but isn't thought to have occupied the home and so most of the house improvements fall to the next occupant, Newell. Newell purchased the property from Walter Pomeroy and moved to the home sometime in 1844 or 1845 (Hussey, 1967:195). Newell and his family lived at the site until 1854 making his stay the longest of all the owners. Newell not only had a very large family as mentioned before, but he was also a wealthy and influential individual. This meant that he had the money and the means to improve the home to better fit his family and lifestyle. This likely included many improvements which we find evidence for in the archaeology. Newell would have first built the kilns on his property which likely furnished the hearth and firebox with its bricks, as well as the foundation which we see laid over the top of the brick pathway leading from the front door. We can say with some certainty that this was the first task to be complete as the expansion of the house could not have been completed without the brick foundation. Once the bricks had been finished, the strongest and most complete bricks were used to lay the foundation and the extension to the west side of the house would be completed. It is difficult to say if this extension was originally meant as a covered porch which was then later enclosed, a

common practice, or if the extension was always intended as a part of the house. The extension added about 278 sq ft to the interior of the home when complete. It is likely that this is both when the wood floor was installed and replaced or covered the original clay floors, and when clapboards would have been installed on the exterior of the home to not only update the façade but to seamlessly combine the original home and the extension. It was common in early America for families to add extensions to the home or to build the new home flush to the original cabin and install siding to both, effectively hiding the original roughhewn cabin. It is possible that this first extension served to bridge the gap between the two dwellings, the original cabin and the small dwelling likely built during Johnson's occupation. This extension would have extended from the southwest corner where the front door was located and extended out about 2m or 6.5 ft from the first extension. A cast iron stove was either already in the space or added to the space, leaving the burn feature in its place. If the first extension did not establish this connection, then a second extension was likely made to do this. It isn't possible to say in what years these additions would have been made, only what order they were likely completed in sometime between 1844 and 1854. However, it is likely that these additions were made earlier in his occupation as Newell and his family moved to a nearby home which they had built in 1854 and would not likely have made improvements to the old home knowing they would be moving soon (Hussey, 1967:206).

Robert Newell sold the property to Donald Manson who moved to Champoeg in 1857 (Hussey, 1967:155). It is unclear based on the archaeological record if Donald Manson ever occupied the home but oral history states that Manson moved into the original cabin and made improvements to the home (Hussy, 1967:226). It is likely that

these improvements included simple cleanup from the 1854 flood, a small flood a couple years previous, and likely maintenance such as patching or replacing the roof and floorboards. Unfortunately, Manson was devastated in the flood and "his home down on the bottomland was carried away by the high waters. In consideration of this fact, Robert Newell and his wife on March 24, 1862, sold Manson for the token payment of one dollar a tract of four acres on the hillside adjoining the Scotsman's farm" (Hussey, 1967:232). Based on this account, it isn't likely that much of the home survived the 1861 flood.

Sometime after the 1861 flood, what remained of the house was leveled. This likely entailed pushing what was left of the firebox and chimney, as well as what was left from the infrastructure of the house, into available spaces like the well and the cold storage pit. This would explain why most of the bricks at the site were found in these two locations and that the only bricks which remained in situ where those already flush to the ground. One complete "Catawba Wine Bitters" bottle which postdates the occupation of the home (1860-1867) was found in the brick rubble of the cold storage pit and likely marks the event of the house being leveled. Since that time, the area has simply served as an agricultural field leaving behind some of the more modern artifacts that were found which are associated with farming machinery.

Ch. 6 Discussion and Conclusion

When attempting to reconstruct the log cabin that once stood at the Newell site, many images come to mind which reflect the quintessential log cabin in which Abraham Lincoln grew up or where the family from little house on the prairie lived. American's are taught at a young age that the log cabin was the house that new settlers built as they claimed new territory across America. However, this image brings a lot of assumptions with it and favors only one style of log cabin, commonly referred to as the Lincoln log cabin. It is only when we begin to step back from this image and trace the lineage of the log cabin that we begin to understand its long history and the many cultures which have influenced its structure.

Often when looking at a structure as simple and individual as the home, researchers look to the theory of vernacular architecture. This term is the term used to mean, the study of the common or uncelebrated structures which compose most of the architecture around us. Glassie would state that this is a very wide and encompassing term but "when we isolate from the world a neglected architectural variety and name it vernacular, we have prepared it for analysis" (Glassie, 2000:20). It is with this analysis that we begin to create new categories and understand our surroundings better.

Vernacular architecture seeks the individual builder and his cultural influence in explaining why a structure was built a certain way. "All creations bespeak their creators. They stand before us as images of will and wit. In this, architecture is like other things, and there are no differences among kinds of building. All are cultural creations, ordering of experience, like poems and rituals" (Glassie, 2000:18). It is this researchers hope to explore the vernacular architecture of the Newell site, though without a standing

structure, the task becomes more difficult. However, knowing the history of the homes occupants and gathering what details we can from the archaeology and written records, we can begin to say how these men influenced the structure. It is important though, to understand exactly what factors influence the structure.

"Vernacular technology depends on direct connections: direct access to materials and direct connections among suppliers, producers, and consumers who simultaneously shape landscapes, social orders, and economic arrangements, while wealth circulates in the vicinity" (Glassie, 2000:31). This means that we cannot only look at the individuals who lived in the home but their neighbors, the suppliers, possible builders outside of the occupants, the wealth of the area as well as of the individual, and the environment. While commonly a home is owned by one man, the construction of a home is a group effort. As much of these factors change through time and with the different occupants, it is important to work through this analysis gradually.

John Ball, the first occupant, was an American man who grew up in New Hampshire on a farm (Ball 1925:3). John was an individual who grew up hearing stories of the west from a neighbor who had participated in the Lewis and Clark expedition (Ball, 1925:3). Ball was highly educated and likely had some idea of what homesteading would entail, though not the hardship. However, John Ball was not likely to have had the opportunity to ever build his own home until he reached the west coast and his concepts of an early log cabin were likely that of the 'traditional American log cabin' which developed on the east coast.

When Europeans first came to the America's and began to settle the land, they brought with them the architectural styles of their country. "Those from Scandinavia, Germany, and Switzerland built log cabins when they arrived. Those living in countries where log dwellings did not then exist built the types of houses with which they were familiar when they planted their roots in American soil" (Weslager, 1969:93). However, many of the homes built of stone, brick, or other materials soon fell to the wayside in favor of those homes built of wood. Where wood had been a scarce resource in many European countries, in the New World, wood was plentiful. This required many cultures to adapt construction styles that were of German, Swiss, or Scandinavian heritage (Weslager, 1969:117-133). As more and more Europeans flocked to the new world, more and more cultures began to adapt the wood structures of other cultures. "After their arrival in the New World the Scotch-Irish lost no time in imitating this method of house construction used by their Swedish and Finnish neighbors in Delaware and their German neighbors in Pennsylvania" (Weslager, 1969:228). As time moved on and cultures began to mix, different traits from different European cultures began to be used in the construction of log cabins creating hybrids unknown to the traditional European cultures. "Typological differences began to lose whatever national or ethnic diversity they once may have had, and personal tastes and individual genius played an important part in the design of a log cabin consonant with the environment and available materials" (Weslager, 1969:238). Eventually, an American cabin evolved which incorporated "basic Scandinavian and German traits, with modifications by the Scotch-Irish and others" and the individuality of the European countries was lost to the classic American log cabin (Weslager, 1969:238). It is this log cabin that John Ball was likely familiar with, though

his family likely lived in a hewn wood house rather than a cabin, and it is the image of the classic log cabin that Ball likely brought with him to the West. However, we know that this is not the cabin which was built.

The archaeology at the site has revealed a post in ground method or poteaux-en-terre style of construction which is a well-known style of French construction. This construction style was used in France and brought over with the French settlers to areas such as Eastern Canada and the Midwest. "Log building was known in France, although the horizontal notched log style was far less common than walls composed of vertical logs set in the ground. This style, termed *poteaux-en-terre,* existed in France as late as the nineteenth century, and was used in French settlements in the New World well into the twentieth century" (Hutslar, p.23). This style of cabin would have been unknown to John Ball except maybe as witnessed during his time at Fort Vancouver (Mullaley, 2011:32). Many of the Hudson's Bay Company men who were hired were French Canadian and they brought with them their cultural style of construction. As Glassie would state, "Culture accumulates into an inner resource of association and gathers order aesthetically", creating familiar styles of construction (Glassie, 2000:17). When asked to build structures as homes and shops for the Hudson's Bay Company, these French Canadian men referred to a structural style which was familiar to them, the poteaux-en-terre style. It is likely that when John Ball arrived to Champoeg with no experience in building and looking for a home, that this style, familiar to his French Canadian neighbors, was deferred to. We know that Ball stayed with his neighbor Desportes McKay while building his home in Champoeg (Ball 1925:95). We cannot say for certain who helped him to construct his home, however, based on the construction style, it seems

likely that McKay and some of the other French Canadian HBC men from the area were responsible. We also know from John Ball's description that the cabin was very simple and the building materials from the local environment. This would have reduced costs as well as simplified the construction process. It is likely that Ball did not feel conflicted having his home of a French style as "secure in faith and trust, engaged with the environment, engaged with the neighbors, restricted in freedom, people are confident. They are not very comfortable, they are not rich at all. But they are not bent by the breeze of every fashion, disoriented by every change, frightened by every noise. They are not lost in quiet desperation with only commodities to use in the struggle to construct a self." (Glassie, 2000:51). Those trends in construction style and design which Ball had grown up with on the east coast were irrelevant to the secluded west coast where a different culture and environment determined the basic style of construction. It is once we get past this very secluded, small, mostly French population that the design of the home becomes more complex.

As was stated previously, it is doubtful that any improvements were made to the home until William Johnson occupied the house with his wife and sons. He was a British born sailor who, like his neighbors, worked for the Hudson's Bay Company before settling in Champoeg. He, and his native wife, were likely use to the homesteading conditions in the west and did not likely feel the need to improve the home to any great extent. However, we do see some reflection of status and wealth in the two slave boys that Johnson is said to have had and in the teacher, Mr. Robert Moore, that he was able to hire for his sons (Wilkes, 1975:104; Hussey, 1967:78). It is likely that with the added source of labor his slaves provided and some sense of status and comfort, that Johnson

was not only able to add windows and a brick path to the home, but build an extant structure in which his slaves or guests were able to stay. The window glass and rubble brick path were minor improvements which were added luxuries in a small and secluded community, but with Johnson's connection to the HBC, it was possible for him to purchase limited goods such as window glass. We also know from written accounts, that Johnson's wife's native culture was reflected in some of the simpler aspects of the home. Farnham noted that the house had "a floor covered with flag mats", a common practice of the local Native Americans who used the mats to cover clay floors (Farnham, 1977:88). It is lucky that Farnham noted this simple feature of the home as it provides the researcher with information which the architectural record could not. It also tells us that most of the improvements evident in the archaeological record were made later on, likely during the Newell occupation.

Newell is unique to the history of the home, in part because he is occupies the house the longest of any of its occupants, but also because he represents a very different type of man. Newell, unlike most of his predecessors, was a man focused on building the town, forming an American government, and who had accrued his own wealth. Just as "the change from the village to the farm was a change in the economy from collective to individual enterprise", the change from the farm to the village was a change from the individual to the collective (Glassie, 2000:105). This now meant that the isolation and seclusion which had made Ball feel safe in a French style of home and which did not reflect current trends had disappeared and Newell, as well as other American's coming from the east, were now focused on presenting the ideal American town. Not only were American trends a growing influence, but more commodities to achieve this ideal were

available. Newell was not only wealthy and able to afford these commodities, but he also wished to hold a position of leadership in the town and in the development of the government, and it benefitted him to reflect this in his home. "A dwelling built of logs on the frontier, although admirable suited to the existing primitive settlement conditions, was often considered a mark of inferior status. Thus, when replaced it was succeeded by a timber frame structure, or, when enlarge, the addition was frame and the original log house was covered to hide the log construction" (Noble, 1984:2). As discussed previously, it is likely that Newell added siding to the original log cabin when the first addition was made to the west side of the home. This gave the impression that the house was framed and therefore of a higher quality than a log cabin. In this action, we also see Newell cover up the French construction with a style more suited to the east coast, a style familiar to the now growing American population. Newell would have also replaced the original wattle and daub fireplace with a brick one which was not only more energy efficient but created a focal point and a statement for anyone entering the home. Therefore we see the house influenced not only by Newell's American background, his wealth, and status, but also the town's now American population and the overall better access to resources.

Understanding this long and somewhat complex history of the house, we come back to the question stated earlier: Can we demonstrate that this structure conforms to a French Canadian style of architecture? Simply put, just like the complex history of the house, the answer to the question becomes somewhat complex as well and largely depends on the year in which we are looking at the house. In 1832, when the house was originally built, yes, the structure conforms to a French Canadian style of architecture.

The house is a standard, one room, poteaux-en-terre log structure. Although, the structure likely varies in what wood was used from those in Eastern Canada or France, and yes, an American is living in the space, but the construction style is undoubtedly French Canadian. As the years pass and other individuals occupy the home, we begin to see changes such as windows and a brick path installed by a British man, likely with the aid of his Native American slaves. Does the home still conform to a French Canadian style of architecture? Overall, yes it does but we also begin to see more of the individual. "Typological differences began to lose whatever national or ethnic diversity they once may have had, and personal tastes and individual genius played an important part in the design of a log cabin consonant with the environment and available materials" (Weslager, 1969:238). We see this particularly in the flag mats used on the floor, a Native American practice, and yet the overall structure of the cabin is still the French Canadian poteaux-en-terre construction style. It isn't until we look at Newell's occupation that the answer really changes. Extensions are added to the house in what is likely an American style of a frame structure brought from the east coast. It is once the original log cabin was also covered by this style of framed house that the French Canadian style of architecture disappears, but only from the perspective of the viewer. The French Canadian poteaux-en-terre construction is still beneath the framing and evident now to archaeologists looking at the footprint of the structure. The house becomes unique, as most houses with a long history of occupancy do. The structure becomes a mosaic of all those who have occupied the home and no longer can be attributed as a whole to any one man or culture.

This particular site is an important example, not only of the unique settlement of the northwest, but a realistic archaeological assessment of a dwelling. Many of the

methods and ideas set forth by archaeologists, focus on the ideal situations. Roenke chose the sites which he studied particularly because they had short occupations with a rather simple history (Roenke, 1978). Often when houses are described in their architecture, it is because they clearly represent a single style of architecture or a single building period, but these examples are rare. Most houses are occupied by many individuals and families, each with their own preferences and ideas on how to improve the home and the result is a mish mosh of foundations, structural styles, and sometimes unidentifiable features. When looking at the archaeology of one of these dwellings, it becomes more difficult to identify concepts such as building style because the structure is no longer there to look at. Some features, such as the roof or the floorboards are completely gone and it is only with artifacts, artifact distributions, and the historic records that the design of the house begins to be pieced together. When the Newell house was first excavated, the long history of the house came as a surprise to everyone and as excavations moved forward, features such as posts and hearths began to tie together what the home must have once looked like. It is once we take all of these factors into consideration that we begin to understand how the house grew and evolved with its occupants and begin to see their cultures, wealth, and environment affect that growth.

Bibliography

Adams, W. H. (2002). Machine cut nails and wire nails: American production and use for dating 19th-century and early-20th-century sites. *Historical Archaeology*, 66-88.

Attebery, Jennifer Eastman (1998) *Building with Logs: Western Log Construction in Context.* University of Idaho Press, Idaho.

Ball, John (1925) *Autobiography of John Ball*. Compiled by Kate Ball Powers, Flora Ball Hopkins, and Lucy Ball. Grand Rapids Michigan.

Bell, James (1998) *Report of the Ground Penetrating Radar Survey at Champoeg, August 1998*. Pacific Global Surveys Inc., Oregon.

Brauner, David (1987) *Archaeological Evaluation of Site 35MA72: The Hudson's Bay Company Granary Site, Champoeg State Park, Marion County, Oregon*. Report prepared for the Oregon State Historic Preservation Office from the Department of Anthropology, Oregon State University, Corvallis, Oregon.

Converse, K. O. (2011). *" Like Nuggets from a Gold Mine" Searching for Bricks and their Makers in'the Oregon Country'* (Doctoral dissertation, Cultural Resources Management Program, Sonoma State University).

Cromwell, Robert, Helen Delight Stone, and David R. Brauner (2000) *Archaeological Testing of the Newell Historic Farmstead Site (ORMA41), Champoeg State Park, Oregon*. Report to the Oregon State Historic Preservation Office from the Department of Anthropology, Oregon State University, Corvallis, Oregon.

Edwards, P. L. (1842). *Sketch of the Oregon Territory: or, Emigrants' guide*. Printed at the" Herald" Office.

Edwards, J., & Wells, T. (1993). *Historic Louisiana Nails: Aids to Dating of Old Buildings*. Baton Rouge, Louisiana: Geoscience Publications.

Ennals, Peter and Holdsworth, Deryck (1998) *Homeplace: the making of the Canadian dwelling over three centuries*. University of Toronto Press, Toronto. http://www.worldcat.org/title/homeplace-the-making-of-the-canadian-dwelling-over-three-centuries/oclc/431557160

Farnham, Thomas J. (1977) An *1839 Wagon Train Journal: Travels in the Great Western Prairies, the Anahuac and Rocky Mountains, and in the Oregon Territory.* (Copyright 1977 by Rodney R. McCallum.) Greeley & McElrath Tribune Building, New York.

Gibson, James R. (1985) *Farming the Frontier: the Agricultural opening of the Oregon Country 1786-1846.* The University of British Columbia Press.

Glassie, H. (2000). *Vernacular architecture* (Vol. 2). Indiana University Press.

Gurcke, K. (1987). Bricks and Brickmaking-A Handbook for Historical Archaeology.

Harris, T. M. (1805). *The Journal of a Tour Into the Territory Northwest of the Alleghany Mountains; Made in the Spring of the Year 1803: With a Geographical and Historical Account of the State of Ohio; Illustrated with Original Maps and Views* (Vol. 3). Manning & Loring.

Herbert, James M. (2007) *Culture Built Upon the Land: A Predictive Model of Nineteenth-Century Canadien/Métis Farmsteads*. Unpublished Master's thesis, Oregon State University, Corvallis Oregon.

How many nails per pound? (n.d.). Retrieved February 16, 2016, from http://www.leaderhome.com/nails.html. Hardware site.

Hussey, John A. (1967) *Champoeg: Places of Transition.* Oregon Historical Society, Portland, Oregon.

Hutslar, D. A. (1986). The architecture of migration: log construction in the Ohio country, 1750-1850.

Hutslar, D. A. (1992). *Log construction in the Ohio country, 1750-1850*. Ohio University Press.

Manion, Mollie (2006) *A Settlement Model at the Robert Newell Farmstead (35MA41), French Prairie, Oregon*. Unpublished Masters Thesis, Department of Anthropology, Oregon State University, Corvallis.

Manion, Mollie (2014) *Where Have All the Women and Children Gone: An Examination of Domestic Life at the Newell Farmstead (35MA41) in the Early Oregon Country.* Unpublished Doctoral Dissertation, Department of Anthropology, Oregon State University, Corvallis.

Manion, Mollie, and David R. Brauner (2011) *Investigations at the Robert Newell Farmstead, 35MA41, OSU Archaeologial Fieldschool, Summer 2009*. Report to the Oregon State Historic Preservation Office from the Department of Anthropology, Oregon State University, Corvallis, Oregon.

Maritime fur trade. (2010, April 10). Retrieved February 16, 2016, from https://commons.wikimedia.org/wiki/File:Maritime_Fur_Trade-NorthWestCoast.png
Image file created specifically for the Wikipedia article

Marshall, Howard Wight (1981) *Folk Architecture in Little Dixie*. University of Missouri Press, Columbia.

McDonald, K. (2002) *Archaeological Applications of Magnetometry and Ground Penetrating Radar on Flood Plains of the Pacific Northwest*. Masters of Arts thesis, Portland State University, Portland, Oregon.

Miller, H. (2013, July 3). Visit an archaeology dig this summer at Champoeg. *Statesman Journal*. Retrieved November 19, 2015, from http://www.statesmanjournal.com/story/travel/outdoors/2014/07/03/visit-archaeology-dig-summer-champoeg/12137431/

Mullaley, M. J. (2011). *Rebuilding the Architectural History of the Fort Vancouver Village*. Portland State University.

Nelson, L. H. (1968). Nail chronology as an aid to dating old buildings. *History news*, *24*(11).

Noble, A. G. (1984). Wood, Brick, and Stone: Volume I: Houses.

Poet, R. M. (1996). Women of valor: the Sisters of Notre Dame de Namur, St. Paul, Oregon, 1844-1852.

Rapoport, Amos (1969) *House form and Culture*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Rapoport, Amos (1994) *Spatial Organization and the Built Environment. In Companion Encyclopedia of Anthropology*. Tim Ingold eds. Pp. 460-502. New York, NY: Routledge. http://books.google.com/books?hl=en&lr=&id=j6Y2hNf35J4C&oi=fnd&pg=PA460&dq=built+environment,+culture&ots=JZPUFdUnAt&sig=HvHjEN7KRnqvaN2NFyzy-CcGXWE#v=onepage&q=built%20environment%2C%20culture&f=false

Roenke, K. G. (1978). Flat glass: its use as a dating tool for nineteenth century archaeological sites in the Pacific Northwest and elsewhere. *Northwest Anthropological Research Notes, 12*(2), 1-128.

Ross, Lester (1976) *Fort Vancouver 1829-1860: A Historical Archaeological Investigation of the Goods Imported and Manufactured by the Hudson's Bay Company*. United States Department of the Interior, National Park Service, Cultural Resources Management Division, Washington, D.C.

Rybczynski, W. (2013). *One good turn: A natural history of the screwdriver and the screw*. Simon and Schuster.

Speulda, Lou Ann. (1986) *Champoeg: A Perspective of a Frontier Community in Oregon, 1830-1861.* Anthropology Northwest Number 3, Department of Anthropology, Oregon State University, Corvallis, Oregon.

Strickland, Samuel and Agnes Strickland (1853) *Twenty-Seven Years in Canada West, or, the Experience of an Early Settler*. R. Bentley, London

Walker, Charles M. "History of Athens County, ohio. Cincinnati: Robert Clarke & Co., 1869.

Walters, W. D. (1982). Nineteenth Century Midwestern Brick. *Pioneer America*, 125-136.

Weiland, J. (2009). A Comparison and Review of Window Glass Analysis Approaches in Historical Archaeology. *Technical Briefs in Historical Archaeology*, *4*, 29-40.

Wells, T. (1998). Nail chronology: the use of technologically derived features. *Historical Archaeology*, 78-99.

Weslager, C. (1969). *The Log Cabin in America: From Pioneer Days to the Present*. New Brunswick, New Jersey: Rutgers University Press.

Wilkes, Charles. (1974) *Life in Oregon Country Before the Emigration*. Eds. Richard E. Moore, The Oregon Book Society, Ashland.

Winther, O. (1950). *The Old Oregon Country: A History of Frontier Trade, Transportation, and Travel*. Lincoln, Nebraska: University of Nebraska Press.

Wonders, William (1979) *Log Dwellings in Canadian Folk Architecture*. Annals of the Association of American Geographers 69(2):187-207.

Woods, J. (1822). *Two Years Residence in the Settlement on the English Prairie, in the Illinois Country, United States*. Longman, Hurst, Rees, Orme & Brown.

Wyeth, Nathanial (1969) *The Journals of Captain Nathaniel J. Wyeth*. Ye Galleon Press, Fairfield Washington.

Young, Amy L. (1991) *Nailing Down the Pattern in Historical Archaeology*. Master's Thesis, University of Tennessee. http://trace.tennessee.edu/utk_gradthes/1240