EXPLORING TECHNOLOGICAL STYLE AND USE IN THE ONTARIO EARLY LATE WOODLAND: THE VAN BESIEN SITE

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Abstract

This thesis explores social identity and group membership at the Van Besien site by identifying the social patterning in the production and consumption of ceramics. Since potting is a social event involving transmission of knowledge, production exists within social constraints specific to each potter and influences the technological choices he/she makes. Such technological choices culminate in what is regarded as technological style, created by the repetition of activities or choices that create discernible patterns to allow for identification of styles that demarcate social boundaries.

By identifying stylistic traditions of production and use of ceramics at Van Besien, I found evidence for both fluidity and rigidity of social boundaries. There are constant technological choices that traditionally would be viewed as evidence of rigid social membership. In contrast, the presence of variability at the Van Besien site indicates that social groups were not rigid. To identify if social membership was spatially represented, variability was explored throughout the site. I found that there were unexpected social divisions visible spatially in the pottery.

The results demonstrate that with new theoretical frameworks, new interpretations regarding village social spheres can be discerned. My thesis represents a successful re-evaluation of an extant collection with missing and deficient documentation. This case study shows that extant collections can be revisited, reevaluated, and shed new light on academic debates in Ontario archaeology.

Acknowledgements

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Chapter 1 – Introduction

Throughout the history of archaeology, ceramics have been used to create chronological frameworks of past cultures. Decoration and form are the attributes most widely used to determine cultural chronology. Decoration and form are also used to define cultures and to track ethnic, boundaries. These are macro-scale issues and do not focus on production or consumption of ceramics. Other areas of the world have used decorative as well as technological attributes of ceramics to explore more micro-scale issues such as group membership and social identity (Belfer-Cohen and Goring-Morris 2007; Gosselain 2011). This avenue was not commonly explored in past Ontario research; rather ceramics were used to explore ethnicity and macro-scale issues (e.g. MacNeish 1952; Noble 1973; Wright 1966, 1967). Ethnicity in Ontario refers to the idea of discrete and homogeneous sociocultural systems (Cunningham 2001:2-3). It is my hope that ceramics from archaeological sites in Ontario be explored more commonly on a micro-scale. Exploring these themes has opened new doors for interpretation and changed how certain aspects have been viewed globally. This thesis uses the site of Van Besien as a case study to show how, by using an alternative approach, Ontario archaeology can explore other social issues by investigating variability of ceramics. Specifically this thesis applies a new approach to explore whether the potters at the Van Besien site made similar technological choices, choices that might suggest a distinct intra-site identity.

1.1 Sociality Through Ceramics

Sociality and identity are reflected in the archaeological record through patterning of material culture, including ceramics. Sociality refers to how an individual engages with another entity (human or material) within a social situation (Knappett 2004:47). Identity is used in this thesis refers to the representation of self in the context of the social surrounding and membership in particular social groups (Knapp and van Dommelen 2008:17). Multiple avenues of investigation, including technological steps and use, reveal distribution patterns that allude to sociality and identity (Stark et al. 2000:298; Wills 2009:284, 286). Ceramics are an example of products produced within social contexts (Dobres and Hoffman 2000). The steps of ceramic production are behaviors learned within communities, as a result ceramics can be used to demarcate the social groups and contexts they were learned within (Hegmon 2000:217-219). For example, if multiple variations in material culture are present, the social community either accepts deviation from a cultural norm or there is a presence of two or more groups living in the same location (Crown 2007:687; Stark et al. 2000:324; Wills 2009:288). On the other hand, if there is an overwhelming degree of similarity of ceramic technology and style, it is generally believed that there is a single social group present (Curtis and Latta 2000:12). In order to address such issues of local group membership and social identity in Ontario, alternative theories and approaches must be introduced and the wealth of extant collections investigated.

1.2 Use of Extant Collections

Extant collections should be utilized to explore new lines of research such as spatial variability of the production and use of ceramics. Scholars suggest that re-evaluation of curated assemblages will result in new interpretations for answering research questions (Allen 2004; Belfer-Cohen and Goring-Morris 2007). For instance, in the Near East, past chronological frameworks are questioned and re-evaluated as more collections are revisited (Belfer-Cohen and Goring-Morris 2007). In Polynesia, scholars are finding regional variation of site patterns and deposition, and through calibration of radiocarbon dates, they are questioning previous theories of socio-political relations, migration/settlements and the rise of societal complexity (Allen 2004:143). Allen (2004:190) stresses the importance of past work as a basis for future work, but points out that, as new data appears, old theories need to be reformulated.

The conclusions drawn from re-evaluated collections may not only can challenge chronology, but also can create opportunities to explore aspects of daily life. In the northeastern United States, Hart (2000) explores the relationship between maize, beans, and squash, and questions the belief that these crops had been utilized at the same time. His interpretation of newer AMS dates suggests that maize, beans, and squash never co-existed prior to 1300 AD. This was confirmed by additional AMS evaluation of extant ceramic collections excavated from the same site. This and other examples demonstrate that archaeological interpretation evolves as better empirical observations are introduced. These observations are open for re-assessment as methods and theories change (Hart 2000:8).

Willingness to re-analyze materials and sites is key to opening the door to Ontario's past. As discussed previously, ceramics are used to define culture complexes, which depend on continuity and homogeneity. Recognition of variability within Aboriginal sites in Southern Ontario contradicts views of regional continuity. Scholars such as Ferris (1999) and Warrick (2000, 2008) have begun to re-evaluate the current labels and interpretations that are pervasive in Ontario archaeology. Ontario archaeology has seen both the production of new data and the re-evaluation of collections (see Chapter 2). These instances illustrate the necessity of "sustainable archaeology" and re-evaluation of re-extant search collections (see Ferris and Cannon 2009). In this thesis I re-evaluate the Van Besien site to demonstrate how re-analysis of extant collections, in light of new theoretical models, can produce new data and benefit our knowledge of Ontario archaeology.

Re-appraisal of Van Besien can contribute to a re-interpretation of Ontario's archaeological record during the Late Woodland period. By using an alternative approach to re-evaluate Van Besien, I identify cultural choices encoded within ceramics (Stark et al. 2000:324). Understanding intra-site relationships highlights broader issues concerning inter-site and inter-regional relationships. Alternative approaches such as technological style question the validity of current broad categorical labeling of past Aboriginal peoples in southwestern Ontario such as "Iroquoian" or "Algonquin" (Cunningham 2001:22; Michelaki 2007:151).

1.3 Thesis Organization

After this introductory chapter, I turn to Chapter 2, which features an overview of Ontario archaeology at multiple scales. The overview explores both theoretical frameworks and previous findings across the province, as well as at the Van Besien site. By presenting the current state of Ontario archaeology, I stress the importance of revisiting extant collections and identify how questions regarding social and group membership can be explored.

In Chapter 3 I discuss the culture historical approach, particularly its role in Ontario. I stress the necessity of developing and implementing other theoretical frameworks before turning to the theoretical framework applied in the remainder of this thesis. I then introduce my research questions.

In Chapter 4 I explain how the theoretical framework is operationalized within this thesis and identify how it addresses the research questions presented in the previous chapter. I lay out in detail each technological step of pottery manufacturing and identify the means by which pottery consumption have been analyzed. I present all of these areas of analysis with their corresponding attributes, and I explain the relationship of each attribute in the context of the proposed theoretical framework.

I present my findings in Chapter 5, separating out each technological step of production (including paste, forming, finishing, etc.) and attributes relating to consumption at Van Besien. I then explore the spatial distribution at the site in regards to the technological choices made in producing ceramics. These choices are discussed in terms of social groupings delineated by technological differences and consumption by

identifying how space is divided socially within the Van Besien site. The idea of technological style at Van Besien is discussed and conclusions regarding their meaning proposed.

The final chapter, Chapter 6, brings the thesis to a close. The data and results are summarized to show data trends and how this new data answers previously presented research questions. In closing, it is stressed how this thesis will contribute to the re-analysis of materials from extant collections in Ontario.

Chapter Two - Study of the Late Woodland Period: A Focus on the Ontario Early Late Woodland

In this chapter I give an overview of the period known as the Late Woodland, or Ontario Iroquoian period in Southern Ontario. I will also discuss the chronology and aspects of cultural variability at multiple scales of analysis within Ontario Early Late Woodland period. I use Van Besien to illustrate the known variability of this period and how Ontario archaeologists have interpreted it. In addition, I will address and identify the social interpretations currently in place in Ontario in regards to politics, economics, and social relations.

2.1 Temporal Context:

The common use of the term "Iroquoian period" has social implications as it ignores the "nuanced, localized identity formations that occur as groups engage with their material surroundings" (Watts 2008:4). By using this term, Ontario archaeologists homogenize the heterogeneity found at the micro scale across Ontario. For example, a site defined as Early Ontario Iroquoian known as the Praying Mantis site, found ceramic decoration variability between longhouses suggesting presence of localized identity (Howie-Langs 1998). Variation and differences are products of environmental variability, differing scales of socio-political organization, and human interaction with cultural surroundings (Watts 2008:4,38). As Ontario archaeologists excavate new materials and

create new data and interpretations (from new and old collections), more material variation has become apparent within cultural categories and as a result certain terms have fallen into partial disuse (Warrick 2000:435). I am not arguing that markers of time periods should change, but rather, that the ethnic nature of the labels used should change. I will specifically be referring to Ontario when discussing the Early Late Woodland more specifically currently identified as Early Ontario Iroquoian; I will not be discussing the Early Late Woodland in the larger context of the United States. Therefore, following recent conventions, the previously known periods of Early Ontario Iroquoian, Middle Ontario Iroquoian and Late Ontario Iroquoian will be referred to as Ontario Early Late Woodland (OELW), Ontario Middle Late Woodland (OMLW), and Ontario Terminal Late Woodland (OTLW), respectively, for the remainder of this thesis.

These three periods span a temporal range from 1000 AD to 1650 AD, a stretch of time that begins with the appearance of longhouses and ends with European contact. The OELW encompasses ca.1000-1300 AD (Timmins 1985) and is characterized by the appearance of incipient longhouses. The OMLW period begins in 1300 AD and transitions to terminal Late Woodland around 1400 AD (Dodd et al 1990: 291). The OMLW period is defined by changes in ceramic decoration and pipe manufacture quality (Dodd et al 1990: 291). The OTLW, which lasts from 1400 to 1650 AD, begins with the consolidation of local groups into larger regional groups and ends with initial European contact (Dodd et al 1990: 291).

Richard MacNeish (1952) placed sites within this chronological framework by creating a typology of Ontario pottery. It is a system that is still used to seriate sites

today. MacNeish (1952) defined his ceramic types based on a combination of traits including decoration, form, and rim shape. This typology is used to trace prehistoric groups through time and space (Timmins 1997:127). For instance, Noble (1973) used the frequency of twelve types to chronologically place Van Besien in the OELW period (Middle Glen Meyer Period) (for further discussion see MacNeish 1952; Wright 1966).

Several years later Emerson (1956) published a handbook, instructing readers in the analysis of rim sherds that built on MacNeish's types. James Wright (1966, 1967) later argued that type analysis should be replaced by attribute analysis for the construction of tighter chronologies. In attribute analysis the distinguishing features of pottery, such as rim shape and decoration, are identified separately and are the focus of study, not the whole pot (Wright 1966; Wright 1967). Wright argued that an attribute was the smallest unit of analysis and therefore the most accurate indicator of temporal and spatial relationships (Wright 1967:99). An excellent example of attribute analysis is Ramsden's *A Refinement of Some Aspects of Huron Ceramic Analysis* (1977). Ramsden discusses the downfalls of typologies and by using attribute analysis challenges previous oversimplifications of Huron culture (1977:15-16). I will now provide an overview of OELW that is informed and shaped by these evolving typologies and their utility for research at the Van Besien Site.

2.2 The Ontario Early Late Woodland Period

According to recalibrated radiocarbon dates, the OELW period dates ca. 1000-1300 AD (Timmins 1985; Williamson 1990). The OELW period is a time of transition from the Middle Woodland period to the Late Woodland period, and is marked by the appearance

of incipient longhouses (Williamson 1990:304). Incipient longhouses are shorter in length than longhouses that appear at the end of the OELW (Williamson 1990:304). Scholars believe the shift to more permanent structures, such as longhouses, during this period indicates a transition to a more sedentary lifestyle (Williamson 1990:318).

OELW sites are located near large tracts of sand that would allow corn to thrive (Williamson 1990:304), and often occupied easily defensible areas (Wright 1972:44). Characteristic OELW villages cover 1 acre (0.4 hectare) (Warrick 2000:434) and are normally surrounded by one or two rows of palisade. Village plans show superimposed houses, indicating that numerous re-buildings were typical, with total occupation of sites ranging from 10-30 years (Warrick 2008:23; Williamson 1990:306). It is estimated that 200-400 people occupied these sites and would most likely have not exceeded 500 people (Trigger 1976:134; Warrick 2000:423). This period is also known for variability in house size and configuration of central hearths and large pit features for storage and refuse (Warrick 2000:436; Williamson 1985:45).

Archaeologists interpret subsistence patterns of OELW residences based on flora and fauna data as evidence for semi-permanent village life and horticulture, and suggest that the settlements were likely most intensely occupied during the winter months (Williamson 1990:306). The presence of resource extraction camps in conjunction with the non-intensive use of cultigens suggests heavy reliance on local resources, with people likely engaged in hunting, fishing, and gathering (Warrick 2000; Williamson 1990).

Some scholars believe matrilocal residence appeared alongside the introduction and adoption of horticulture and movement to year-round villages (Kapches 1990: 50). A

matrilocal tradition is one in which the couple remains in close proximity to the wife's matrilineal ancestors or live within the same longhouse once married (Nauman 2007:16). Matrilineality and matrilocality in Ontario are associated with organized village plans and cohesive political structures (Kapches 1990). Iroquoian longhouses, as found in the OELW and at the Van Besien site, are thought to be characteristically composed of matrilineal-matrilocal family segments (Creese 2012:38; Hayden 1976). These assumptions are based on ethno-historic accounts of the Huron (Richards 1967).

Scholars believe that matrilocal residences are reflected in homogeneity in longhouse floor patterns and ceramics (Kapches 1990:51; Horvath 1977). In other areas such as Kenya, local traditions of pottery form and decoration are thought to indicate matrilocal residence (Herbich 1987:203). This pattern should be reflected in material culture and in particular traits in pottery manufacture especially since ethno-historical accounts suggest that women produced the pottery in this period (Sagard 1939:109). Researchers assume that since the pots are visual objects, they would reflect the membership of women within a matrilocal residence and display social messages in manufacture and use (Chilton 1996: 125). In fact, matrilocality is often cited as a determining factor in the rise of local traditions of form and decoration of ceramics during the OELW (see discussions in Watts 2008:37).

This idea has been contested in Ontario as early as 1967 by Cara Richards. There have been arguments that you cannot infer kinship rules from cultural material (Harris 1968:360) and that ethnographic information from which this idea originated from is flawed (Richards 1967:56). Richards argues that the majority of houses documented in

ethnographic writings actually describes virilocal living patterns (1967:56). Only approximately half of residences during the 17th century described were matrilocal and as a result doubt has been cast on the regularity of matrilocal residences in pre-contact settings (Richards 1967:56). If this was in fact the case, that matrilocal residences were common during the OELW period, ceramics could be an avenue to explore it.

Material culture, including ceramics and faunal remains, from OELW sites has been used to define settlement types, such as villages or resource extraction camps. Increases in certain material types are used to infer chronology such as bone artifacts and specific ceramic decorations, and exotic goods, such as shells, are thought to signify modest trade (Williamson 1990:298-300). Artifact assemblages of OELW sites consist of ceramics (covered in detail below), pipes, gaming discs, chipped lithics, and tools and ornaments made of bone, antler, shell, and copper (Williamson 1990). Pipes become more common in this period, with barrel-shaped bowls as the most prominent type (Williamson 1990:299). Ceramic discs appear to be ground down from body sherds of vessels (Williamson 1990:299). Chipped lithic tools characteristic of the period are triangular points with downward facing corners or spurs and flake scrapers (Williamson 1990:299).

OELW mortuary practices were once thought to have been simple individual interments, but new data shows considerable variation in treatment of the dead (see discussion in Watts 2008:32). The OELW sees the introduction of ossuaries alongside primary and secondary interment in cemeteries and cremation (Williamson 1990:306). For example, in the Norfolk sand plains of southwestern Ontario, individuals were

temporarily buried in single interments before being moved to a secondary interment in communal pits outside of longhouses (Watts 2008:32; Williamson 1990:308). The custom was similar west of the plains, but the secondary interments were placed within longhouses rather than within communal burials (see discussions in Watts 2008:32). Early versions of ossuaries and isolated and flexed burials are also characteristic of eastern Ontario during this period (Williamson 1990:306).

James Wright (1966) uses differences in settlements and material culture to separate southeastern and southwestern Ontario into Pickering and Glen Meyer cultures respectively. This division has most commonly been explored through ceramic decoration (Noble 1973, Smith 1997, Timmins 1997), as well as site placement (Warrick 2000; Warrick 2008).

Populations living in Glen Meyer and Pickering region made similar choices in settlement; both groups settled in areas on hills or areas flanked with ravines and employed palisades (Wright 1966:52). However, as more data has been produced, archaeologists have identified important variations in material culture within these regions. For instance, the ceramics within the branch known as Glen Meyer differ from each other in rim decoration, castellations and body surface treatments. The Pickering sites vary in castellation types and frequency of cording as a body treatment (Williamson 1990:311). Archaeologists originally placed Van Besien in the Glen Meyer branch based on location and patterns in material culture (Noble 1973, Williamson 1990). However, these branches are based on similarities and as more variations in settlements and material culture are exposed through excavation and analysis, there is a gradual

movement to discontinue the use of these labels (Warrick 2000:435). An overview of the ceramics characteristic of this period is given below.

2.2.1 Ontario Early Late Woodland Ceramics

Ceramic vessels across this period tend to be well made and thin walled, but slowly transitioning over time from conoidal to globular forms (Williamson 1990) (Figures 1 and 2). Manufacturing techniques also change over time from coiling to slab/paddle-and-anvil construction (Warrick 2000:423; Williamson 1990). The pots are grit tempered, ranging from one to 20 liters in volume (Braun 2012:2; Watts 2008:3)(Figure 2).

Figure 1: Pickering Vessel (modified from Kenyon 1968: 99)

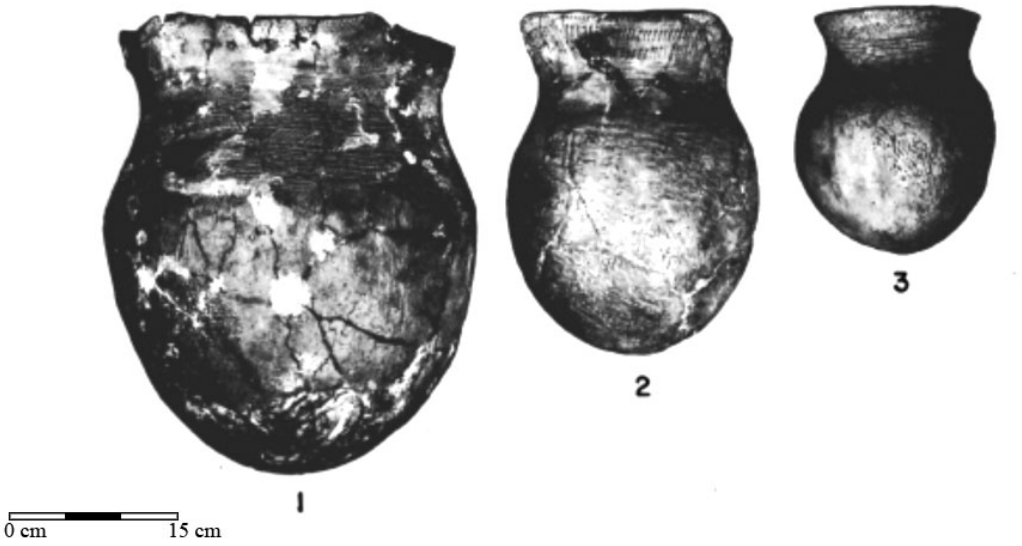


Figure 2: Glen Meyer Vessels (modified from Wright 1966: 175)

The characteristic surface treatment for this period includes cord roughening and smoothed-over cord in combination with the application of incising (cutting lines into the clay) and stamping (pressing of a tool into clay to produce a pattern) on rims and necks (Rice 1987:145-146; Watts 2008:3-4). However, these surface treatments vary across Ontario. For instance, in southwestern Ontario, the predominant finishing type is smoothed-over cord and "plain decoration" (Williamson 1990:298). Smoothed-over cord is the partial smoothing of cord markings on the surface of pots that leaves some cord markings visible (Williamson 1990:298; Wright 1966:30). Plain decoration does not imply that there is no surface treatment, but that markings left behind by paddle and anvil were completely obliterated by the act of smoothing (Rice 1987:128; Wright 1966:29). In contrast, archaeologists have found that "ribbed paddle" is the most common in south-

central Ontario, and scarified, a surface treatment with slashes seemingly random in order created by an implement or paddle, is specific to the Norfolk sand plains region where Van Besien is located (Williamson 1990:299). The ribbed paddle surface treatment appears as a series of parallel grooves resulting from a paddle with a notched or corrugated surface (Williamson 1990:298; Wright 1966:30). Collars and upward protuberances of the rim, known as castellations appear for the first time in the OELW on vessels and necks and become more defined in later periods (Williamson 1990:298). Castellations, incipient in nature, vary greatly throughout the region (Williamson 1990:298). These attributes are described in greater detail in Chapter 4.

Most researchers believe that the production of ceramics in Ontario was as an in-house or in-village activity (Allen 1993, Braun 2012; Kapches 1995). Based on low levels of ceramic production, it has been assumed that ceramics were made locally and not exchanged with other settlements (Braun 2012:18). Allen (1993:134) argues that every Iroquoian household produced pottery for its own needs. This argument is based on a lack of specialization (varying rim symmetry, firing and temper size) and previous studies in Ontario that have found attributes that vary spatially (Allen 1993; Warrick 1984b). As a result, I am assuming that the level of production is restricted to local manufacture at the Van Besien site. That being said, local production does not rule out the possibility of other aspects that can influence ceramic production such as intra-site innovation (Smith 2003:35), specialization (Martelle 2002:307-424), and exogamy (Gosselain 2011:218,220).

Iroquoian ceramics, based on ethno-historical accounts, were used for a mixture of cooking and storing goods and water (Timmins 1997). Timmins (1997:127) cites Sagard, a Recollet friar, who wrote an ethno-historical account of the Huron in the 1620s. Sagard compiled an account of Huron practices and talked about the use of pots. Sagard (1939) observed that Huron women were the makers of pottery. Archaeologists have used Sagard's observation to make the assumption that Iroquoian pottery was always made by women. According to Sagard, the Huron used pots to cook meat and fish, and as kettles for boiling water (Wrong 1939:102, 109). In his study of the Calvert Site (an OELW village in southwestern Ontario), Timmins (1997) surmises that pots made by OELW peoples were likely used for these same purposes. Residue analysis, used to infer use, is still in its infancy (Timmins 1997:127), but some studies have shown other interpretations (Morton and Schwarcz 2004; Warrick 1984b; Williamson 1985), suggesting there may have been different uses such as cooking corn.

To further explore the issue of consumption of ceramics in Ontario, Morton and Schwarcz (2004) completed a study of stable isotope analysis of $\delta^{13}C$ on charred residues of ceramics from northern and southern Ontario, ranging in age from 600-1200 AD. The aim of the analysis was to identify the types of foods prepared in ceramic pots (Morton and Schwarcz 2004). Through their analysis, Morton and Schwarcz (2004:506-507) inferred that certain charring patterns resulted from specific foods. Thick soups and mashed foods produce solid charred residues and spotty, uneven residues and encrustation come from other types of foods, such as stews of fish and mashed beans (Morton and Schwarcz 2004:506-507). The charred residue from the sites of the same

period produced a lower isotopic level more characteristic of corn than what was present in human bone collagen, which suggests maize made up 50 – 60 % of human diet in Ontario by 1200 A.D. Morton and Schwarcz (2004) concluded that corn was prepared in other ways in addition to cooking in pots since it is represented highly within human bone collagen.

2.3 The Van Besien Site

The availability of the complete artifact collection from the Van Besien site (housed at McMaster University) and lack of detailed study of the artifacts and settlement pattern data make it an ideal site for this case study. The characteristic features of the site excavation, such as no recorded stratigraphy, limited notes, and no hand-drawn maps, make it a perfect example of the applicability of this type of re-evaluation as this is the common state of documentation of extant collections. As discussed by Cannon and Ferris (2009), there is a plethora of material that has only been discussed in field reports. Many extant collections are in the same condition as Van Besien with similar documentation of the Van Besien site. As such, it will provide an accurate depiction of challenges others may experience when working with extant artifact collections.

The Van Besien site is one of many extant collections available for analysis in Ontario that are underutilized. In 1971 and 1972, William Noble, sponsored by McMaster University, directed the excavation of the Van Besien site. There are three documents directly detailing the excavation of the site: the unpublished field notes from the 1972 excavation, an Archaeological Survey of Canada site form, and a write up published in *Ontario Archaeology* (Noble 1973). With the exception of generic statements

acknowledging its temporal placement, Van Besien has received very little attention since its excavation and curation.

The Van Besien site is a characteristic OELW village and demonstrates the degree of variability present in this period. The site, which is located in the township of Norwich on the Norfolk Sand Plain in southwestern Ontario (Figure 3), dates to the OELW based on ceramic seriation and radiocarbon dates circa 1000 A.D. (Noble 1973:7; Williamson 1990: 310). As mentioned previously, sites of this time period were used for 10-30 years and then abandoned. Although there is no chronological control for this site, it is assumed that 30 years would be the longest time of occupation.

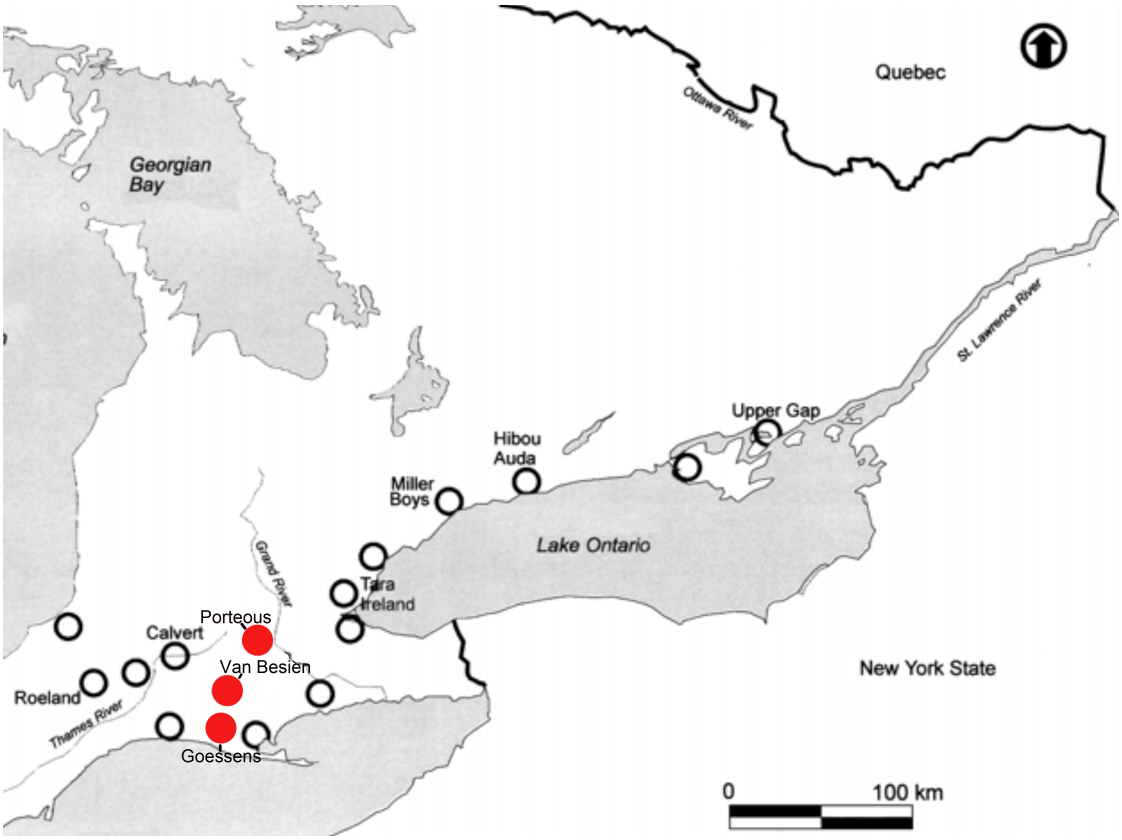


Figure 3: OELW Sites (Modified from Warrick 2000: 435)

Like many OELW settlements, the site is bordered on three sides by water. Big Otter Creek borders the north, and the west and southern perimeters drop off to ravines (Figure 4). It is a palisaded village site that experienced at least three expansions, as is evident by the presence of three separate palisades superimposed by houses. At final expansion the site included at least three longhouses with varied living intensities and architectural forms (Figure 5) (Noble 1973:10). Noble initially noted that the site at full expansion covered 1.2 hectares but this would be greatly unusual for this time period as most sites cover .4 to .6 hectares (Williamson 1990:306). Using population estimate theories (Warrick 2008), the village would have at most been occupied by 250 people at a time. Noble interpreted the village as a semi-permanent settlement, close to fishing grounds on the north shore of Lake Erie (Noble 1973:5).

Five areas were excavated in the early 1970s. Areas A and B, excavated in 1971, are located in the southernmost portion of the site. These are believed to be from an earlier occupation due to the presence of corded stick decoration, a form of rim decoration type associated with the Middle Woodland Period (Noble 1973:7). Therefore, these areas will not be addressed within this thesis. Areas C, D, and E were excavated the following year (Noble 1973; Figure 4). Area E, which is 48.8 square metres, is in the western part of the site, situated approximately 55 meters from all other excavated areas, and was believed to be a midden (Noble 1973:11). Area C is 415 square feet and is located on the eastern-most side of the site adjacent to the living space, is also likely a midden (Noble 1973:11). These remains were believed to represent refuse trapped

between palisades (Noble 1973:11). Area D represents the living space of the village itself and covers 6,795 square feet (Noble 1973:11).

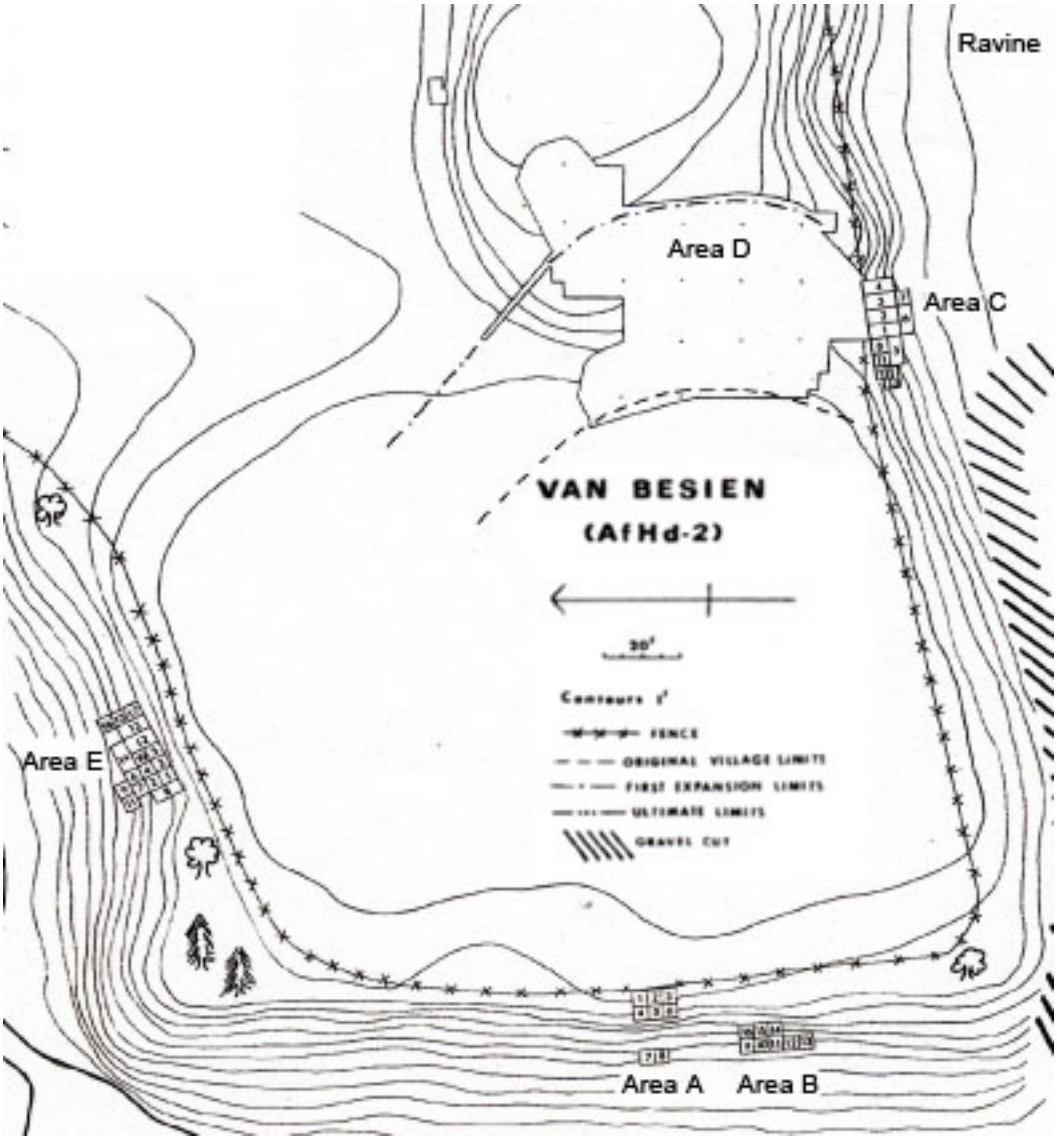


Figure 4: Van Besien Site Map (Noble 1973: 6)

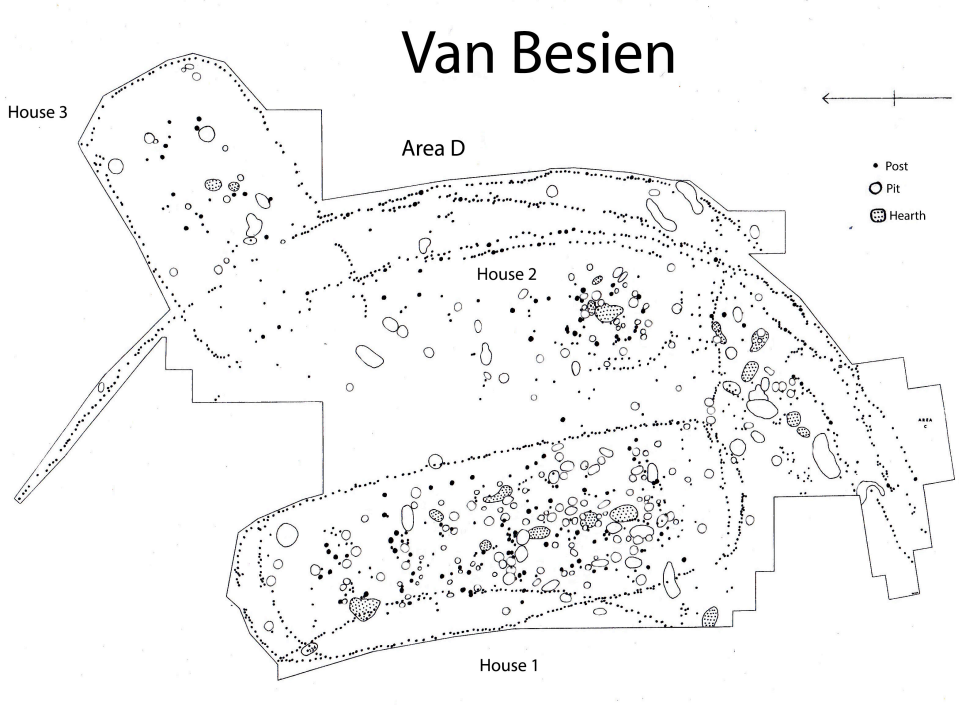


Figure 5: Van Besien site Settlement Patterns (Noble 1973: 8)

Area D contains three longhouses with variable architecture and various features, including refuse pits, grey ash pits, black soil pits, and hearths (Noble 1973:7, 10). House 1 is oriented northwest to southwest and superimposes a palisade, suggesting that this area represented a village boundary prior to the construction of House 1 (Noble 1973:11). House 1 is the largest structure in the village at 22.6 metres long and 7.8 metres wide and narrowing at each end (Noble 1973:11). Entrances are at the southeast and north ends of the longhouse, demarcated by larger spaces between support poles (Noble 1973:11). At each end of the house, there are interior division walls (Noble 1973:11); this architectural feature is not present in the other houses. There are seven oval hearths present along with 128 features. House 2, parallel to House 1, was not completely excavated, but is estimated to measure 18.3 metres long by 6.4 metres wide with rounded

ends that lead into a sidewall of double pickets (Noble 1973:10). This house contains 36 features including refuse pits and black soil pits, only five of which produced artifacts, and three hearths, with two centrally aligned (Noble 1973:11). House 3 is oriented northeast to southeast, and belongs to the latest expansion, superimposing the second palisade (Noble 1973:11). The house measures 14.8 metres long by 7.9 metres wide with two oval hearths and 18 features: six refuse pits and 12 black soil pits (Noble 1973:11). Noble concluded that, due to the small amount of refuse, this house was the least intensively occupied of the three houses excavated (Noble 1973:11).

The assemblage from the entire site consists of faunal, lithics, and cultigen remains, worked bone, worked teeth, worked shell, worked antler and native copper (Noble 1973:12). Faunal analysis, completed by Burns (1973), suggested that the Van Besien site was used for year round occupation based on the faunal and floral data. The ceramic finds include pottery, miniatures, pipes and gaming pieces. Ceramics make up 39.8% of the artifacts recovered, the overwhelming majority of the assemblage (Noble 1973:12).

In the report for the Van Besien site, Noble compared material culture to two other nearby sites, Porteous and Goessens. One is documented in a published report (Porteous) and one is not (Goessens). Thomas Kenyon and Ian Kenyon initially discovered the Porteous site in 1967-68 and salvage excavation was completed in 1969 under the supervision of Noble (Noble and Kenyon 1972:11). Stothers further excavated Porteous and explored this data in his Ph.D dissertation *The Princess Point Complex* (1977). Porteous is also located on the Norfolk Sand Plain within close vicinity to the

Van Besien site and an early example of year round occupation of a village (Noble and Kenyon 1972; Stothers 1977: 124) (Figure 3). Porteous dates to the beginning of the OELW period (Stothers 1977). It is a 0.1 hectare village with a total of five superimposed house structures surrounded by a full double palisade (Stothers 1977:126) (Figure 6). Four of these structures are described as incipient longhouses (ranging in size) and one as a circular structure (Stothers 197:126). The variable size of houses and overlapping post molds found at the Porteous site is extremely similar to the settlement plan of the Van Besien site. In chapter 5 I will compare the Porteous data with my results from Van Besien to give insight into differences between villages as well as within the site of Van Besien. Such a comparison is appropriate due to its close temporal and geographic context as well as the similar village pattern and year round occupation.

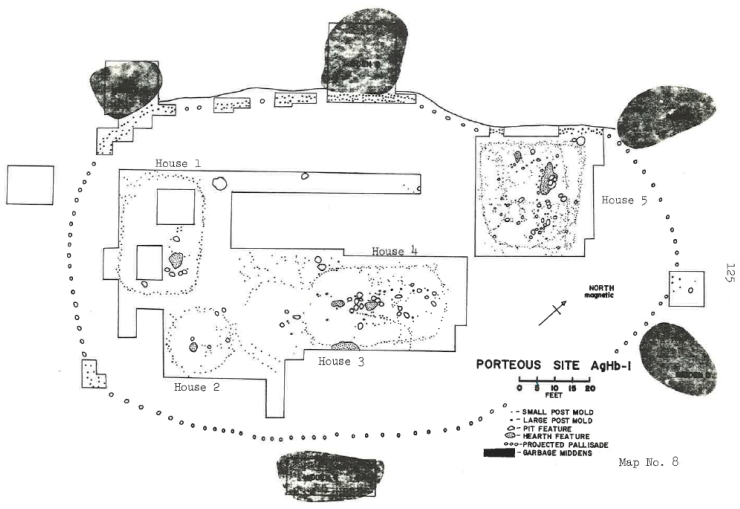


Figure 6: Porteous Site Map (Stothers 1977:125)

2.3.1 Ceramics at the Van Besien Site

Ceramics at the Van Besien site are similar to the ceramics of other OELW period sites. The ceramics are tempered with "grit" (sand/rock) and the ceramics are formed using both coil and paddle and anvil techniques (Noble 1973:20). Basal sherds from the collection show that the most common form of a pot was conoidal. According to the seriation discussed above this suggests that these ceramics date to the beginning of the Ontario Early Late Woodland period, prior to the transition to globular forms (Williamson 1990: 295).

Noble performed a basic attribute analysis on an undefined sample of the Van Besien ceramic assemblage. Noble analyzed the decorated sherds focusing on lip, rim (interior and exterior), punctates and bosses, and castellations. He spent little time on the aplastics (or non-clay inclusions) other than noting the use of grit as temper. Noble also noted that the popular forming technique was paddle and anvil (Noble 1973:20). Body sherds were examined separately to observe surface techniques and wall thickness. Noble (1973) used 16 basal sherds to conclude that the common form was conoidal and varied in wall thickness. Sherds were marked with provenience (square or pit excavated from), but no depth or stratigraphic level was given. Noble's research has documented the visual characteristics of ceramics at the Van Besien site, but more recent research in Ontario uses additional analytical attributes of ceramics to address social questions.

2.4 Interpretive Approaches in Ontario Archaeology

In recent research, ceramic assemblages and architecture are used to investigate political, economic and behavioral relations between and within sites (Howie-Langs

1998, Ramsden 2009). The case studies described below exemplify how politics, economics, and behavioral relations relate to issues of social organization and cohesion and how they have been explored previously in Ontario. These investigations vary from the macro to micro scale of analysis to explore identity at different scales (regional, village, and site). To engage with these issues, ceramic assemblages can be used in combination with other lines of evidence such as faunal remains and architecture to draw conclusions regarding ethnic identity and group membership.

2.4.1 Spatial Variability at a Regional-Scale

Warrick (1984a) and Timmins (1997) infer degrees of social cohesion through the comparison of spatial organization. Warrick (1984a) argues that closely spaced houses, such as those in OELW villages, signify a cohesive social and political entity (Warrick 1984a). Timmins (1997) goes one step further and states that longhouse clusters with doorways close to each other may reflect tighter social clusters. Through spatial organization of architecture, Warrick (1984a) and Timmins (1997) argue for social cohesion of OELW sites.

It is assumed in Ontario, through the comparison of longhouse architecture and cultural remains such as ceramic decoration of different villages, that each longhouse was occupied by an extended matrilineal and matrilocal family. Warrick (1996) argues that micro-bands of Middle Woodland times may have constituted the social group of early longhouses as they became more sedentary. During the middle Woodland period, micro-bands are assumed to be single family groups that exploited winter resources at resource

camps and then gathered together with other micro-bands to form macro-band villages in the spring and summer (Spence et al. 1990:153-154).

Like Warrick (1996), Neal Ferris (1999) argues that longhouse architecture varied throughout southern Ontario on a family-by-family or micro-band basis. To Ferris, the visible nature of architecture in combination with the required effort to construct longhouses implies a social meaning (Ferris 1999:40). He argues that the variation in architecture was a testimony to a family's place in the village (Ferris 1999:40). Longhouse architecture can represent familial growth and prosperity and a statement concerning those who lived within the residence (Ferris 1999:40).

Ceramics on a regional scale were used to form a chronological framework for OELW. This framework is based on periods of stasis and change in pottery decoration and vessel morphology. Types are not only used to gauge temporal placement but also to define ethnic/tribe identity and boundaries (MacNeish 1952). For instance, typologies of the Ontario Early Late Woodland period were used to trace origins of cultural complexes and create site seriation by citing commonalities and identifying type sites (MacNeish 1952).

Others have used ceramics, specifically decorated ceramics, as an indicator of matrilocal residence patterns based on spatial variability and similarity (Chilton 1996:125). This is a common theory of social organization within villages in Ontario during the OELW and regards homogeneity as evidence of matrilocal residence (Chilton 1996:125). It has been argued that ceramic variability indicates different matrilineal clans and as a result differences in ceramics are thought to be the result of intermarriage and

women travelling (Chilton 1996:125; Williamson 1985:344 - 345). This assumption has become embedded in Northeastern archaeology and unfortunately such an approach ignores the individual agency seen in other theoretical frameworks in favour of focusing primarily on ceramic decoration (Chilton 1998:132, 134). Like the regional scale case studies presented above, the site scale studies presented below explore architectural differences in addition to ceramic variation.

2.4.2 Spatial Variability on a Site Scale

On a smaller scale, Ramsden (2009), Howie-Langs (1998), Warrick (1984b), and Holterman (2007) explore spatial variability in a site context using longhouse architecture and ceramics to tease out social differences and intra-site identity. Ramsden (2009:306) explored variability and change in the size of longhouses, finding evidence of economic competition at a sixteenth century Huron site, known as the Benson Site. Out of the 16 houses at the Benson site, Ramsden observed that the largest house had numerous expansions and had the highest accumulation of European trade goods, St. Lawrence pottery, and beaver faunal remains (Ramsden 2009). Ramsden argues that these patterns suggest the integration of immigrants during the dispersion of St. Lawrence Iroquoians populations that had trade relations with Europeans (Ramsden 2009:306). He believes that the immigrants brought pelt trade contacts and goods with them, which explains the high number of beaver remains associated with this house (Ramsden 2009:306). Ramsden (2009:310) concludes that the continuous expansion and variability of architecture was due to economic stimulation, namely trade connections.

At the OMLW Nodwell site, Wright determined which houses were progressive and conservative in regards to adoption of new pottery decoration techniques through decorative analysis (1974). A decade later, Warrick (1984b), exploring spatial variability at the Fonger site, a late sixteenth century Late Woodland site, argues for the presence of two separate social groups. Arguments were based on the sequence of house construction, geometric patterning of settlement, and differences in pottery. Warrick believes these patterns support the presence of two different groups of closely related households (Warrick 1984b:98-99). By comparing the spatial variability in pottery form, decoration, and use, Warrick (1984b) identifies two distinct social groups.

Holterman's (2007) re-evaluation of the Fonger site ceramic distribution, from the perspective of the entire technological sequence, came to the same conclusion as Warrick. In her examination of two distinct middens, she discovered differences in preferred temper types, amount of temper used, rim orientations, and types of decoration (Holterman 2007:180) (Figure 7). These two middens were located in relation to two separate longhouse groupings (west and east wards) and thus were thought to belong specifically to each longhouse grouping (Holterman 21:180; Warrick 1984b:100). However, Holterman found little variability in use of the vessels: soot and carbon adhesions patterns appeared similar across the site (Holterman 2007:174-175). Her study ultimately confirmed that there were two social groups present at Fonger and demonstrated that agency and social identity may be constituted in ceramic attributes other than decoration (Holterman 2007).

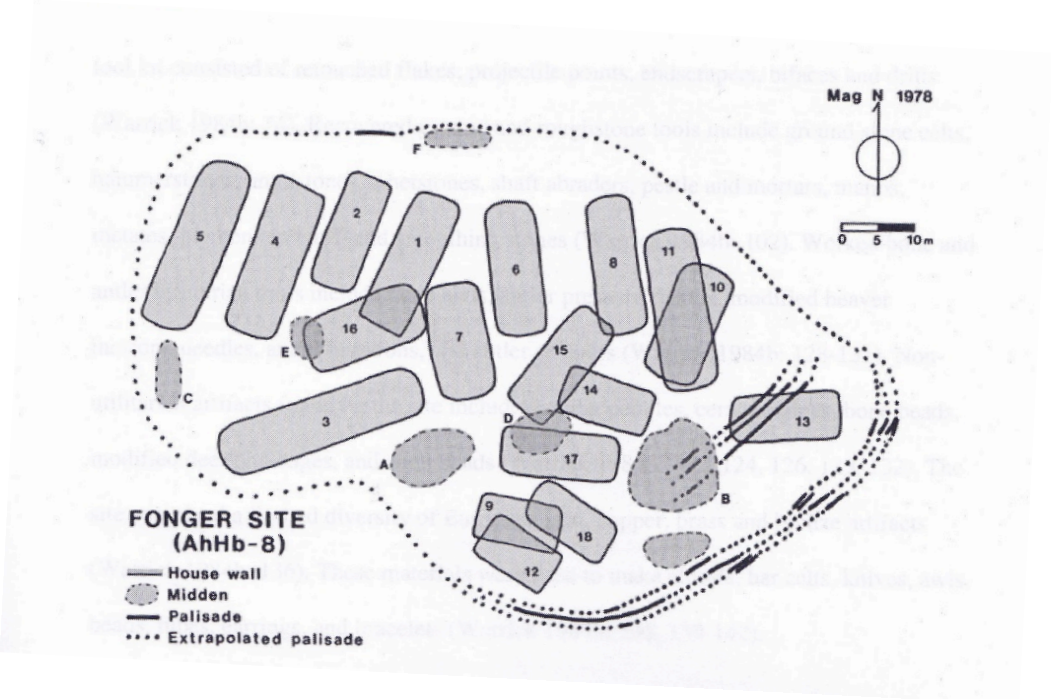


Figure 7: Fonger Site Map (Holterman 2007)

Another study completed by Howie-Langs (1998) also focused on ceramic attribute variability, ceramic consumption (use wear) and spatial distribution. She focused on use wear to identify activity areas within the OELW Praying Mantis site. Howie-Langs (1998) found that different activities involving ceramics occurred inside and outside of longhouses. She also inferred specific motives behind ceramic attributes, including decisions pertaining to decoration. She found that punctate and bossing was the only decorative feature with significant variability between longhouses at the Praying Mantis site. Specifically House 1 had the least amount of punctates (at 30%) and House 3 had the least amount of bosses (at 20%) (Howie-Langs 1998:85). Howie-Langs (1998:86) concludes that certain aspects of decoration, including punctate and bosses, were restricted by household membership, but other production choices were part of a larger

shared series of choices in this village. This suggests that identity differed intra-site and was possibly specific to each household as decorative elements differed between them.

As shown above, spatial variability has been explored through architecture and ceramics in Ontario. The results of these case studies suggest that there is more variability in Ontario than previously recognized and that identity is not something that can be defined regionally without exploring identity at smaller scales. These case studies support the theory that spatial analysis of ceramics can reveal important facets of Ontario's archaeological history, such as political, economic and social behaviors. In order to contextualize these large-scale patterns as mentioned above in Ontario, we first identify the small-scale patterns. The identification of small-scale patterns can assist in clarifying differences between sites and even regions.

2.4.3 Intra-site Variability at Van Besien

Intra-site variability has not been explored at the Van Besien site, but could be explored in site plan organization, architecture, interior features of longhouses, and distribution of artifacts. I will briefly discuss the similarities and differences between longhouses, specifically construction variations and interior features (Noble 1973:9-11), before turning to focus exclusively on the ceramics in later chapters. Figure 5 shows that all three longhouses range in size and corresponding palisade construction signaling village expansion. Refuse pits and hearths are also organized differently within each longhouse (Noble 1973:10-11). It also appears that material culture patterns hint at spatial variability. For instance, in Noble's (1973:31) list of percentages of scrapers by excavation area, we see that that concentrations of scrapers vary across the site, as well as

types of scrapers, but these findings have not been explored in any detail. Organization within Van Besien is not homogenous as varying architecture and material culture point to. This begins to show that the Van Besien site may have multiple social identities, such as multiple potting groups, as discussed by Holterman (2007), differing house preferences as discussed by Howie-Langs (1998), or micro-bands as suggested by Warrick (1996). Thus, the exploration of spatial division shows promise for an analysis exploring site variability.

2.5 Summary

In this chapter I have presented background archaeological information on Ontario, the Ontario Early Late Woodland period, and the site of Van Besien. I have introduced the archaeological interpretations of this period, concentrating on those related to pottery. I have argued that more recent studies acknowledge the value of variability instead of similarity for discerning meaningful information. They use, much like earlier research, pottery as a chronological marker to discuss spatial and social issues, such as identity and activity areas, through ceramic and architectural evidence. I advocate pushing this movement progressively forward with the analysis of ceramics from the assemblage of the Van Besien site. In the next chapter, I will explain how approaching Van Besien ceramics in a new way will give insight and build on the strengths of previous research.

Chapter Three – Theory and Research Questions

In this chapter I summarize the current cultural historical approach to Ontario ceramics and introduce two approaches I will be using to study the ceramics from Van Besien: technological style (production) and use wear (consumption). Ceramicists studying technological style explore the choices made by potters in the manufacturing process within wider social circumstances (Tite 2008:16). Scholars examining use-wear explore the social consumption of ceramics and the role pots play in society. By understanding these two essential aspects of the "social life" of ceramics, we can delve into the technological and social contexts that structure their production, use, and discard (Lemonier 1993:4; Sillar and Tite 2000:3). This chapter will explain the theoretical underpinnings of these ideas and explain why such approaches are necessary in Ontario archaeology. I end this chapter by introducing my research questions and hypotheses which focus on technological style and use in the Ontario OELW.

3.1 Theoretical Framework

3.1.1 Current Theoretical Orientation: Culture History

Culture history, a theoretical framework used in many areas of the world, focuses on the differences of material culture between adjacent groups to map cultural influence and to define ethnic boundaries (Johnson 2010:22, 70, 238). Scholars forming their research in terms of culture history often see cultural change as a result of migrations and

diffusions. The end goal is to trace the lineage of prehistoric cultural groups (Johnson 2010:19; Shennan 2000:811; Trigger 2006:235), particularly those of a similar ethnicity (people sharing language and ways of life) (Trigger 2006:308). As a result, ceramic form and decoration serve as a proxy for social boundaries of particular ethnic groups (Goodby 1998:161). Culture history provides a narrative of events and presents innovation as a result of cultural diffusion (Johnson 2010:20, 21). The narratives of culture history tend to be descriptive and there is little explanation of cultural change (Johnson 2010:19).

For the past 50 years archaeological research in Ontario has mostly followed the guidelines of culture history and has focused on time-space systematics (MacNeish 1952; Wright 1966). As in most veins of research, there are exceptions and other theories have been explored. The current theoretical approach concerning ceramics in Ontario is one focusing on seriation and decoration (Michelaki 2007:144; Timmins 1997; Warrick 2008) to explore the processes of migration and in-situ Iroquoian development (Chilton 1998:132; Johnson 2010:19; Michelaki 2007:144; Watts 2008). Scholars use attribute analysis and typology to construct and refine cultural sequences and to identify ethnic boundaries (MacNeish 1952; Wright 1967). Early academic arguments surrounding pre-contact periods in Ontario focus on typical culture history questions, such as the origin of ethnic groups, specifically Iroquoian nations, and whether the culture developed in-situ or through a process of migration (Snow 1996).

In general, scholars working within a culture history framework accept that archaeological cultures reflect ethnic groups of the past as predictable (motivation wise) and adhering to strict typologies and chronological sequences (Chilton 1998:132; Dietler

and Herbich 1998:233). In Ontario archaeology, the Glen Meyer and Pickering dichotomy is a prime example of the problems inherent in a culture historical approach to identifying ethnicity in the archaeological record. Ontario archaeologists place sites into early, middle and late Pickering or Glen Meyer categories based on ceramic decorations, castellations, and body surface treatments (Williamson 1990). Wright acknowledged that there were similarities between the Glen Meyer and Pickering categories, but defined these two cultural complexes by stressing the differences between the ceramics (Johnson 2010:18; Williamson 1990:293). Wright (1980) later revisited his work, and admitted that his taxonomy was too simplistic and should be altered, but insisted that some type of taxonomy was necessary (Watts 2008:26; Wright 1980).

The use of archaeological materials to infer past cultural divisions is based on the idea that cross-culturally, regardless of context, similarities and differences are motivated by two main causes - migration and diffusion. This approach places data into a vacuum that does not use theory to explore human action (Binford 1962:217; Trigger 2006:303). This is evident in the current ceramic research in Ontario that does not explore the social role of ceramics or the humanistic involvement in their creation but instead focuses on culture historical questions like origins (Michelaki 2007:144). Culture historians do not engage with agency in culture change, and as a result do not address the diversity in human behavior (Dobres 2000:229; Trigger 2006:283). Discourse concerning human action is restricted to general statements instead of contextual observations (Jones 2002:51). Material culture is seen as passive with regards to social dynamics (Roe 1995:28) and ceramics are discussed regarding broad categories of shape or decoration

and not the myriad of choices available to a potter (Lemonier 1993:2). If we continue to base interpretations on theories grounded in ideas of regional continuity and ethnic boundaries delineated by material culture (Binford 1962:217; Trigger 2006:240) we will not be able to explore the social identity and actions of those who came before.

Approaches other than culture history have been applied to ceramics in Ontario. For instance, Martelle (2002) and Creese (2012) both explore ceramic decorative style, but in a way that is attuned to production choice. This approach allows Creese to follow the movement of individual potters (Creese 2012:43). This approach to ceramic analysis assumes that motor habits involved in the execution of decoration are completely individual to each potter (Creese 2012). Creese (2012:43) and Martelle (2002:39) use this approach to identify and follow the movements of individual potters through identified social networks by observing movement of specific aspects of ceramic design that could be specific to each potter in order to reconstruct "tribal or ethnic territories and affiliations"(Martelle 2002:39). As mentioned previously, movements of peoples and ethnic affiliation are common issues that are assessed through culture history. However, these two scholars are looking at the movement of individual potters between sites based on styles. This research is breaking out of the culture history mold in that it is addressing the individual. Nevertheless, some scholars argue for that additional avenues of ceramic analysis need to be investigated that build on past research.

Chilton (1998) and Michelaki (2007) have recently argued that researchers should focus on a more comprehensive approach to ceramics in order to observe how ceramics are shaped by social interactions and in turn how ceramics shape them. These

scholars draw on ethnoarchaeology, social theory, and research regarding the social nature of technology (Michelaki 2007:143). Two case studies that exemplify this approach are Braun (2010) and Chilton (1998).

Braun's (2010) analysis of the fourteenth century Antrex site in Ontario takes a comprehensive approach by examining the manufacture, use, and discard of ceramics with a focus on material and social choice. Braun employs petrography, microanalysis and macro-analysis of the pottery from the Antrex site. He discovered 16 different fabric groups, a highly variable firing regime, that wall thickness increases with vessel size, and that there was little correlation between decoration and other attributes (Braun 2010:70, 76, 79, 91). Braun infers that decisions that Antrex potters made were for deliberate results and influenced by the intended function of the pot (Braun 2010:81). Decisions by potters concerning choice of temper could not be explained by environmental or economic factors, and thus Braun concludes they must have been socially chosen (Braun 2010: 81). Thus, the patterns in ceramics at the Antrex site were not viewed as a result of culture historical process, but rather a part of socially embedded activities (Braun 2010: 81).

Chilton (1998) analyzed ceramic production styles to explore the relationship between vessel manufacture/use and subsistence patterns. She compared the technological styles of Iroquoian and Algonquin ceramics in order to explore subsistence patterns (Chilton 1998: 60). In pre-contact times, the Algonquians and Iroquoians are thought to have had different settlement patterns, subsistence, and political organization (Chilton 1998: 51). Algonquians are called "mobile farmers"; they are thought to have

spent very little energy on maize cultivation and were fairly mobile (Chilton 1998: 52). Iroquoian subsistence was mostly devoted to cultivating, harvesting, storing and preparing maize (Chilton 1998: 53). These subsistence differences were reflected in production context and scale and intended use. As expected with more sedentary societies, the Iroquoians produced more ceramics for processing and cooking maize (Chilton 1998: 59). Chilton concludes that macro-level analyses would be more beneficial in comparing the Iroquoian and Algonquian ceramics as there is too much variability in each group (Chilton 1998: 60). That being said, Chilton's results draw attention to the vast amount of micro-scale variability that can be explored.

Braun (2010), Chilton (1998) and Michelaki (2007) argue persuasively for alternative theories and approaches in ceramic studies in Northeastern archaeology, specifically requesting a detailed analysis of the entire use-life of ceramics and their connection to larger social contexts through deposition. These scholars have shown how Northeastern archaeology can benefit from studying the lives of pots from their creation to their final deposition. Specifically, studying the life cycles of pots allow archaeologists to infer the use of space and social group membership within Northeastern archaeological sites.

3.1.2 Technological Style of Production

Following the lead of Braun, Chilton, and Michelaki, I will approach the manufacture of Ontario pottery through a different lens - technological style. Lechtman (1977: 270) originally coined the term technological style to refer to the holistic view of behavioral and technological events. Lechtman believed that these events express culture

through patterning that is neither cognitively known nor consciously realized by members of cultural communities that portray culturally accepted rules (Lechtman 1977:276-7). Dietler and Herbich (1989) refer to a similar concept that they refer to as micro-styles. A micro-style is the product of local manufacturing traditions that reflect combinations of technological, formal, and decorative features and are learned from personal interaction among potters in a community (Dietler and Herbich 1989:150). According to Dietler and Herbich, these micro-styles persist in the local tradition regardless of exogamy or an influx of foreign influences (1989:150).

In this thesis, technological style will be used to describe materials produced within particular social, economic, ideological, and technological contexts (Dobres and Hoffman 1994; Lemonier 1993; Sillar and Tite 2000:3). Each step within the production sequence involves a choice made in compliance with various social constraints in order to achieve a specific end product (Edens 1999:24; Lemonier 1993:5). These choices are referred to as technological choices. Such choices produce technological styles that represent social ideas and norms learned through traditional behaviours (Lemonier 1993:2).

Technological style is thus a culmination of choices between alternative techniques of production that create distinguishable differences in material culture recognized as traditions (Sillar and Tite 2000:3). Traditions are unique products of apprenticeship, skills commonly learned within communities and embedded with acceptable social norms (Gosselain 2011:213). These styles or traditions represent group identities and social boundaries (Hegmon 2000). In learning such traditions, an

individual's motor habits become second nature, entrenched, and resistant to change (Milnar and Crown 2001; Roddick and Hastorf 2010). As a result, technological style is not easily copied and over time produces distinct patterns in the archaeological record representing social groups transmitting knowledge (Hegmon et al 2000:219; Michelaki 2007). This is not to say that innovation in regards to technological choices does not happen but that entrenched motor habits are not often changed suggesting innovation would not happen often or would require particular social events in specific contexts.

Oliver Gosselain's (2011) work illustrates the potential of technological style for demarcating social boundaries. Gosselain explores the cultural nature of potting practices and what production can represent socially in Africa by focusing on the diffusion of knowledge. He traces the spatial variability of particular technological choices to explore if certain steps of ceramic production can accurately delineate social boundaries. In areas of Africa such as Northern Cameroon, Benin, Mali, Kenya, Sudan, Niger as well as other areas of the Lake Chad Basin, Horn of Africa, knowledge transmission is usually within kin groups and the transmission process (apprenticeship) lasts approximately 6 years (Gosselain 2011:214-215). Individuals outside of potting families can learn the craft, but only if someone is willing to pass on their knowledge (Gosselain 2011:213). When people relocate, they follow the traditions of their mother or father, likely due to a lengthy apprenticeship (Gosselain 2011:215).

As a result, it is logical to think that the technology of pottery production would move as a package, unchanging through time and space. Instead, Gosselain (2011:215) found that regardless of other social boundaries, clay extraction and processing and

combinations of tempers can vary between districts, villages or even families (Gosselain 2011:216). The step that corresponds most with significant social boundaries is shaping of the pot (Gosselain 2011:217, 220). The gestures made during this phase of production, as well as how the clay is shaped and stuck together, corresponded closely with boundaries (Gosselain 2011:217). The results concerning decoration are highly variable and motifs are found to spread over large areas of land, but the ways they are employed correspond with salient boundaries such as language or communities (Gosselain 2011:217). In Niger, a more specific area of Gosselain's field work, decoration was found to parallel the boundaries depicted by shaping techniques (Gosselain 2011:221). Like decoration, firing techniques are heterogeneous regardless of social boundaries (Gosselain 2011:216). Post-firing decoration and alteration seem to reflect local practices and are usually adopted when a potter moves to a new area (Gosselain 2011:222).

Gosselain's work in Africa gives deep insight into the relationship between social boundaries and ceramic production techniques and reinforces the necessity of the detailed investigation of technological style. Adopting this approach in Ontario would revolutionize the role of ceramics in archaeological interpretation (Braun 2010:69; Michelaki 2007:144). For example, while Ontario archaeologists have focused on decoration, research shows that it indicates little about social identity, as it is not always indicative of specific social boundaries or identities, unlike other technological choices (Chilton 1998:133). The identification of spatial patterning of these technological choices will allow for identification of discrete social groups (Stark 1999) within an Early Woodland village.

3.1.3 Consumption and Spatial Distribution

Cultural choices do not cease after production but continue with the use of the vessel. The decision of what form of vessel to use for a certain function is a complex behavioral choice. Those who use ceramics choose a vessel depending upon their cultural knowledge of pots, and what is deemed an effective or appropriate vessel for the activity or activities they will complete (Sillar 2003:175). This suggests that cultural restraints are present when deciding what type of pot to use for certain activities. Thus, the technological style of the pot may influence whether a pot was used for cooking or for storage. As a result, functional analysis gives great insight into ancient society and economy by discerning ancient behavior regarding ceramics (Henrickson and McDonald 1983:640).

Evidence of the actual consumption of ceramics, much like technological style, is left in traces of repeated behavioral events. Such repeated behaviors as food preparation, food consumption, and other activities taking place within the site can be identified through use wear and, through depositional patterns, shed light on use of space (Braun 2010; Heron and Evershed 1993:247; Skibo 1992). Use-wear patterns, such as attrition, carbon deposits, and sooting, can indicate specific activities and spatial divisions for different uses (Skibo 1992). By identifying the results of specific uses, archaeologists can identify variation within social practices involving ceramics and allude to differences in social norms in daily practices (Braun 2010; Heron and Evershed 1993; Skibo 1992). The relationship between vessel morphology, mechanical properties, and use are often assumed (Rice 1987:232), whereas use wear indicates the actual relationship between

morphology and use (Skibo 1992). This avenue of research has not been fully explored in Ontario archaeology (as discussed in Chapter 2), and scholars often rely on ethnographic references and not on the pots themselves.

Spatial variability of technological style and use allows for the understanding of ancient spatial structure of settlements (Henrickson and McDonald 1983:640). Spatial variability will be examined through vessel use by considering use-alteration (Skibo 1992) and depositional variability. Refuse patterning of ceramics is the main source of evidence used to reconstruct social activities within housing compounds (Deal 1985:244-245). This theory will allow for conclusions to be drawn from contextual deposition vis-à-vis the larger questions of intra-site variability.

3.2 Research Questions

Although Noble did not record extensive spatial data in his excavation of the Van Besien site, the ceramic variability present makes it appropriate to explore intra-site variability in ceramic production (the choices which differentiate technological styles) and consumption (use and deposition). My research asks, *were potters at the Van Besien site making similar technological choices, choices that suggest a distinct intra-site identity?* I begin by identifying the possible technological choices, and highlighting those that were preferred, before turning to explore the spatial variability of particular technological styles at the Late Woodland Van Besien site.

I investigated variability through multiple scales at Van Besien, asking if the differences in the technological styles of Van Besien ceramics vary consistently spatially. First, I looked at variation between the village (areas C and D) and midden (area E). I

then identified variation within the village (area D). Lastly, by using House 1, I looked at variation within the unit of the longhouse itself. At every scale I observed the variability of technological style and use wear within each spatial unit of analysis. This data lends insight to issues of social division of space and the fluidity of membership.

My hypotheses regarding variability in technological style at Van Besien are derived from Braun (2010), Chilton (1998), and Michelaki's (2007) work in addressing the life cycle of pottery and the social clues it holds. *If there is variability in ceramic technological style, social identity varies throughout the village*. In contrast*, if there is no variability in technological styles, then social identity may rely on other mediums for expression and/or there is a strict adherence to a set way of ceramic production*. Due to recorded variability of longhouse architecture present at the Van Besien site, I predicted that *there would be technological variability signifying separate social affiliations*.

My second research question pertains to the relationship between social space, ceramic use and depositional context: *Is social division of space and social groupings reflected by use wear? If use wear patterns are uniform across the site, activities that leave different patterns of use on ceramics are not restricted to specific areas*. In contrast*, if use varies spatially, then certain areas of the site were obviously used for different activities*. Based on the variability of longhouse architecture present at the Van Besien site and arguments for each house encompassing a different family, I expected that *there are separate social groups within each longhouse*. If the families do in fact consider themselves separate social groups, they would have needed separate spaces to perform their own, individual social activities, such as cooking (consumption of ceramics). Thus, I

propose that the same use wear will be present within each longhouse. Use variability would not differ if individuals were performing the same activities in each longhouse.

3.3 Conclusion

The framework currently in place in Ontario prevents archaeologists from addressing questions regarding identity and social context of ceramic production. Specifically I argue that technological style and consumption should be used to re-evaluate archaeological ceramics in Ontario. These approaches allow for the exploration of individual identity and the social context of ceramic production, and social groupings within sites. In the next chapter, I will introduce the methodology appropriate to address research questions introduced above.

Chapter Four - Sampling and Methodology:

This chapter explains how the theoretical framework will be implemented and how it will address the research questions introduced in the previous chapter. I present my sampling strategy, which allows me to identify ceramics suitable for analysis from the Van Besien site collection. I then explore each step of ceramic production and use and discuss their relationship to identity and technological style and their relevance to my research questions. In addition, I discuss how ceramic attributes may aid in identifying social boundaries.

4.1 Sampling

The ceramic assemblage of the Van Besien site consists of 7,417 sherds. Areas A and B of this assemblage, as described by Noble (1973), are of earlier origins than areas C, D, and E. Therefore, sherds from areas A and B were not analyzed as they fall outside the stated focus of identifying intra-site identity, which requires contemporaneous cultural areas. Areas C, D, and E are interpreted as contemporaneous and date to the same time period, circa 1000 A.D (Noble 1973:5). The excavations from these three areas produced a total of 5,426 sherds (Table 1).

Area	**Subareas**	**Number of Sherds present**	**Number of Sherds Analyzed**	**% Analyzed in Each Area**
Area C		2,868	273	17
Area D		1026	267	26

Area	Subareas	Number of Sherds present	Number of Sherds Analyzed	% Analyzed in Each Area
	House 1	654	179	27
	House 2	11	5	45
	House 3	5	5	100
	East Open Area	356	78	22
Area E		1,543	119	20
Total		5,426	659	12

Table 1: Spatial distribution of sherds and sherds sampled at the Van Besien site

Attributes of all sherds (rim sherds, neck sherds, body sherds, and basal sherds) were recorded as suggested by the Prehistoric Ceramic Research Group (PCRG) (2011). Other researchers in Ontario (e.g. Howie-Langs 1998; Braun 2010) have used this approach to sampling in order to record the full variability of ceramic manufacture and use. In order to observe overall variability of production and consumption, I examined sherds that were larger than 3 cm by 3 cm in size and had both surfaces preserved. These requirements are generous, as some studies require sherds to be 5 cm by 5cm, since ceramics characteristic of Ontario sites have high rates of variability and may not be fully observed in smaller pieces (Braun 2010:70). Due to the quality of pottery sherds and the state of preservation, only a sample of the excavated assemblage was analyzed. This further reduced the sample size to a total of 659 sherds. Care was taken to spread out sample locations within each area to obtain a representative sample and avoid spatial bias (Figures 5, 8, and 9). The number of sherds sampled from each area is displayed above (Table 1).

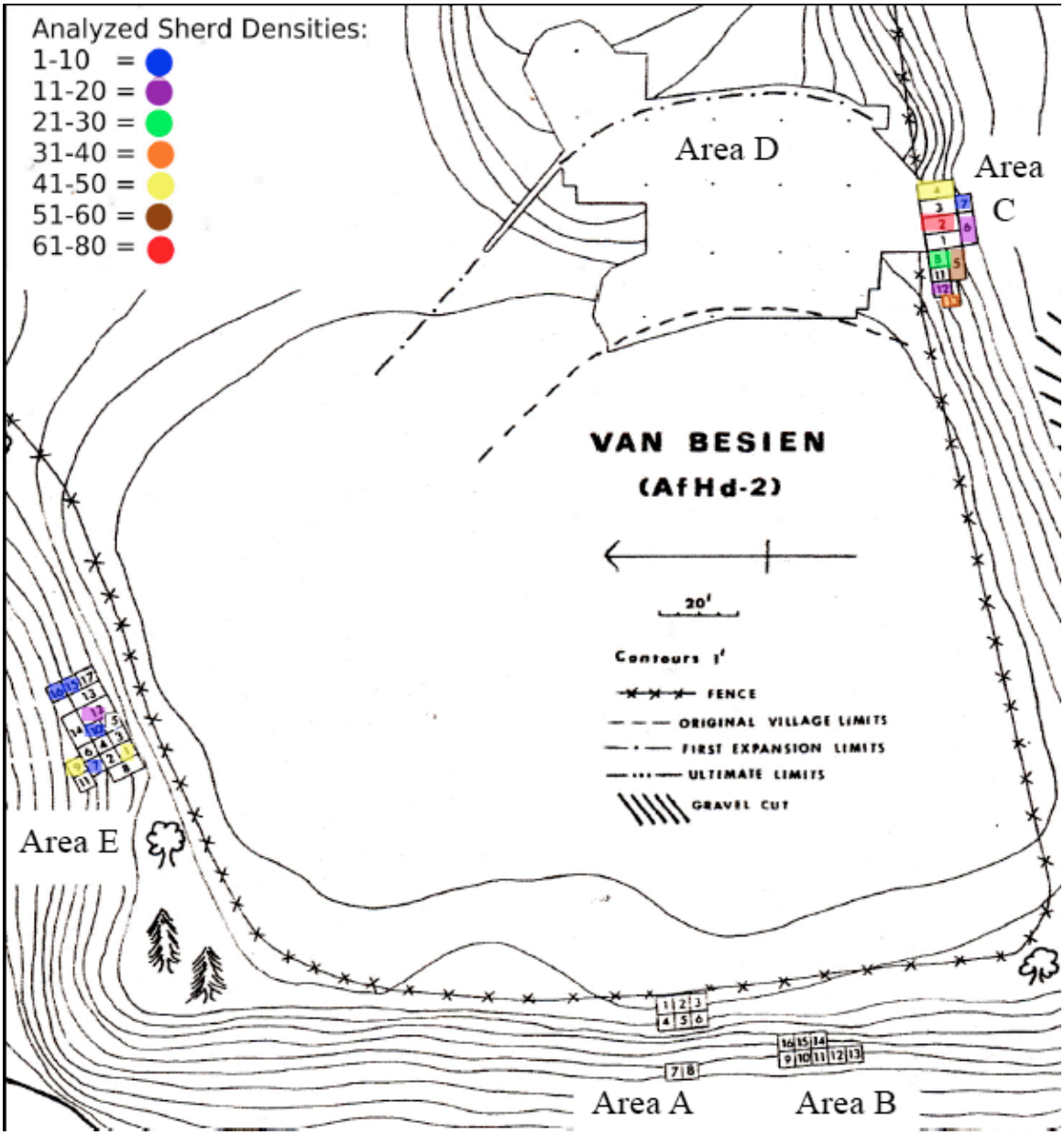


Figure 8: Densities of Analyzed Sherds in Areas C and E (Modified from Noble 1973: 6)

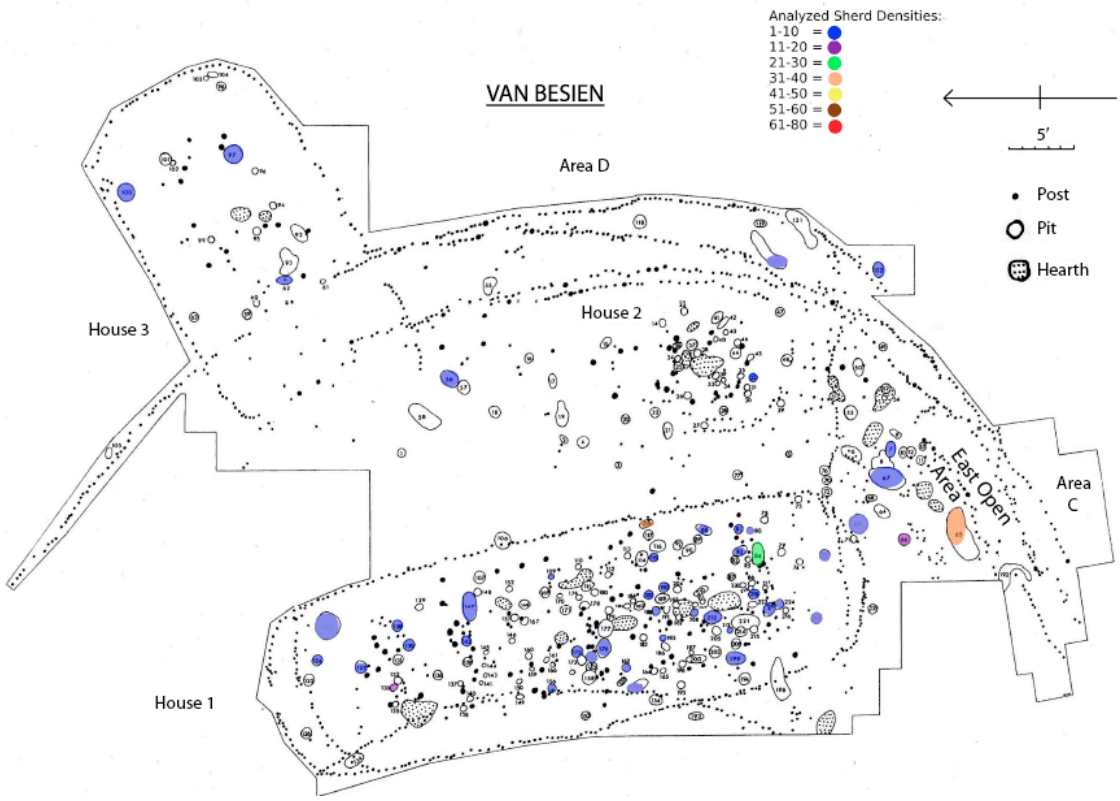


Figure 9: Densities of Analyzed Sherds in Area D (Modified from Noble 1973: 8)

4.2 Methodology

In order to explore social identity through technological style and consumption, attributes indicative of every step of both the production process and categories of use were identified and recorded. My analysis of technological style and consumption investigates the sherds from paste recipe through primary and secondary forming, finishing, firing, use, and deposition. This information, which I acquired through macroscopic visual assessment, allowed me to explore potential variability among individual sherds, and between the areas within the site identified above.

Prior to my analysis I assigned individualized catalogue numbers to each sherd to facilitate future research. I then recorded provenience (including area, square, house,

etc.), sherd type, and sherd extent in a spreadsheet. I also included all of Noble's original data on decorative style and sherd type (rim, body, neck, etc.) regardless of whether it aligned with my interpretation or analysis. By recording Noble's original data, I am acknowledging Noble's original work and conserving it for further use if/when Van Besien is studied again.

I then developed an attribute analysis appropriate to study each technological choice to define particular technological styles and to follow the use-life of the pottery. Attributes were chosen based on case studies using technological style (Braun 2010; Gosselain 2008; Hegmon et al. 2000; Holterman 2007; Howie-Lang 1998; Michelaki 1999; Stark et al. 2000), guidelines of the Prehistoric Ceramic Research Group (2011) and those suggested by the broader ceramic analysis literature (Orton et al. 1993; Rice 1987; Rye 1981, Shepard 1985). The methodology utilized in this project adheres to the published recording and coding standards of the PCRG (2011) in the hope that Ontario and Canadian archaeology can contribute to global data gathering conventions for ceramic artifacts. I used an initial pilot study to identify additional attributes as types of ceramic variation were observed to recognize attributes should be included in the final analysis.

Unfortunately due to small sample size, I was unable to perform statistical tests. I completed an exploratory analysis through the use of *Excel* pivot tables. I also used excel to perform basic quantitative analysis and cross-tabulation to explore relationships between variables. These variables will be discussed in detail below.

4.2.1 Raw Materials/Paste

The compositional recipe of a clay pot reflects the potter's choice in raw materials prior to forming particular pots. Paste is a term used to describe a mixture created for the production of clay pots and added non-clay "aplastic" inclusions (Rice 1987:479). I am not using the term fabric or ware, which refer to the mixture of clay and inclusions since these terms also refer to pores and/or surface treatments of particular pastes (Rice 1987:479); I did not explore pores within paste. I am addressing surface treatments as a separate attribute of ceramics.

To determine different pastes I observed inclusion types (size and colour) and the post-fire colour of clays, as these are end results determined by the ingredients used. Paste mixtures offer different degrees of strength depending on ingredients, as the size of temper and type of clay can determine how a pot behaves when fired and can impact the strength of the pot (Rice 1987:74, 227). Plasticity can differ between clay types due to different rates of shrinkage (Velde and Druc 1999:152). Potters can counteract these shrinkage rates and weaknesses through the addition of specific tempers to specific clays, which also can have the benefit of reducing thermal stress (Velde and Druc 1999:161).

Inclusions smaller than 0.5mm are considered natural rather than purposefully added temper (Stoltman 1991:109). If there is a complete lack of organic (plant fiber) inclusions in the clay matrices present in Van Besien ceramics, then this would suggest that the clays were processed, impurities removed and organics taken out (Braun 2012:4). Due to the natural co-occurrence of some of these minerals in the clay, inclusions may not always signify added temper. This may be true, but even if the minerals are natural

inclusions, patterns in clay mixture may still indicate the potter's choice to use particular clay sources, and is therefore worthy of discussion. Pastes are a result of acquiring the right balance of clay and inclusions, as well as the right minerals to use as non-plastics. Consequently, a source of materials may be re-used if a pot is successfully made (Orton et al. 1993: 115; Velde and Druc 1999:151). It is argued that marked differences between choices of inclusions and preparation, due to the difficulty of creating working pastes, can represent conscious choices to uphold traditions (Braun 2010; Orton et al. 1993:115; Rye 1981:16-17).

Glacial till in Ontario and the similarities of regional clay makes it extremely difficult to assess the geographical source of raw materials (Allen 1993: 143). As the glaciers melted and moved south, sediments from northern locations were transported in glacial meltwater. These events, unfortunately, make it almost impossible to differentiate mineral sources in Southern Ontario as the majority of minerals have chemical signatures of minerals further north. As such very few studies have been completed sourcing clay, but studies completed have shown promise for future research (see Trigger at al. 1980). However, paste recipes can be examined to gain insight into variability in production choices.

I classified pastes into categories based on the colour and size of inclusions. Inclusion colour was visually assessed using a magnifying lamp and an illuminating (10x) loop lens. Without use of petrography, colour is the best determinant of paste types. Adhering to PCRG coding, paste codes begin with R0, since pastes present at the Van Besien site are comprised of rock fragments (Prehistoric Ceramic Research Group 2011).

I grouped paste recipes into a total of 11 groups based on inclusion colour. Although fewer types of paste are more common, without petrographic analysis to further group minerals together based on mineral structure, division was not practical.

The density of inclusions for each sherd was recorded using PCRG density charts (Prehistoric Ceramic Research Group 2011). PCRG density charts are descriptive pictures that display examples of density ranges of inclusions in ratio to the clay matrix. Density ranges are important as it affects wall strength (Carr 1990:24). Tempers such as quartz have higher expansion rates than most clay and as a result a lower density and size of temper is more conducive to thermal stress (Carr 1990:26). If a clay is non-plastic, more temper can be added or natural inclusions can be removed to improve workability and the strength of the clay (Orton et al. 1993:115). The density of inclusions can determine the strength of the pot (Rice 1987: 74). Changes in temper and inclusions affect the workability and plasticity of a type of clay. Additionally, the absence of temper still indicates the choice either not to purify the clay and therefore keep natural inclusions, or to rely on the clay strength alone without temper. Technological benefit of specific tempers cannot explain all choices made at the Van Besien site, as some technologically inferior clays or minerals that change at certain temperature, such as quartz (Shepard 1985:28-29), were continually used.

4.2.2 Primary and Secondary Forming

Next I addressed primary and secondary techniques of construction. Primary techniques of construction determine the initial intended shape of the pot (Orton et al.:117; Rye 1981:62). Known techniques in Ontario for this time period are pinching,

slab building, and coiling (Williamson 1990:298). Potters finalize their vessel shapes through secondary forming techniques such as paddle and anvil, turning, scraping, trimming, and joining (Orton et al. 1993:117; Rye 1981:62; Shepard 1985:185). As explained above, steps included within the categories *primary and secondary forming* are central to the visual end result of the vessel (Gosselain 2011:214; Van der Leeuw 1993). These choices have different social and functional ramifications. Diverse methods of construction in different areas of the village and/or creation of varied vessels give insight as to whether potters learned from or trained under the same potter. The general shape of the final product can signify intended use of the vessel or make a statement regarding social affiliation. Both of these attributes will help define social boundaries within the site of Van Besien.

I visually inspected each sherd for indentations indicative of coiling, and sherd breaks specific to pinching and coiling. If coils were not smoothed properly or completely, indents between coils are present can result in a weak point, and may cause the vessel to break at the joining points, creating smooth, curved breaks (Rice 1987:67,128). This is in contrast to slab building or pinching, which break in an unpredictable nature for the most part (Rye 1981:70). However, one must keep in mind that a jagged and irregular, or hackly, break can result from properly smoothed coils (Shepard 1985:184).

I examined secondary forming technique by identifying surface markings, including casts, ridges, facets, drag marks, and indents (Rye 1981:59). These markings are recorded in order to observe use of molds, whether a tool was used, if clay was

removed, or if grit/hard inclusions were dragged across the surface of the pot during smoothing (Rye 1981:59). Casts indicate depressions left by a tool or hand. Ridges are junctions between parts of molds and tools that moved across the surface when it was soft. Facets (flat areas) are produced when the clay is cut with a straight tool or if a flat tool is used to paddle the clay. Drag marks are caused when grit or hard inclusions are dragged across the surface; grains may remain at the end of the dragline. Indents are misplaced clay as a result of incisions from tools or hand (Rye 1981:59).

Once I documented techniques of construction, I then moved to examine vessel shape variability. I recorded the maximum thickness of sherds, rim diameter, and rim shape. As vessel shape is an extremely visual aspect of a vessel, it can be seen as a social behavior and to give insight in to social identity relationships among those who can view each other's products (Chilton 1996:17). Vessel shape can also represent intended use. For example, restricted necks suggest liquid storage, wider necks suggest easy access for cooking, and certain finishing techniques can suggest intended uses if they improve grip or reduce thermal stress (Henrickson and McDonald 1983). To identify restriction of orifices, rim diameter was recorded using a rim chart in centimeters along with the percentage of the rim sherd.

Numerous scholars, (e.g. Howie-Langs 1998, Timmins 1997, Williamson 1985), have deviated from classifying rims by the established typologies in Ontario. Rather, they determine similarity by rim attributes, such as if a rim is collared or not, rim profile (straight, concave, convex), and rim orientation (outflaring, inflaring, or straight). In order to identify variability of rim shape within Van Besien, I identified and recorded my

own rim groups based on the complete shape of the lip and how the lip attaches to the neck. These types were created completely by visual assessment and new types were created if one did not match the lip shape or how the lip attached to the neck. New groupings were not detrimental to my research, as I am discussing the variability within the site of Van Besien identifying variability within the site itself.

Maximum thickness of sherds was recorded in order to indicate vessel size and intended use (Rice 1987:227). Larger vessels require thicker walls to support the structure of the vessel (Rice 1987:227). In addition, thinner walls are better for cooking and conduct heat better whereas thicker walls insulate better and less likely to break in transfer (Rice 1987:227). By observing these attributes, I was able to refer more information regarding use and form at the Van Besien site.

4.2.3 Decoration

The meaning of decoration varies cross-culturally; it can be used as an indication of social self-identification and/or as a medium for displaying personal creativity (Chilton 1996:127). Hypothetically, the decoration of a vessel can include anything a potter can imagine. The potter can choose what decoration to use, where to place it, what combination of decorations to use, and how to produce the design, for instance whether it be incised, impressed, or stamped. As decoration is an extremely visual attribute, archaeologists tend to consider it in terms of symbolic meaning and changing traditions. While decorative choice is thought to represent upholding traditions to some degree, it is known to change more readily than any other attribute. As a result, decoration is

extremely valuable to delineating social identity, as it is an attribute that is allowed to change.

Ontario archaeologists examine decoration in terms of technique and motif (Howie-Lang 1998, MacNeish 1952, Noble and Kenyon 1972, Timmins 1997, Williamson 1985). Techniques are described in terms of the tool and action used, such as incised, suture stamped, and impressed decoration (Howie-Lang 1998, Noble and Kenyon, Williamson 1985, Timmins 1997). In my analysis I refer motifs as individual bands of decoration that can be used in combination with other or same bands to create numerous bands to identify further variability. In addition, description of decoration in this thesis also includes surface finishing.

Decoration on the exterior and interior of vessel and on the lip of rims was recorded. A total of 14 codes were developed to identify each type of decoration. These decoration codes do not speak to the method of decoration application (i.e. incising, stamping, etc.). I also recorded interior and exterior decoration rows of decoration that I refer to through the rest of the thesis as bands.

I recorded and differentiated between surface treatments present at Van Besien and visually documented them. Surface treatments are the visual surface finishing of ceramics. These include but are not limited to smoothing, burnishing, cutting, and combing (Orton et al. 1993:126; Rye 1981:89). These treatments can be completed while the vessel is still plastic, but they are usually done once the vessels are dried and leather-hard (Orton et al. 1993: 126). I differentiated between surface treatments based on orientation, organization, and texture. As surface treatments are visual aspects of

ceramics, the choice of what surface treatment to apply signifies a conscious decision to comply with accepted surface finishings if there were more popular treatments. As discussed in the next chapter, the potters of Van Besien utilized many surface treatments.

4.2.4 Firing

Firing can be a very visual and public procedure. If this is the case in the OELW, the choices made during this step are a product of a village–wide performance (Belkin et al. 2006). When firing a pot, a potter has to choose how long to fire a vessel, the firing temperature, type of fuel, the firing technique to use, and how close to place the vessel to the source of fuel. All of these choices influence the product's final appearance and visual social statement.

I documented colour of firing cores, fire clouding, and interior and exterior surface colour to infer firing techniques or control over firing. Core, margin colours, and interior and exterior surface colour signal the type of atmosphere the pottery was fired in. These environments can range from oxidized to reduced depending on firing technique and control (Rice 1987:333-345; Velde and Druc 1999:122). Variability, or lack thereof of firing techniques, can point to learned technological prowess. As mentioned previously, learning how to produce ceramics is likened to an apprenticeship and as a result apprentices replicate the teachers' ways of production (Gosselain 2011). This would lead to a degree of technological know-how that would produce similar results. In addition, inconsistency can indicate a possible lack of control (Rye 1981; Shepard 1985:213).

To view these attributes it was necessary to create fresh breaks on each sherd. The breaks were three centimeters in length and away from any diagnostic attributes, such as rims and decoration. In order to categorize cores and observe if control over firing was present, I defined firing cores, interior surfaces, and exterior surfaces as oxidized or reduced based on colour. I then codified surface and core colours together to identify firing environments as these can result from different techniques (Rice 1987:333, 345).

I also recorded the presence of fire clouding. Fire clouding represents the physical remnants of fuel directly contacting the pot during firing (Orton et al. 1993:223). The presence of fire clouding indicates a lack of control over firing practices or indifference to fire clouding on the exterior of a vessel (Rice 1987:58; Shepard 1985:92).

4.2.5 Use wear

The physical traces of ceramic use can be analyzed to determine the later (post-production) stages of the life history of a vessel (Orton et al. 1993:222). Since ceramic use patterns differ between activities practiced, such as cooking, mixing, storing and transportation inferences about activities can be made. Thus, once use wear is identified, one can identify what activities were practiced more commonly with what ceramics forms, and where within a site. When explored spatially, ceramic use wear can suggest use of space. If a ceramic is disposed of in an activity area, it can reflect the specific use of the area. Thus, if a sherd with soot and/or carbon adhesion is deposited next to hearth, the area was most likely used for cooking. Interpretations connected with recorded evidence will be discussed in the following paragraphs.

Observations of attrition types, such as pitting, pedestaled temper, scratching, sooting, and charcoal adhesions, can help distinguish such uses as mixing, cooking, and transport. Exterior and interior use wear was recorded separately for each sherd. When attritional scratching was present, if orientation of scratching was discernible (horizontal or vertical) it was recorded to identify different activities such as mixing, cleaning, storage, and transport of goods.

Attrition results from an abrader such as a spoon or stone coming in contact with a ceramic (Skibo 1992:105). There are three types of attrition: pitting, scratching, and pedestaled temper. Pitting occurs when the surface of the ceramic incurs a single impact that nicks or gouges the surface and appears as a shallow depression (Braun 2010:82; Skibo 1992:115). Pitting results from the use of hard implement for mixing or grinding, hard objects being moved within the vessel, or bumping the exterior of the pot (Braun 2010:82). Scratching is the result of objects sliding across the interior or exterior surface of the pot and appears as grooves, gouges, or scratches (Skibo 1992:116). Scratches on the interior can be caused by numerous activities, such as stirring of contents, scrubbing the surface clean. When present on the exterior of a potsherd, scratching indicates movement of the pot (Skibo 1992:116, 137). Pedestaled temper results from abrasion with substances whose grains are smaller than those of the temper, and as a result remove parts of the surface while leaving larger temper in place (Braun 2010:84; Skibo 1987:140). The observations of these abrasions thus allow great insight into daily use of the vessel.

Carbon adhesions result from incineration of organic materials that are then deposited on the surface of the vessel (Skibo 1992:147). Carbon adhesions on the interior are caused by charred food (Skibo 1992:148). Exterior carbon adhesions can be caused by the overflowing of food or wood combustion (Skibo 1992:152). Soot, a result of fuel combustion at the edge of the flames, is a carbon or resin-like covering on a pot surface (Rice 1987:235). Soot adheres during pottery firing, cooking over an open fire, or when a pot is discarded in a burned structure (Skibo 1992:147). The location of sooting can indicate how the pot was positioned during use, such as whether it was in the fire or suspended over it (Hally 1983b:7-10; Rice 1987:235).

4.2.6 Discard

The relation of ceramic attributes across space can indicate social boundaries, therefore spatial evidence can provide insight into social spheres of interaction within a site. By identifying these relationships spatially inferences can be made concerning use of space and attribute correlation at the Van Besien site. Refuse patterning of ceramics is commonly used within housing compounds to reconstruct social activities, such as the ones I am seeking to discern (Deal 1985:244-245). Patterns of discard can be used to discern areas of activity and social interactions within sites (Hally 1983a). The depositional patterns of materials can be used to indicate possible activity areas.

Researchers warn that primary deposition, whereby objects enter the archaeological record at their location of use, is rare, and that refuse contexts should not be viewed as initial deposits (LaMotta and Schiffer 1999:21). However, domestic refuse should only accumulate around walls and corners of structures due to sweeping and

cleaning (Hayden 1982:48), and ceramics found there likely indicate activities in these areas. For instance, Hally (1983a:179-180) suggests that if materials are removed from the area of activity, they will be discarded away from all activity areas at a site. This means that there may have been little contamination of pits or middens within longhouses at Van Besien, since outside activities would not contribute to indoor waste.

4.4 Conclusion:

In this chapter, I have shown how the theoretical frameworks of technological style and consumption were investigated and how the attributes relate to group membership and identity. I have set forth the sampling strategy and the methodology I used for my analysis of the Van Besien ceramics. I have also emphasized the necessity of each step of the methodology and the relationship between identity and attributes. In my next chapter I discuss the data that this sampling and methodology produced.

Chapter Five- Technological Choices and Technological Style:

In this chapter I will discuss the technological choices potters made and how ceramics were consumed at the Van Besien site to address my research questions. Namely, "*are potters within this Ontario Early Late Woodland village part of one cohesive social unit with one group identity*?" and "*Is social division of space and social groupings reflected by use wear?"* To explore these queries, I identified technological choices at the Van Besien site. I also explored the spatial distribution of pottery attributes to explore whether the village is divided socially and then investigated whether space was divided socially. Unfortunately, I was unable to investigate all areas of the village due to sample size. As mentioned previously, House 2 and 3 have a minimal number of artifacts, and thus will not be discussed in great detail. I conclude the chapter by contextualizing the results within Ontario archaeological literature, specifically addressing the differences between culture historical interpretations and those deployed here.

According to the theoretical framework of technological style, at every step of pottery production, a potter is confronted with technological choices. The potter makes the decision to follow socially accepted methods of production or to experiment with new techniques. As discussed in Chapter 2, the archaeological evidence for economical organization of Woodland villages suggests that vessels were primarily produced within villages (and were not traded in) (Allen 1993, Braun 2012: 2). In other words, I assume the technological choices represented by the ceramics are made by Van Besien potters,

which in turn allowed me to recognize social diversity. Thus, variation of techniques shows acceptance of creativity and experimentation at Van Besien. This suggests that strict adherence to accepted social standards were not required in the village. If there is little variation, it suggests that, in terms of innovation in potting practice, social standards were conservative, and that social identity was not fluid. To further explore the nature and extent of individual creativity at the Van Besien site, I will compare it to a nearby site, mentioned previously, the Porteous site.

5.1 Production

5.1.1 Raw Materials/Paste

An analysis of sherd cross-sections indicates that different materials were used, as well as a variety of different methods of paste preparation. Potters at Van Besien used ten different pastes, nine that are comprised of minerals coloured pink, white, black, gold, and red and one paste with no temper (Table 2).

Colour	**Mineral**
Pink	Feldspar/Quartz
White	Feldspar/Quartz
Black	Hornblende/Biotite
Red	Chert/Jasper
Gold	Muscovite

Table 2: Hypothesized correspondence of colour to mineral (Pough 1976; Velde and Druc 1999: 16-25)

Of these ten pastes, the density of inclusions at the Van Besien site ranges from zero percent (no inclusions) to 50 percent. The most common density was 11-20 percent, which makes up 51 percent of the sample (n=338). A similar range of density suggests potters followed a formula with specific ratios (Rice 1987: 406). Due to a consistent ratio and an absence of voids from organic inclusions, I believe that the potter processed the clay and added temper to create a workable paste.

Each of the paste types represents different raw material choices and techniques of temper preparation (Braun 2010:73, Orton et al. 1993: 67). All but one paste used clay matrixes with a combination of minerals. RO11 is the only paste with no macroscopically visible temper, and represents 1% (n=5) of the assemblage. Feldspar/quartz was present in the ten remaining pastes. Feldspar and quartz is plentiful in Ontario, and occur naturally in clay. As a result, feldspar/quartz is most likely present within clay and as addressed previously, if minerals are smaller than 0.5mm they are believed to be natural (Stoltman 1991:109). There is only one paste that is purely feldspar/quartz. RO6 is a combination of white and pink feldspar/quartz making up 5% (n=35) of the total sample. The other eight pastes consist of more than one type of inclusion (Figure 10; Table 3).

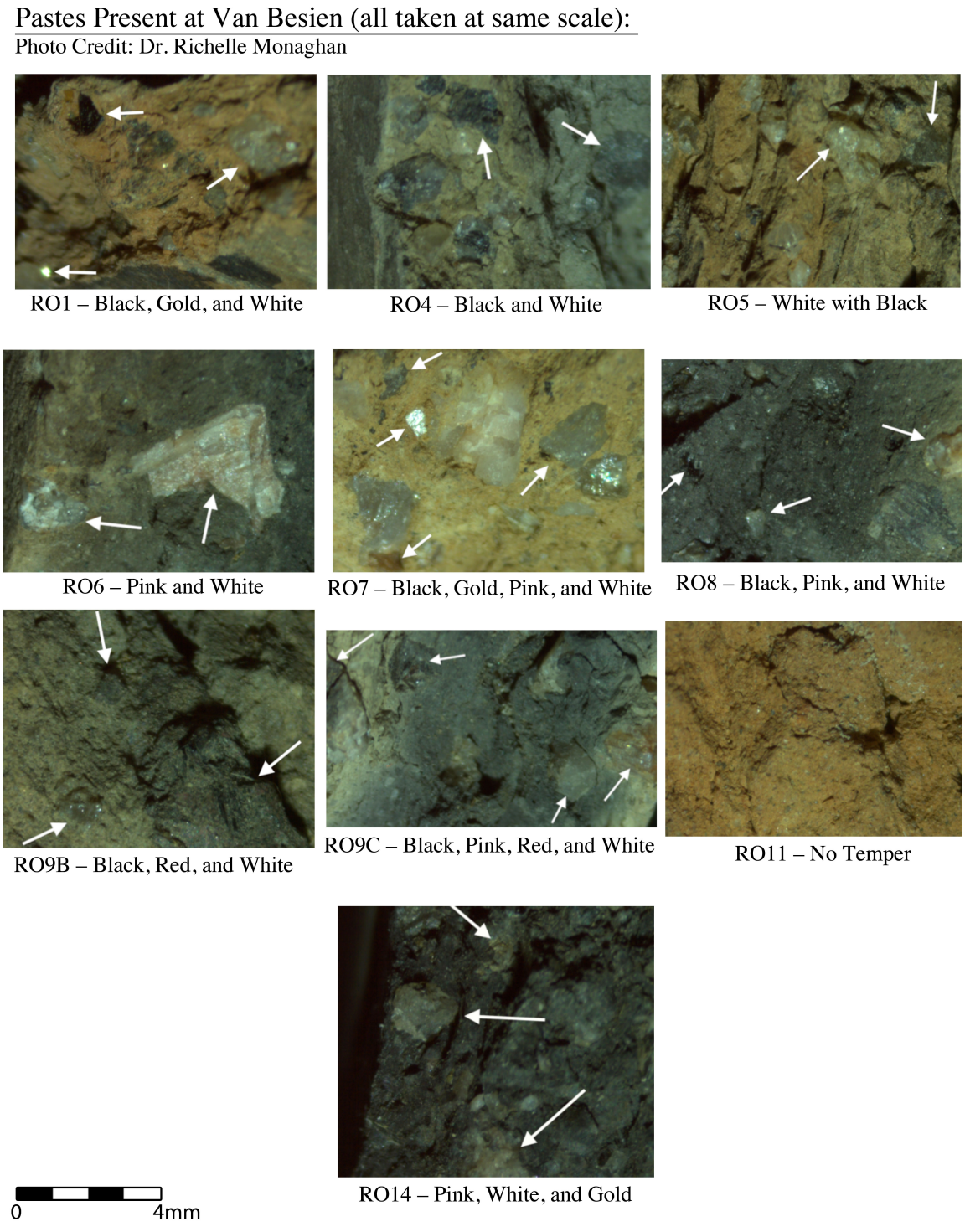


Figure 10: Van Besien Paste Recipes

Out of the ten pastes present in the Van Besien sample, there are two that are predominant (Table 6). RO1 (n=124) and RO8 (n=148) each represent 19% or more of the assemblage. Taken together, these two pastes represent an overwhelming 40% of the sample. This shows a common paste recipe that was used widely, but variability suggests that paste production was not restricted to one specific paste recipe.

Paste Code	Inclusion Colours	Paste Description	N =	Percentage
RO1	Black, Gold, and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 3 to 30%	124	19%
RO4	Black and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub rounded and sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 5 to 40%	105	16%
RO5	White with Black	Inclusion size ranging from .5 to 4 mm with shape ranging from sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 15 to 40%	104	16%
RO6	Pink and White	Inclusion size ranging from .5 to 4 mm with angular shape, temper is sorted poorly with percentages ranging from 10 to 40%	35	5%
RO7	Black, Gold, Pink, and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub rounded and sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 10 to 40%	92	14%

RO8	Black, Pink, and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub rounded and sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 5 to 40%	148	22%
RO9B	Black, Red, and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub angular to angular, temper is sorted poorly with percentages ranging from 20 to 30%	18	3%
RO9C	Black, Pink, Red, and White	Inclusion size ranging from .5 to 4 mm with shape ranging from sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 5 to 40%	9	2%
RO11	No Temper	Contains no inclusions	5	1%
RO14	Pink, White, and Gold	Inclusion size ranging from .5 to 4 mm with shape ranging from sub angular to angular, temper is sorted poorly to moderately with percentages ranging from 15 to 20%	7	1%
Total			659	100%

Table 3: Paste Descriptions and Predominance in the Van Besien Assemblage

Since particularities of paste, specifically inclusion percentage, impact the workability and plasticity of clay, these steps affect the proceeding steps of manufacture. The paste that Van Besien potters used to make pots has to be capable of the construction type and form chosen by the potter. Noble and Kenyon do not discuss inclusions or paste types for the Porteous site. All of the sherds were labeled as “grit” tempered (Noble and Kenyon 1972:26).

5.1.2 Forming (Primary and Secondary)

During primary and secondary forming, the potter is confronted with choices of how to construct the pot (e.g., pinching, coiling) to achieve the intended final shape. As discussed in Chapter 4, primary forming techniques can be distinguished by fractures, coil ridges, and surface markings (Rice 1987: 128, 129; Rye 1981: 67 - 84). Only two types of fractures are present at Van Besien: hackley, which corresponds with multiple types of forming techniques, and laminar, which corresponds with coiling. The most common type of fracture is hackley (n=657). Only two sherds showed laminar fractures. The break is concave in accordance with where a coil would attach to another (Figure 11). There are ten sherds with ridges characteristic of unsmoothed coils. This, along with the two coil breaks, demonstrates that potters chose coiling as an alternative type of primary forming but that overwhelming production was most likely not coiling.

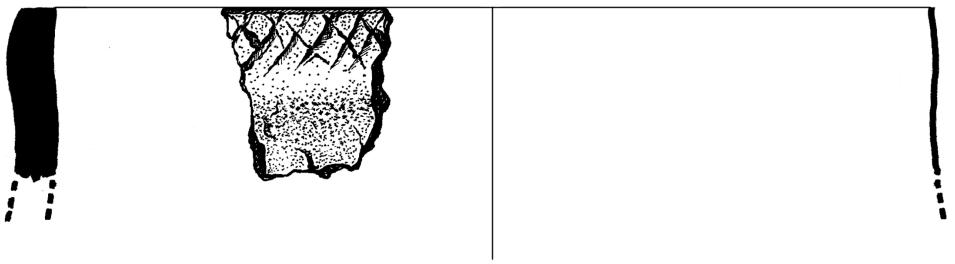
Figure 11: Break Types Present at Van Besien

While manufacturing a vessel, potters leave behind surface markings of tool use, or obliterate them if they deem it necessary. Evidence of any previous techniques of

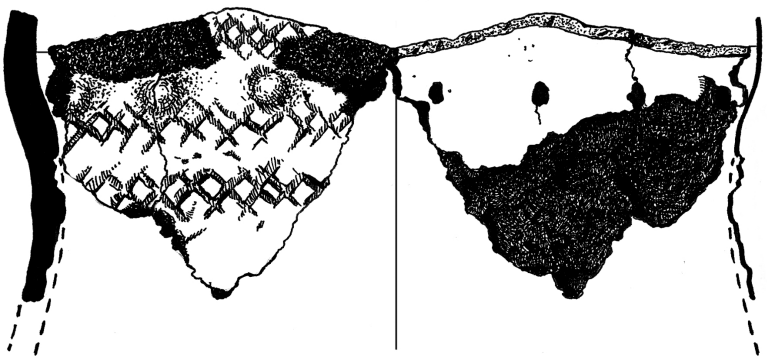
finishing can be completely obliterated, such as coiling (Shepard 1985: 187). In turn, there could be more vessels present at Van Besien using the construction method of coiling but no evidence is visually present. The surface markings left behind by potters at the site of Van Besien are casts, ridges, drag marks, indents, and a combination of all four. Drag marks (n=101) and casts (n=79) are the most common, indicating hand-forming and subsequent smoothing to reduce markings. The presence of casts and drag marks together may indicate that smoothing was common but that obliterating fingerprints and indents was not of primary concern to the potter.

The fragmentary nature of the collection made identification of form difficult. It was possible to discern rim shapes and diameters but analysis of neck restriction and full shape of vessels was impossible. Select sherds were drawn to show the least fragmentary examples of shape (Figure 12). The illustrated sherds are representative of forms present at the Van Besien site and are similar to the surrounding areas of southern Ontario (Noble and Kenyon 1972; Williamson 1990). Forms of the nearby Porteous site are extremely similar and described as “straight to everted lip down through a shoulderless mid-zone to a thickened conoidal base” (Noble and Kenyon 1972:23). As shown below, examples from Van Besien have straight to everted lips without shoulders. For more examples of sherds recovered from Van Besien please refer to the appendix. Vessel base will be discussed in greater detail below with maximum wall thickness.

Sherd ID: C31
Diameter: 17 cm



Sherd ID: E5
Diameter: 14 cm



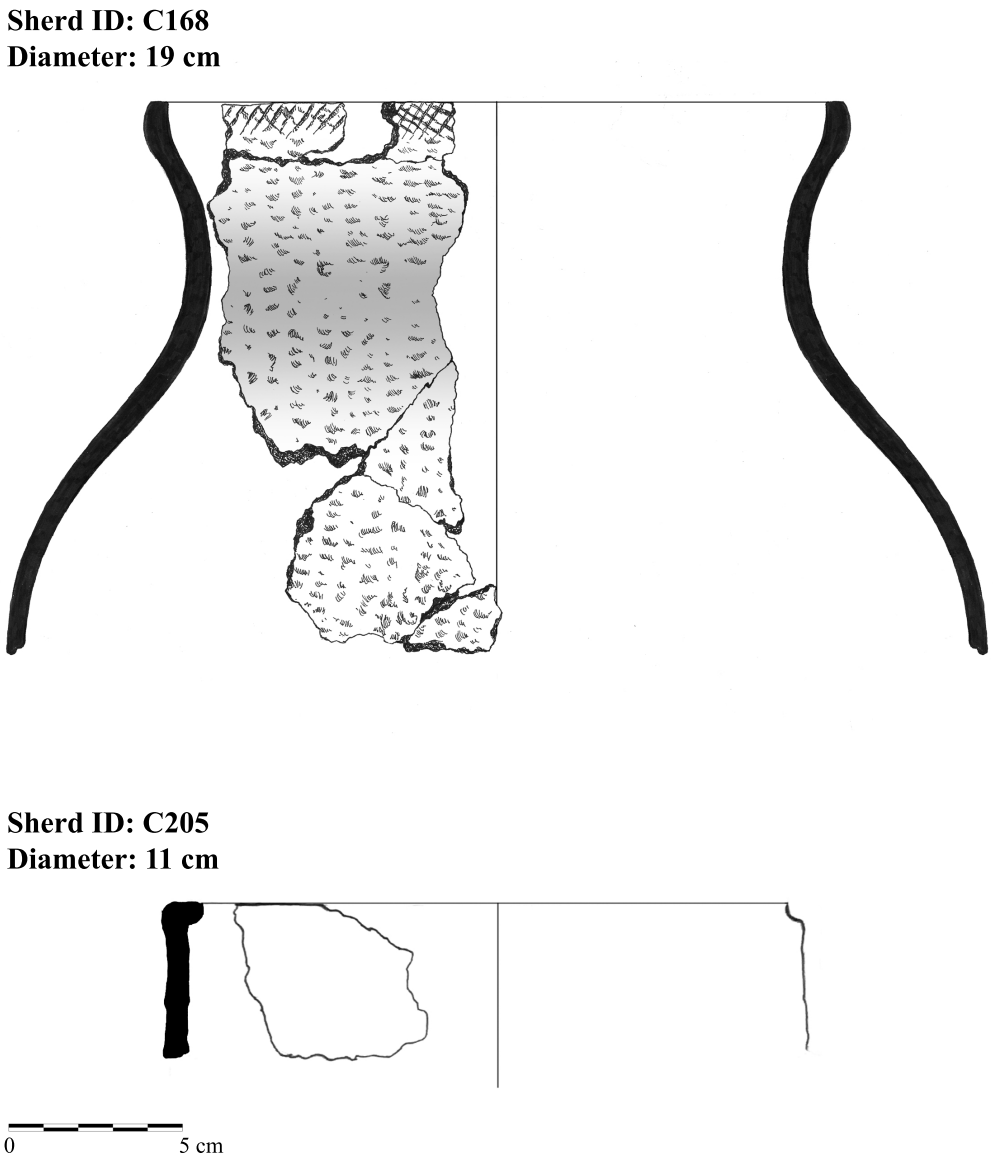


Figure 12: Sherd Illustrations (Drawing Credit: Nikolay Kolesnikov and Jennifer Schumacher)

As discussed in my methodology, I created my own rim typology to capture the full range of variability expressed by the potter as certain rim shapes were not represented at nearby sites. Much like Noble and Kenyon (1972) and MacNeish (1952), I illustrated and classified the cross-sections of rims (Figure 13). The rim shapes present at Van Besien differed greatly from those present at Porteous and as a result, I decided it was necessary to expand rim types and create my own.

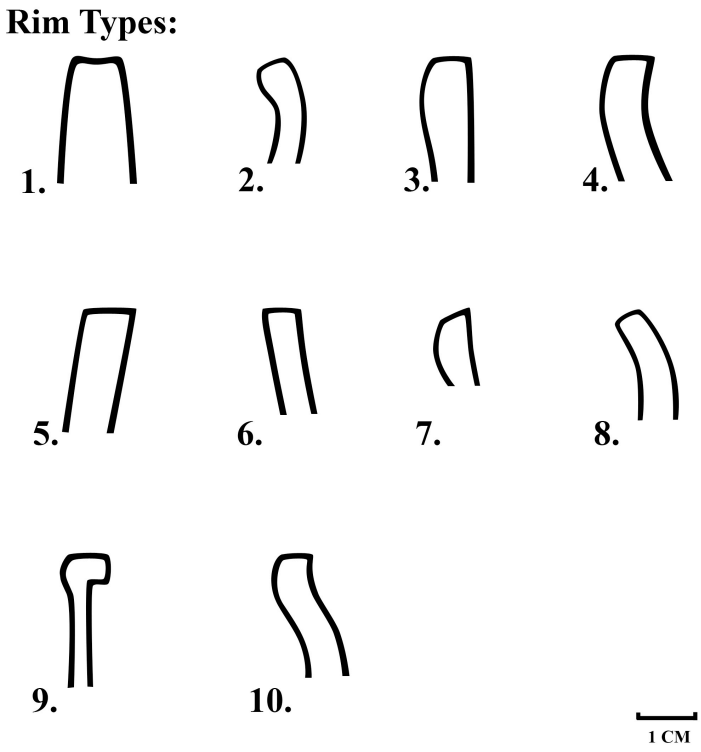


Figure 13: Rim Types Present at Van Besien

Out of 112 rims, I identified ten rim types used at Van Besien. The overwhelming preference was rim type 4 (n=40, 36%). Two other types of rims were common; type 1

was found in 27% (n=30) of the sample, and type 3 14% (n=16). These percentages suggest that type 4 was preferred overall, but that there was acceptance of other types into everyday life. There were only four rims that resembled those present at Porteous out of 19 rim types (Rim types 1, 2, 5, and 8). At the Porteous site, rim type 1 was the most popular (n=12). The rest of the rim types common between Van Besien and Porteous appear in amounts less than 5. As discussed later, form is not known to vary extremely during this period and as a result the rim groupings presented above can be inferred to belong to similar or the same forms.

Only two types of castellations were present at Van Besien, simple rounded and simple pointed (Figure 14). A total of 9 castellations were found at the Van Besien site. This is not surprising, as during the OELW, castellations were incipient based on small appearances throughout the time period (Williamson 1990) Eight castellations were separated into rounded (n=4) and pointed (n=4), and one castellation was too fragmentary to discern the type. As mentioned above, the small amount present demonstrates that castellations were not commonly used. Porteous has a higher percentage of simple pointed (n=7, 63.64%) than simple rounded (Noble and Kenyon 1972: 26). The occupants of Porteous had a slight preference for one type, whereas Van Besien was equally divided between both rounded and pointed castellations.

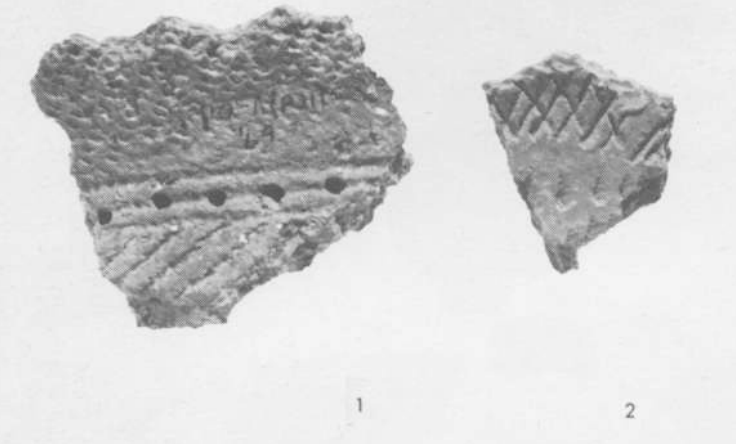


Figure 14: Castellations from Porteous Site: Simple Rounded (1), Simple Pointed (2) (Noble and Kenyon 1972: 36)

Out of 112 rims, I was able to discern the diameter of 109. The diameters range from 2 cm to 36 cm. The most common diameters are 14 cm (n=13) and 16 cm (n=12 cm). The least common diameters range from 25-28 cm (n=1) and 3 cm (n=1).

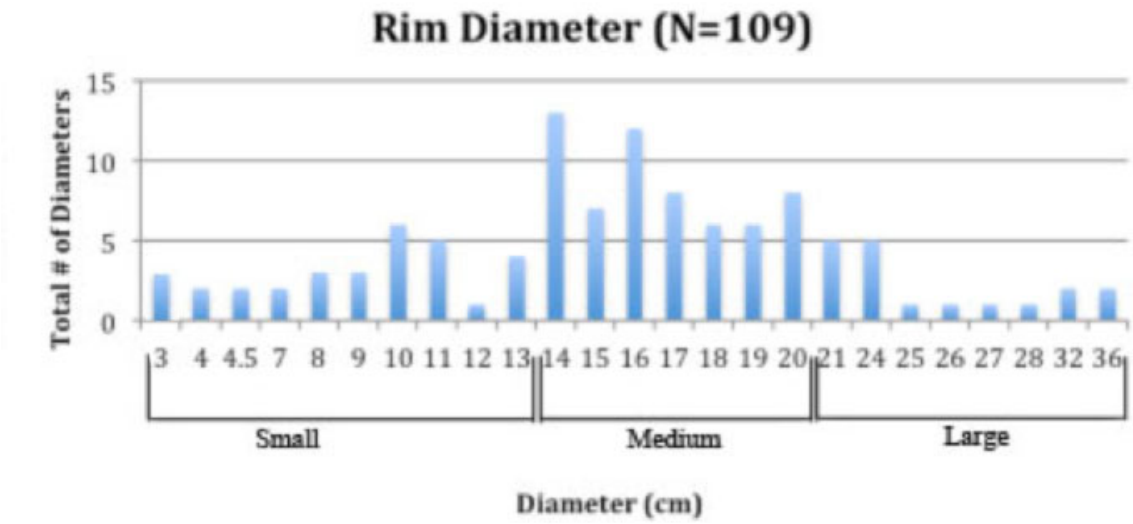


Figure 15: Distributions of Rim Diameter Present at Van Besien

I clustered rim diameters into three main groups: small, medium, and large (Figure 15). This division is arbitrary and based on rise and fall of quantities. Small

vessel diameters range from 3 – 13 cm, medium vessel diameters range from 14 - 20, and large vessel diameters range from 21 – 36. Medium-sized vessels represent 4% more than any other diameter present at Van Besien. This suggests a preference for medium-sized, portable vessels with slight constriction for cooking (Henrickson and McDonald 1983) compared to smaller diameters. On the other hand, there is evidence of the existence of vessels of other sizes. These sizes may not be as heavily used or desired, but appear to have been required to some extent. Although Noble and Kenyon do not note vessel size variation, other scholars have found that vessels from relative time periods can range in capacity from 1 to 20 liters. Capacity may range but are these are all thought to be of the same globular generic form with constricted necks and thickened rims (see discussions in Braun 2012:2; Figures 1 and 2).

Similar to rim diameter, the maximum thickness of sherds ranges greatly: 3-22 mm. The most common range is 5-9 mm, which constitutes 82 percent of the sample. The thinnest walls belong to "juvenile" pots and thick sherds only compose two percent of the sample. The technical knowledge of how to manufacture thinner pots that could withstand use was present and show evidence of sooting, carbon adhesions, and all three types of attrition. Porteous' sherd thickness varied less than that of Van Besien, measuring 3-17 mm (Noble and Kenyon 1972: 26). Porteous does not show the presence of thicker walls/larger pots.

5.1.3 Decoration

Based on the 659 sherds, the potters at Van Besien utilized seven types of surface finishing, including cord (C), cord malleated (CM), cord roughened paddle (CRP),

smoothed (S), scarified (SC), smoothed-over cord (SOC), and smoothed-over cord-roughened paddle (SOCRP) (Figure 16). Cord is characterized by random cord patterns with no seeming order. I refer to cord impressions with an orderly pattern of parallel lines as cord-roughened paddle. In other contexts smoothed has been referred to as plain, but the presence of drag marks on the surface of sherds suggest there is, in fact, a smoothing technique being employed. Scarified is thought to be unique to the Norfolk Sand Plain and described as a smoothed or corded surface finishing with seemingly random scratches placed over the surfaces pre-firing (Williamson 1990: 299). Seemingly random cord patterns that have been smoothed over are referred to as smoothed-over cord. If pieces were too small to ascertain if the lines were linear in pattern (resembling SOCRP), they were categorized as SOC. This is in contrast to smoothed-over cord-roughened paddle, which are orderly parallel cord impressions that are smoothed over.

Figure 16: Van Besien Surface Treatments (not to scale)

Smoothed, smoothed-over cord, and smoothed-over cord-roughened paddle were the decorations most preferred by the inhabitants of Van Besien. Although the technique called scarified is specifically unique to the Norfolk Sand Plain, it is not very common at the Van Besien site or at the Porteous site (Noble and Kenyon 1972:28). The most common surface treatments do not seem strictly adhered to and paste does not appear to influence choice of surface treatment, as it appears evenly dispersed. At the Porteous site, there were three preferred surface treatments as well, but not the same three. Plain

(n=274, 28.9%), smoothed-over cord (n=232, 24.5%), and cord malleated (n=206, 21.7%) were the three preferred surface treatments. This is intriguing as cord malleated shows up in very small amounts at the Van Besien site.

I initially charted motif combinations to observe if band decorations appeared in patterned combinations and no band decoration patterns appeared more than eight times together. In the archaeological literature, decorations are commonly discussed within a wider vessel typology that is characterized by rim type and other attributes. As expressed earlier within this thesis, I did not use typologies as they restrict observable variability. Since not all vessels have more than one line of decoration at the Van Besien site and no combinations were numerous, I am referring to only the first line of decoration.

I compared the number of bands on interiors and exteriors of vessels, and observed that the highest number of bands used at once on the exterior of vessels was six. The majority of vessels with decoration on the exterior had one band of exterior decoration (n=148). As the number of decorative bands increases, the number of vessels decrease. It would appear that one row was preferred, but creativity was also present. Fourteen types of decoration were employed at the Van Besien site. Out of these 14 there are three decorations that seem to be preferred. Decorations 2 (right oblique) (n=53), 4 (continuous horizontal lines) (n=59), and 5 (crosshatching) (n=51) all comprise more than 15 percent of the decoration bands used (Figure 17 and 18). Although these decorations are more common, the wide expanse of decorative possibilities suggests an overall freedom of decoration that was slightly restricted to socially favoured designs. The design analysis of Porteous focused on how the decoration was made (incised or impressed) or if it was a

groove or a stamp (Noble and Kenyon 1972: 23), rather than noting design shape. Unfortunately, I cannot compare Porteous to Van Besien as a result.

Decorative Motifs Present at the Van Besien Site:

1. Alternating Diagonal Obliques

2. Right Obliques

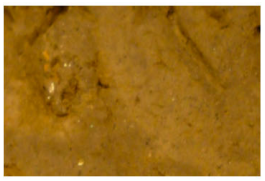
3. Left Obliques

4. Continuous Horizontal Line(s)

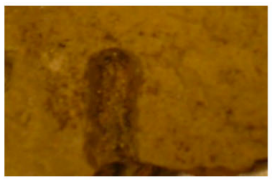
5. Cross Hatching

6. Vertical Incised Lines

7. Rows of Circles

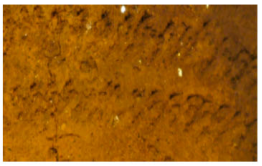


8. Interior Embossing

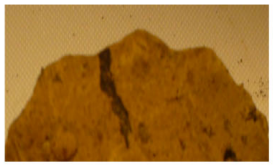


9. Exterior Embossing

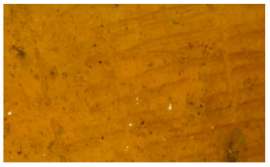
10. Punctates



11. Rolled Cord



12. Notched



13. Diagonal Lines with Horizontal Line Through

14. Triangles Made With Horizontal and Diagonal Incised Lines

Figure 17: Van Besien Decorative Motifs

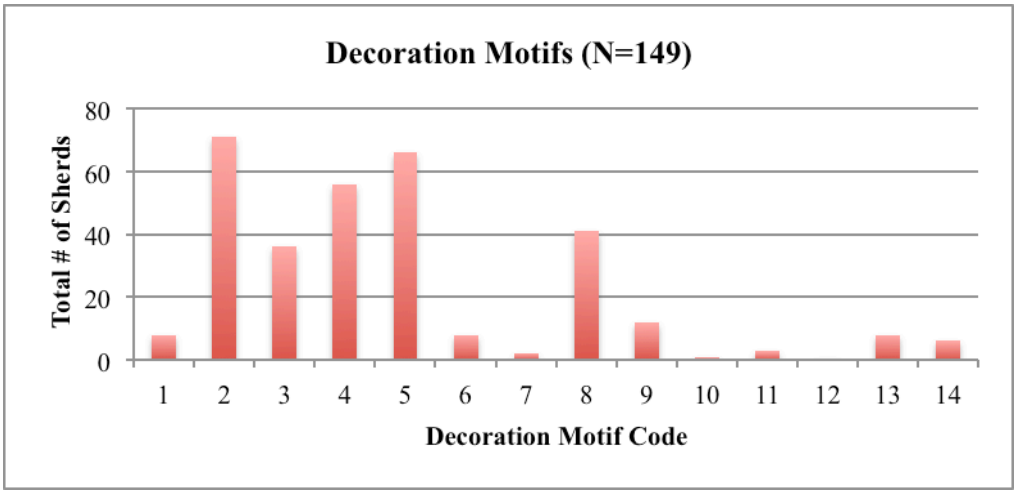


Figure 18: First Row Decoration Motif Treatment at Van Besien

There are only 18 vessels with decorative bands on the interior. The highest number of bands used at once was two. Much the same as the Van Besien site, the Porteous site only has 13 vessels with decorative bands on the interior (Noble and Kenyon 1972:25). This suggests that while interior decoration was acceptable, it was not popular and numerous bands of decoration were not accepted as forms of social media or self-expression.

5.1.4 Firing

I discerned eight categories of firing cores: completely reduced, completely oxidized, reduced sandwich, oxidized sandwich, oxidized-reduced-reduced, reduced-reduced-oxidized, reduced-oxidized-oxidized, and oxidized-oxidized-reduced. I regrouped these eight categories into four categories of firing environment: completely reduced, mostly reduced, completely oxidized, and mostly oxidized. A completely

reduced sherd would signify obstruction of oxygen to the pot during firing with organics present (Rice 1987:345; Rye 1981:115). A mostly reduced sherd is a result of being placed on an open fire and partially covering the pot with fuel or other materials (Rye 1981:115). Therefore, this type of sherd has a dark appearance ranging from grey to black. Completely reduced and mostly reduced sherds are characteristic of pit firings where oxidizing atmospheres are hard to maintain (Rye 1981:98). This is not to say that this cannot be accomplished and completely oxidized and mostly oxidized are evidence of that. In an environment where a sherd is exposed to oxygen, it becomes uniform in colour (no core), suggesting either that organics were completely burned out, or were never present. This type of sherd is regarded as completely oxidized (Rye 1981:115). A mostly oxidized sherd is typical of a sherd that was fired in an oxidized atmosphere but was not fired long enough to burn out all organics in the clay (Orton et al. 1993: 69; Rye 1981:115). This gives a lighter outer appearance with a darker middle.

Mostly reduced is the most common firing type (n=252) at Van Besien (Figure 19). The presence of a majority firing environment suggests pit firing. The next most common firing type is mostly oxidized (n=163). As conditions of firing in open fires like pit fires, are extremely variable (Rye 1981:98), it is not surprising to have this evidence of variability. As a result, this is evidence for either complete disregard for fire control or a preference for separate firing regimes.

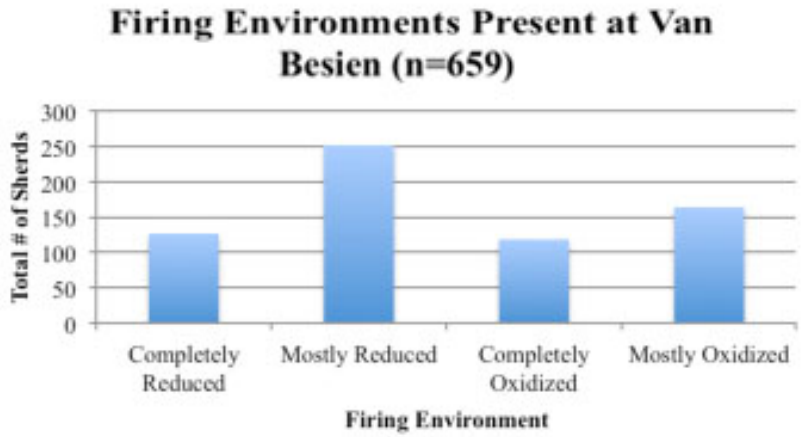


Figure 19: Amount of Each Core Types Present at Van Besien

One can infer the firing process by observing residual patterns of firing (Orton et al. 1993: 133). Fire clouding is the result of the potter placing the vessel in direct contact with the fuel during firing; this is not common at Van Besien. Out of 659 sherds, 166 (25%) show evidence of fire clouding. This suggests that during the majority of firings potter did not immerse or place the pot directly in the fuel. This could signify the potter's ability to maintain an evenly fired pot, an aesthetic desire for no fire clouding on the surface, or that firing was closely controlled. However, in combination with the patterning of cores, it is evident that firing was not closely controlled. Unfortunately, this attribute is not commonly observed in Ontario and is not recorded from the Porteous site (Noble and Kenyon 1972). If this was to be recorded at Ontario sites, variability of skill in firing could be compared across the landscape over time.

5.2 Use

Like production, the use of a vessel is the result of an individual's choices. Although the potter may intend a specific function for a ceramic, the consumer chooses

the actual use of the vessel and when to mend or discard it. This aspect of ceramics is rarely explored in Ontario. The few who have addressed this attribute (Braun 2010, Howie-Lang 1998) have considered it by breaking use wear into specific categories corresponding to activities, much as this thesis does.

5.2.1 Interior Use wear

Evidence of interior use wear is present on 247 sherds of the sample. Sooting is the most prominent instance of use wear (n=113) (Figure 20). The large amount of sherds with no use wear, including sooting (n=412), could signify that pottery was used more for storage than cooking (Rice 1987). Other common use wears are attrition-scratches (n=84) and attrition-pedestaled temper (n=58); these suggest that pots were used for other purposes in addition to storage such as food preparation and serving.

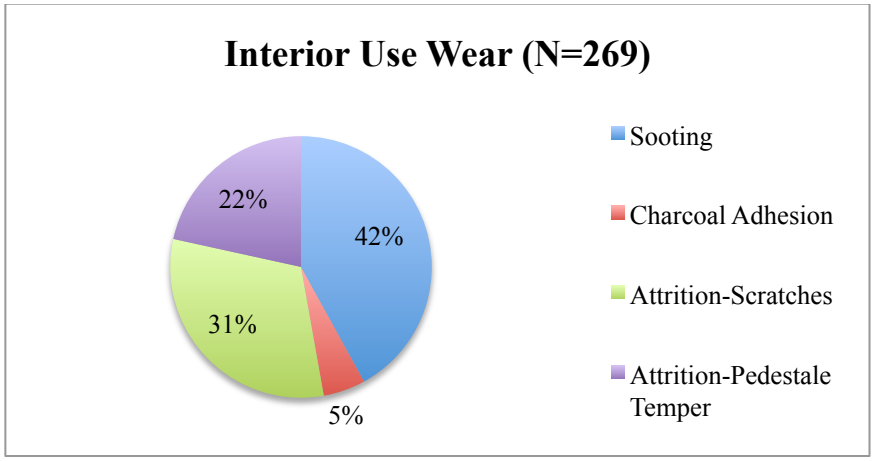


Figure 20: Interior Use Wear Present at Van Besien

5.2.2 Exterior Use Wear

Sooting is the most common exterior use wear (n=62), suggesting that vessels were used over fire. The placement of sooting on body sherds rather than basal sherds

suggests not only use in fire, but also that the pots were not suspended over the fire but placed directly into it. If vessels were suspended over the fire, sooting would be present on basal sherds (Rice 1987). Sooting was only present on 3 of 27 basal sherds. Sooting, scratches, and pedestaled temper appear most on body sherds, suggesting use in fire and settling the pot amongst the embers of the fire causing external degradation of the surface.

5.2.3 Interior and Exterior Use Wear

Combinations of use wear, such as scratches without sooting, are rare (n=12). Combinations of such use wears suggest that individual pots were possibly used for single purposes but instead multi-purpose. If all vessels were in fact only used for one activity throughout their lifecycle, there would be vessels with use wear of only one activity. This is evidence that ceramics, even if intended for specific uses by the producer, the consumer ultimately used the pot however needed.

5.2.4 Use Wear in Comparison with Other Attributes

Pastes showing the highest percentage of interior use wear are RO8 (n=65, 44%), RO7 (n=46, 50%), RO14 (n=4, 50%), and RO1 (n=53, 43%). Other than RO14, all of these are common pastes. This suggests that common pastes were not valued as highly as marginal pastes, as they show the lowest amounts of use wear. This could also signify that marginal pastes were not used as heavily as majority pastes. These patterns of use wear suggest that marginal pastes were not used for the same activities or as often as common pastes.

Exterior use wear differs between marginal and common pastes. The frequency of use wear is the same, but the type of use wear is where differentiation begins. Common pastes show a high amount of exterior attrition; evidence of a pot being moved around and possibly use for transporting goods. Marginal pastes show the use wear of sooting, but not of transport. This suggests that marginal and common pastes were not valued over one another, but were used for different activities.

All decoration types show evidence of use. Decoration types 6, 7, 8, 13, and 15 only show sooting and carbon adhesion, which are evidence of cooking. There are no decorated pieces that display evidence of stirring, such as attrition-scratching, and pedestaled temper, without evidence of cooking. This suggests that decoration type did not determine whether a pot was used for a specific activity. Therefore, it appears that decorated vessels were being used for many activities. This is supported by Braun's (2010:93) research completed of the Antrex site which identified very little relation between decoration and use. However, this does not determine that all vessels were always multi-use, just decorated vessels.

Much like paste type, vessel sizes show different percentages of use wear, suggesting that they were used for different activities. Small vessels show very little exterior use wear and 29% interior use wear, suggesting that smaller vessels were not commonly used for cooking or for other destructive activities. Medium vessels show a small amount of exterior use wear, only 12% but a large amount of interior use wear (57%). As for large vessels, they show no exterior use wear and a total of 32% interior use wear. This data suggests that medium vessels were use for cooking and transport as

shown by exterior use wear more often than any other size of vessel. The interior use wear shows that even though larger vessels were not moved around they were used in such a manner that would show use wear on the interior. This is not surprising as larger vessels are unwieldy to move and were most likely kept in one place (Henrickson and McDonald 1983:633)

5.4 Consumption and Spatial Distribution

In this portion of the chapter, I will discuss spatial variation within Area D, concentrating on House 1. I do not discuss middens in spatial analysis as artifacts from other longhouses could skew observations regarding refuse that did not match House 1. In addition, not all spatial patterns were significant. If the sample size was too small to support an analysis or conclusion, then I do not discuss the data.

5.4.1 Raw Materials/Paste

Between House 1 and the east open area, RO1, RO4, RO5, and RO8 are the most common pastes. The east open area also has approximately the same amount of sherds of fabric RO7 as the other common pastes. This may signify that RO7 was used in the outdoor area and not in houses. If the outdoor area was used by all houses, then this variability could represent pottery made by other houses, or, if the eastern open area was used as a meeting area, it could represent pottery from outside villages.

In the west end of House 1 the most commonly used pastes used consist of biotite, pink, and white feldspar/quartz (n=10) and biotite with white feldspar/quartz (n=11). In the eastern part of House 1 the same paste used in the west end was used which consists

of biotite, pink, and white feldspar/quartz (n=23). In the middle part of the house, the most common temper used was one of mostly white feldspar/quartz with some biotite. The eastern and middle parts of House 1 have the widest array of pastes, totaling at least seven. The western part of House 1 only has a total of six pastes.

5.4.2 Forming (Primary and Secondary)

The only spatial patterning from the category of *primary and secondary forming* appeared in the diameter and rim type. Diameter in area D does not differ significantly between House 1 and the east open area (Figure 21). Overall, the middle range (12-16 cm) vessel size are most predominant. In addition, there is an extreme difference in large vessels present in each area. The east open area has only one large vessel where as House 1 has 9. The distribution of diameters within Area D is similar to the whole village; all sizes are present and with the same ratio. If diameter size signifies specific uses, these areas appear to be used similarly.

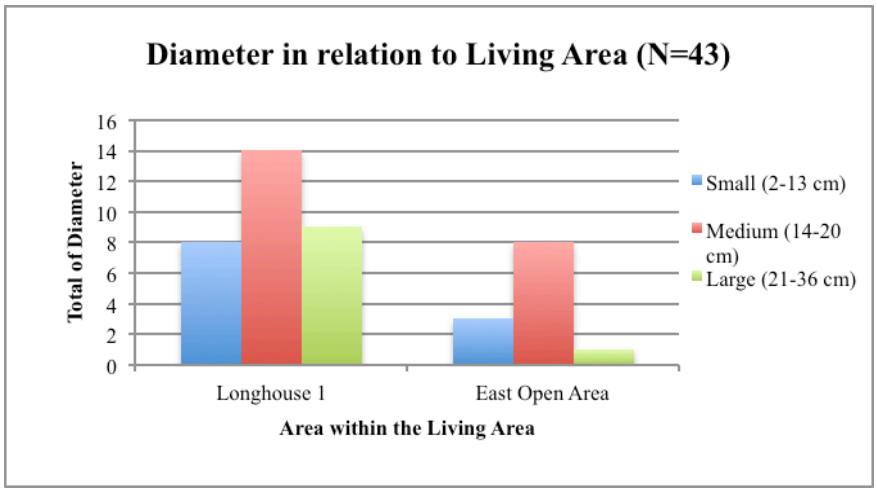


Figure 21: Diameter Charted With Corresponding Living Area

The prominent rim types within the Area D are rim shapes 2 and 5. Rim types 2 and 5 are the most common in the open area east. This is in contrast with House 1 where the most prominent rim types are 1 and 2. The presence of different ratios of rim types between the east open area and house 1 suggest the east open area may have been used by other families, other houses, or for meetings. Another interesting aspect, is that the preferred rim types within Area D do not align with the preferred rim types of the whole village (including middens). The only rim type that shows in great amounts in the living area and the village as a whole is rim type 1. This shows that to fully understand the depth of variability within a site, spatial analysis should be completed to further explore if preferences differ within the larger unit of analysis

5.4.3 Decoration

The living area appears to be divided by decoration preference. Within House 1, decoration types 2 (30.10%) and 5 (35.71%) are most common. Decoration types 3 (26.67%) and 4 (20%) are most common in the east open area. Putting this aside, most decorations were used in both areas. Although there are decorations in common, the variability signifies a social allowance of creativity in regards to decoration, even though it appears certain potters or individuals preferred certain decorations (Chilton 1996:127). On the other hand, this data aligns with other spatial data that the east open area shows different preferences.

Within House 1 decoration varies much like the other data sets. The largest array of decorated sherds are present in the middle part of House 1. The middle part of longhouse 1 has 7 out of 9 of the same decorations that are present within House 1

(Figure 22). The east and middle parts of House 1 are similar in the aspect that that they share four types of decoration. Only 1 out of these 4 shared designs appears within the West part of House 1. This supports the idea that the house was divided and there may not have been one cohesive social identity.

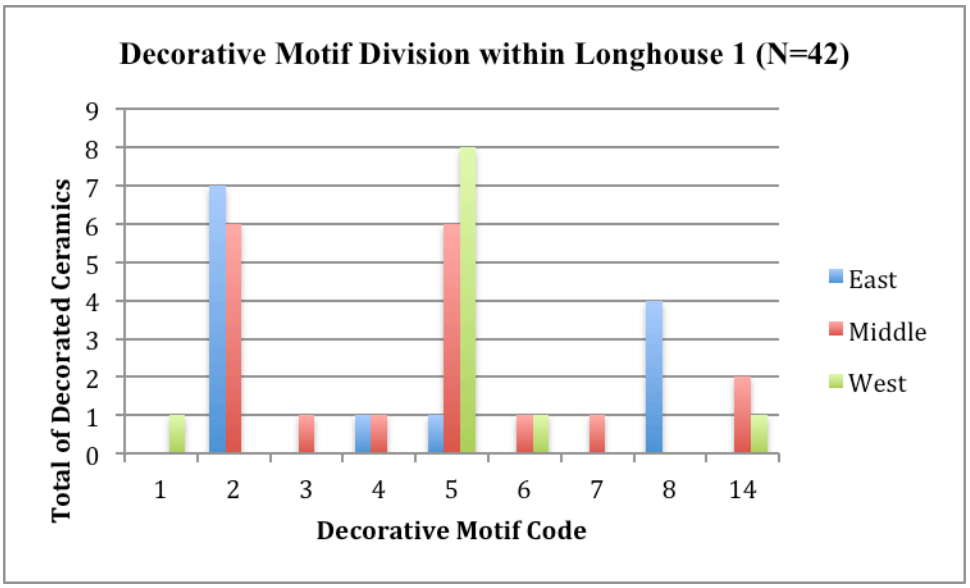


Figure 22: Decoration Motives in Longhouse 1

5.4.4 Firing

The most common firing regime in area D is mostly reduced (n=84). At 33%, this regime higher than any other. In differing zones of area D (eastern open area and House 1) the regimes are similar in ratio. In the eastern open area, the most common regime is completely reduced, with a total of 24 sherds (31%). Ceramics are predominantly mostly reduced in House 1 (39%). This specific technological choice or use of ceramics with this appearance could signify similarity between ceramics used in the public visual arena and ceramics used indoors.

The division in House 1 is apparent when looking at firing regimes. The western and eastern parts of the house have mostly reduced as the most common regimes, while the middle part of the house has a majority of mostly oxidized (n=25) and completely oxidized (n=23). This begs the question of whether groups within the house preferred different ceramic aspects, or if their technological styles differ altogether.

5.4.5 Activity Areas

It has long been argued that longhouses were used by one extended family or clan. As such, I explored use of space within the longhouse to identify if there were multiple social groups providing for themselves, or in fact one cohesive group providing for all. To explore use of space within the living area, I identified differences or similarities in use wear between the east open area and House 1, as well as within House 1.

In area D, the east open area shows an immense amount of use wear on the exterior and interior of vessels. In combination with the fact that sooting is the most common use wear, it can be inferred that the open area in D was used as an exterior kitchen of sorts. This kind of activity pattern in combination with year-round use of the site suggests that in warmer months this area could have been a hive of activity.

Across House 1, all areas show approximately the same amount of interior use-wear (Figure 23). This suggests that, in terms of vessel use, all areas of the house were used for similar activities. Exterior use-wear does show up more in the eastern part of House 1 (n=9), but not in high enough amounts to signify different activities. Cooking,

mixing, and serving using pottery was taking place throughout the longhouse. This could suggest that each hearth provided for those living around it in the colder winter months.

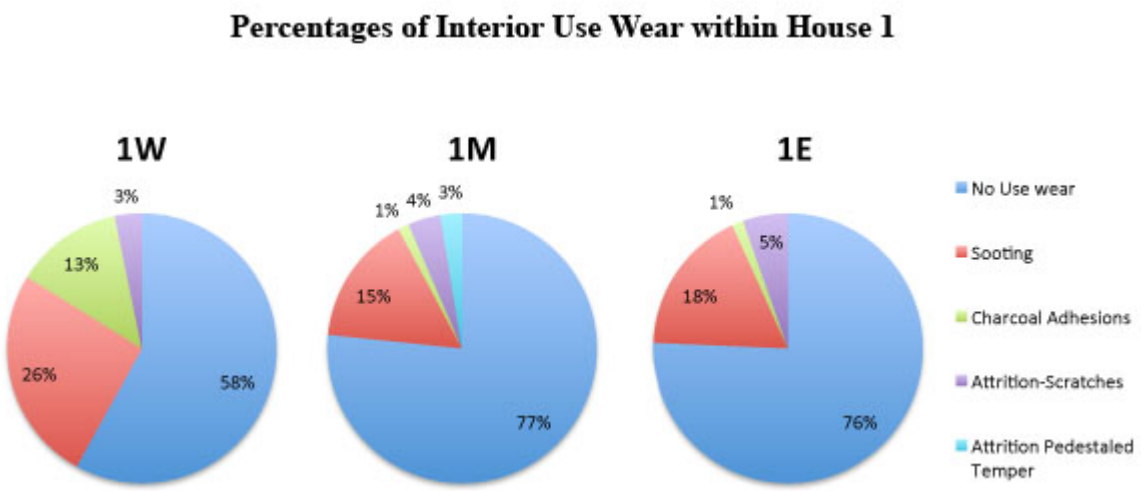


Figure 23: House 1 – Interior Use Wear

5.5 Discussion:

I now turn to consider my findings. I first discuss the results in context of my first research question "*Were potters at the Van Besien site making similar technological choices, choices that suggest a common intra-site identity?"*. I then discuss spatial variability in regards to my second research interest, "*Is social division of space and social groupings reflected by use wear?*". I conclude the chapter by discussing and comparing my results to those of a cultural historical interpretation.

5.5.1 Production Similarities at Van Besien

The data presented in this chapter reveals a technological tradition within the site of Van Besien. Production choices, including preferred methods of construction, surface markings, wall thickness, surface treatments, interior decoration, top of rim decoration, and fire clouding, are consistent across the site. The preferred construction technique was paddle and anvil, but coiling was used in the production of some vessels. Surface markings were for the most part obliterated, with a few exceptions of casts and drag marks. Surface treatments preferred by Van Besien inhabitants were smoothed, smoothed-over cord, and smoothed-over cord-roughened paddle. There was a preference for decoration motifs used for interior decoration (type 2). There was no fire-clouding present in 75% of sherds (n=491).

This homogeneity in production could be seen as evidence of matrililocality (Kapches 1990:51) or specialization (Martelle 2002). It is often cited that local traditions of form and decoration during the OELW are a result of matrilocal residence learning pattern (Watts 2008:37; Herbich 1987:203). The technological traditions at the Van Besien site appear to align with such a theory. These common technological choices would suggest an overarching social identity present at the site of Van Besien, but the presence of varying technological choices implies otherwise. Through the analysis of ceramic production and use, a more detailed picture is revealed.

5.5.2 Production Differences at Van Besien

I also found varying choices during the production process; suggesting that there was no requirement to follow one specific technological style. Technological attributes,

such as paste, rim type, diameter, castellations, decorative motifs, and firing environments, varied greatly. There are ten different recipes of paste signifying a range of technical knowledge as these pastes were successfully used. As discussed previously, paste can determine the ability of a pot to withstand thermal stress and not all combinations of temper and clay are successful. In terms of form, there are 10 rim types, 2 types of castellations, and diameters ranging from 2 cm to 36 cm. Decoration varies greatly, with a total of 14 decorative motifs as well as 8 different firing environments. The large amount of different manufacturing preferences indicates that the village allowed individuality and was not a distinct social unit in regards to pottery production.

The variability present suggests that ceramic production was not restricted by one distinct social identity that passed on technological styles, but most likely resulting from a myriad of individual influences. This suggests the possibility that pottery making was likely learned from numerous people, influenced by numerous variables, and/or that experimentation and creativity were accepted at the Van Besien site. To answer my first research question regarding a common intra-site identity, I believe that social identity varies within Van Besien in regards to ceramic production and the amount of variability is indicative of numerous social groups. This supports the conclusions drawn by Warrick (1984b), Holterman (2007), Howie-Langs (1998), and Wright (1974) that multiple social groups or social preferences were present within Ontario Woodland sites.

5.5.3 Consumption and Spatial Analysis at Van Besien.

In each scale of analysis, different divisions of technological choices appeared. These differences in technological choices suggest social variation in regards to ceramic

production and use. As Braun (2010:69) discerned, potting is a socially embedded process and as a result reflects social groups and social relationships.

5.5.3.1 The Living Area (East Open Area and House 1)

Within the living area, the east open area and House 1 show different preferences for paste, decoration, and firing. This suggests that certain attributes were used in the east open area, while others were used indoors. This division may suggest that other houses used this area. Attributes such as rim and diameter appear to be similar between the two areas.

Patterns in use wear allowed for distinction of activity areas at the site of Van Besien. As the amounts of use wear are extremely similar between House 1 and the east open area, one can assume that it was used as an outdoor extension of the house in regards to ceramic use (Figure 24). It is possible that this could be an exterior kitchen of sorts. In regards to use of areas for certain activities, Van Besien exhibits an example of possible seasonal use of village space.

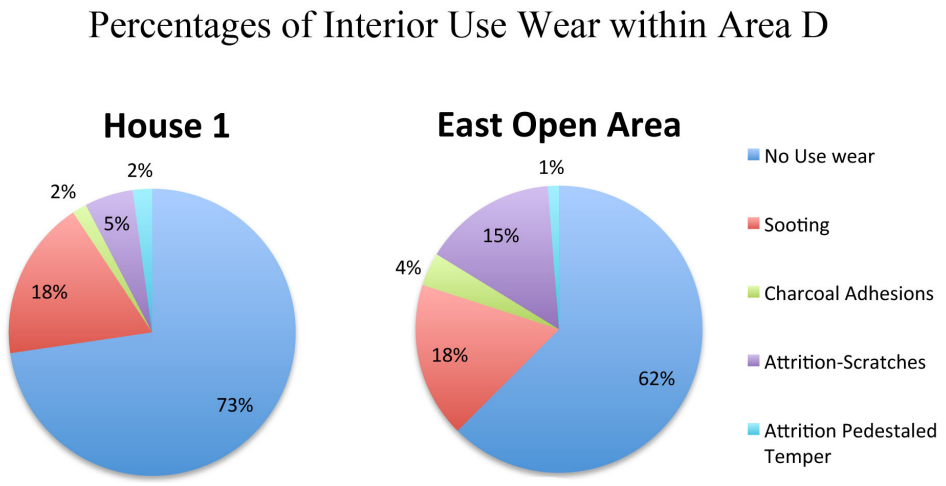


Figure 24: Area D – Interior Use Wear

5.5.3.1 House 1

It became evident when explored spatially that within House 1, the west, middle and east portions of the house appear to exhibit different technological choices. It would appear that ceramic production was not learned from a singular, unchanging source. These choices include the number of decorative rows, decorative motif preferences, diameter, and paste. As the majority of these attributes are visual, even if the vessels were not created in-house or within the village, the choice to obtain these vessels would have visual ramifications. These social distinctions are somewhat mirrored by use-wear patterns, suggesting that these technological choices are also reflected in the use of space.

Each third of House 1 appears to have ceramic deposits with similar degrees of interior use wear. Activities leaving behind cooking use wear were present throughout House 1, suggesting that each central hearth was used in a similar way. This is probable as hearths are thought to serve at least two families for cooking, warmth, and lighting (Dodd 1982:44; Warrick 2008:128). One must keep in mind that these hearths may have been used at separate times but without temporal control there is no way to know. Other than commenting that each third of the house appears to be used similarly, no significant social conclusions can be drawn.

5.6 Possible Causes of Variability at the Van Besien Site

The high amount of variability within House 1 solidifies the observation made at the village level. In regards to ceramic production there are numerous technological choices made which signals different social learning experiences. As discussed previously, pottery is usually taught through an apprenticeship where you take on the

recipe and skills of your teacher (Gosselain 2011:213). As a result, if all potters had the same learning experience, pots would be homogenous and produce a specific technological style (Hegmon et al 2000:219). Differing technological choices at such small scale (House 1) begs the question "why?". Five possible options that could cause variability in ceramics in Ontario are trade, innovation, occupation length, specialization, and exogamy.

Trade is often used to explain exotic and odd goods that are found within sites. At the Van Besien site, this is not a feasible explanation for the variability found within House 1 or the Van Besien site as a whole. During the late Woodland period, trade goods are extremely scarce (Williamson 1990:27,34). At Van Besien itself, there are two instances of possible trade items according to Noble (1973), ochre and native copper. Due to the small amount of recognized trade networks during this time period, trade is not a possible explanation of the high amount of variability at the Van Besien site. If by chance there was vessel trade there would be much less ceramic variability present.

Other scholars have cited innovation as a cause for ceramic variation within Ontario Woodland Period sites (Timmins 1997; Smith 2003). To explore the idea of innovation, Smith (2003) explored variability of juvenile pots (which are assumed to be made by children). Smith (2003) found that the juvenile pots did not vary in form or technological aspects in comparison to the larger pots which are assumed to be made by adults. As ceramic technology is harder to successfully experiment with than decoration, it is not that surprising that forming and possibly other technological choices would not differ as these become entrenched habits. The juvenile pots do vary in decoration. This is

not surprising, as reviewed earlier decoration is more apt to change and as an expression of one self's identity (Chilton 1996:127). In addition, Smith (2003) discusses the possibility that mothers and grandmothers can be involved in the teaching process. If this were true, variation would only appear if residences were non-matrilocal, as the grandmother and mother would have not learned the same techniques. Due to Smith's conclusion that technological aspects did not convey innovation, the variability in ceramic production cannot be attributed to it.

The three more likely scenarios are specialization, occupation length, and exogamy. As Martelle (2002:322) discusses, specialization is a possibility in Iroquoian society. Martelle proposes that women had little spare time between raising children and providing 75% of the diet as well as other tasks to produce ceramics (2002:331). In response to such little time, Martelle (2002:351) suggests that one or several women could have produced pottery for an entire village as other women were delegated their chores. If several women were producing pottery at the Van Besien site, there would be a fair amount of variability. Whether the amount of variability present at the Van Besien site is too high to indicate specialization or not remains to be seen, although it makes it less likely.

If the Van Besien site was occupied over a wide temporal range it could explain the high amount of variability present. Although, as discussed earlier, OELW sites are thought to be occupied for 10-30 years at a time (Warrick 2008). Based on assumptions of the presence of one generation every twenty years (Roddick 2009:177), this length of time would only encompass two generations of potters. The amount of variability that

could result from two generations of potters is not enough to account for all the variability present at the site. As a result, the most likely explanation for the variability present at the Van Besien site is exogamy or movement of women.

Exogamy or movement of women would create the high amount of variability of technological choices of ceramic production (Gosselain 2011:220). Even though a woman may feel pressure to adapt to her new social surroundings, it is common that certain aspects of ceramics will remain the same (Bishop and Smith 1975:60). As mentioned previously, a total of 250 inhabitants could have occupied the site at one time (see chapter 2). Of 250 inhabitants, a total of 60-80 women could have been producing pottery at one time. If a percentage of these women brought a new technological choice to the Van Besien site, this could account for the full range of variability present and in turn the most plausible explanation. As a result, I do not believe that matrilocality was practiced at the Van Besien site. Matrilocality is believed to be reflected in the homogeneity of ceramics (Kapches 1990:51; Horvath 1977). As mentioned previously, homogeneity in ceramics in areas such as Kenya are thought to indicate matrilocal residence and matrilocality is often seen as the reason for local traditions of form and decoration of ceramics during the OELW (Herbich 1987:203; see discussions in Watts 2008:37). As this type of homogeneity is not present, I conclude much the same as Richards (1967). I conclude that living patterns were unregulated or were virilocal and exogamy was practiced which is contradictory to ethnohistorical accounts of the 17th century (Richards 1967:56).

5.6.1 The Van Besien Site and Regional Context

The results of this research raise questions. For example, is this variability present at other sites or within this region? With the amount of variability found at the micro-scale of the Van Besien site one might ask if this variability means anything or if this would be present at every site at such a small scale of analysis. Although this type of study has not been completed for OELW, it has been completed for a site dated to the OLLW. As mentioned previously, Braun (2010) employed a similar analysis that found high amounts of variability at the Antrex site. The variability formed four different technological styles. At the Van Besien site, very few attributes appear to influence the others, and unlike the Antrex site, there were no apparent technological styles. The differing technological choices and styles present at Van Besien and the Antrex site show that variability is present in Ontario at a site level but that the variability is not consistent in amount or attribute. Through the comparison of ceramic attributes present at the Van Besien site and the Porteous site we are able to see if levels of variability within a small geographic range and small temporal span are more similar.

There is broader evidence to suggest that Van Besien did not belong to a broad regional identity. For instance, Van Besien does not share many ceramic patterns with the Porteous site. Van Besien is temporally similar and located approximately 20 kms from Porteous. The sites do not share similarities in rim types, castellation preference, wall thickness or popular surface treatments. The only attribute these two sites share is that a few vessels are decorated on the interior. It does appear at both sites that there were amounts of variability but the attributes that vary are not similar between sites. This

suggests that variability was common and that these two sites did not belong to an overarching regional social identity such as Glen Meyer as thought in the past.

5.7 Conclusion

This chapter adds to Ontario archaeology in two ways. Not only does this chapter discuss and identify technological practices common to Ontario during the Ontario Early Late Woodland period, but it also speaks to the use of ceramics in Ontario and how certain technological choices can influence this. This chapter illuminates the social division of space and variability in Ontario Early Late Woodland villages, which has rarely been done for this period. In addition, this adds to the knowledge of how social groups and activities were divided within a site. As demonstrated by this chapter, analysis of technological style and consumption can give insight into Ontario archaeology.

Chapter 6 - Conclusion:

This thesis explored the validity of current categorization of Iroquoian sites in southwestern Ontario and produced new results concerning inter-site and inter-regional relationships by examining intra-site relationships. I believe that the Van Besien site is a perfect example of the challenges of undertaking a study of extant collections, as well as the overwhelming benefits. Spatial grouping within the site of Van Besien gives insight into uses of identity, learning, and relations of interaction (Hayden and Cannon 1984) on a local scale that had not previously been explored using the technological style of pottery in Ontario Early Late Woodland archaeology. The data from the Van Besien sites reveals numerous technological choices and not one unified technological tradition. Constant technological choices throughout the site are preferred methods of construction, surface markings, wall thickness (and pastes used for specific thicknesses), surface treatments, interior decoration, top of rim decoration, and fire clouding. This homogeneity would has been viewed as evidence of matrilineality (Kapches 1990:51). Local traditions of form and decoration during the OELW are viewed with the assumption of matrilocal residence (Herbich 1987:203; Watts 2008:37). The attributes that are similar align with such a theory, but variability appears throughout technological style at the Van Besien site.

The amount of variability at the Van Besien site suggests that ceramic production was not influenced by a specific, distinct social identity that regulated and/or controlled technological styles. Technological attributes that varied greatly are as follows: paste, rim

type, diameter, castellations, decorative motifs, and firing environments. Different preferences at the Van Besien site indicate that within the village different technological choices and use suggest individuality within no distinct social identity of knowledge transmission, and was not restricted to one technological style. These varying technological choices were explored spatially in this study.

The spatial exploration of such patterns brought to light social divisions within the Van Besien site that have not been previously recognized and challenges the traditional theory of matrilineality and matrilocality reflected in ceramics. Different social divisions, as defined by different technological choices, were present in each scale of analysis. House 1 and the east open area showed various preferences for different technological steps, suggesting different social uses for the areas. For the micro-scale analysis, House 1 seems to differ in all three areas: western, middle, and eastern portions. The majority of the attributes that differ are extremely visual which suggests a social statement regarding the different pottery used in areas of the house. I have concluded that there were different social groups spatially represented within House 1.

As the data presented above demonstrates, re-evaluation of extant collections is pertinent and beneficial to academic research both in Ontario and globally. The re-interpretation of extant collections is not without its problems; problems that at times can be intimidating. There is currently a lack of public access, insufficient records or field notes, lost items or collections, and the inability to go back and record more excavation-related information. The case of Van Besien certainly demonstrated many of these issues. As exemplified by the results introduced previously, overcoming these issues turned out

to be greatly valuable. For instance, revisiting materials from past excavations validates the importance and cultural value of work previously completed. Benefits of extant collections vs. new excavations include avoiding destruction of natural areas, providing ready materials for academic projects, and minimizing financial needs, which is certainly a concern with increasing funding restraints.

6.1 Contributions, Limitations and Further Work

My hope is that my thesis will inform others that the obstacles that exist in pursuing Ontario archaeology should not encumber academic research. It demonstrates that these obstacles to using extant collections should not deter academic research. By using an extant collection, I am also able to identify what types of data that can be used and what data is too flawed for use. As mentioned previously at Van Besien (much like other sites of this period and in plow zones), there is no recorded stratigraphy, brief documentation, and a feature list without provenience that require reliance on maps drawn by Noble. Through the use of an alternative theoretical approach focusing on technological style, I was able to explore the social process of manufacturing ceramics, allowing me to observe spatial differences that denote social boundaries within the village using the artifacts and data from a previous site excavation. In addition, using a site with missing and deficient documentation, demonstrates that sites excavated prior to regulations imposed by the Ministry of Culture in 1975 can be revisited, reevaluated and add to academic debates in Ontario.

The plethora of materials available for similar undertakings is staggering. As of 2000, 50 Iroquoian villages alone were excavated due to land development in Ontario

(Warrick 2000: 416). Luckily, scholars have taken steps to make these materials more readily available and accessible. Centres for Sustainable Archaeology, as pioneered by Dr. Neal Ferris and Dr. Aubrey Cannon, located at University of Western Ontario and McMaster University will house extant collections with the goal of consolidating Ontario collections into a single database. Other resources include grey literature, such as field reports, that are rarely utilized. This abundance of previously excavated materials in combination with newer technology and future ease of access shows promise for the ability to redress current theoretical interpretations.

As discussed previously, this thesis was a journey, personal and academic, to explore the usefulness of re-evaluating extant collections in Ontario. With every project there is a tendency for obstacles to arise, and this project was no different. Before starting, I acknowledged issues I predicted would hinder my analysis in hopes of planning for and overcoming them, but more arose. The learning curve of ceramic analysis greatly delayed completion of my study. In addition, the fragmentary nature of the collection made identification of form precarious. More generally, in Ontario there is very little public access to written materials such as site reports or collections, making it extremely hard to acquire knowledge and information regarding Ontario Archaeology.

Unfortunately, certain questions were not answered due to the condition of the Van Besien assemblage. To assure the ability to answer such questions In the future I would acquire an assemblage that had recorded layers of stratigraphy, a larger ceramic sample, and more in-depth notes about the excavation methodology. These assemblage attributes would allow for questions of time elapse, transition, and more detailed ceramic

comparison. Although such issues could not be addressed in this study, the contribution of this new data and interpretation is significant.

In addition, I hope that this thesis shows how observing ceramics at a micro-scale can benefit all avenues of Ontario archaeology. Although identity is not necessarily an interest of CRM archaeology in Ontario, the movement and identification of groups across the landscape is. As discussed previously, technological choices and styles can be traced across the landscape; these do not change as readily as decoration (Chilton 1998; Gosselain 2011). As CRM is shaping the knowledge of Ontario history with the large amounts of data produced every year, it is extremely important to recognize that even if sites are seriated to the same time period that these is not indicative that they are the same people. It may not seem beneficial to discuss the movement of peoples of Ontario based on temper combinations without other sites to compare to but these are areas of future research.

In order for this approach to be beneficial to Ontario and validated as a useful approach, similar studies need to be completed within Ontario. As these studies are conducted a database of comparable sites analyzed with the same attributes can be created to delineate movement of technological choices and styles across the landscape. If this work is completed it could reshape assumptions and understandings regarding the movement and interaction of peoples during the OELW.

References Cited:

Allen, K. M. S.

1993 Iroquois Ceramic Production: A Case Study of Household-Level Organization. In *Ceramic Production and Distribution: An Integrated Approach*, edited by Bey III, G.J, and C. A. Pool, pp. 133-154. Westview Press, Oxford.

2004 Revisiting and Revising Marquesan Culture History: new archaeological investigations at Anaho Bay, Nuku Hiva Island. Journal of the Polynesian Society 113:143-196.

Belfer-Cohen, A., and A. N. Goring-Morris

2007 A New Look at Old Assemblages: A Cautionary Tale. In Technical systems and Near Eastern PPN communities, edited by L. Astruc, D. Binder, and F. Briois, pp. 15–24. Éditions APDCA, Antibes.

Belkin, Tara, Steven A Brandt, Surer Noor.

2006 [1990] The Potters of Buur Heybe, Somalia. Walnut Creek, California: Left Coast Press.

Binford, Lewis R.

1962 Archaeology as Anthropology. *American Antiquity* 28(2):217-225.

Bishop, Charles A. and M. Estellie Smith

1975 Early Historic Populations in Northwestern Ontario: Archaeological and Ethnological Interpretations. *American Antiquity* 40(1):54-63.

Braun, Gregory

2010 Technological Choices: Ceramic Manufacture and Use at the Antrex Site (AjGv-38). *Ontario Archaeology* 89/90:69-96.

2012 Petrography as a Technique for Investigating Iroquoian Ceramic Production and Smoking Rituals. *Journal of Archaeological Science* 39:1-10.

Carr, Christopher

1990 Advances in Ceramic Radiography and Analysis: Applications and Potentials. *Journal of Archaeological Science* 17:13-34.

Chilton, Elizabeth

1996 *Embodiments of Choice: Native American Ceramic Diversity in the New England Interior.* Unpublished Ph.D. dissertation, Department of Anthropology, The University of Massachusetts.

1998 The Cultural Origins of Technical Choice: Unraveling Algonquian and Iroquoian Ceramic Traditions in the Northeast. In *The Archaeology of Social Boundaries*, edited by Miriam Stark, pp. 132-160. Smithsonian Institution Press, Washington, D.C.

Creese, John

2012 Deyughnyonkwarakda – "At the Wood's Edge": The Development of the Iroquoian Village in Southern Ontario, A.D. 900-1500. Unpublished Ph.D. dissertation, Department of Anthropology, University of Toronto.

Crown, P.L.

2007 Life Histories of Pots and Potters: Situating the individual in archaeology. *American Antiquity* 72:677–690.

Cunningham, Jerimy J.

2001 Ceramic Variation and Holism: A Case Study from the "Yonge-Early Ontario Iroquoian Border" in Southwestern Ontario. *Canadian Journal of Archaeology* 25:1-27.

Curtis, Jenneth E. and Martha A. Latta

2000 Ceramics as Reflectors of Social Relationship: The Auger Site and Ball Site Castellations. *Ontario Archaeology* 70: 1-15.

Deal, Michael

1985 Household Pottery Disposal in the Maya Highlands: An Ethnoarchaeological Interpretation. *Journal of Anthropological Archaeology* 4:243-291.

Dietler, Michael and Ingrid Herbich

1998 Habitus, Techniques, Style: an Integrated Approach to the Social Understanding of Material Culture and Boundaries. In The Archaeology of social boundaries, edited by M.T. Stark, pp. 232-263. Smithsonian Institution Press, Washington.

Dobres, Marcia-Anne

2000 Technology and Social Agency: Outlining a Practice Framework for Archaeology. Blackwell Publishers, Oxford.

Dobres, Marcia-Anne and Christopher Hoffman

1994 Social Agency and the Dynamics of Prehistoric Technology. *Journal of Archaeological Method and Theory* 1(3):211-258.

Dodd, Christine Francis

1982 *Ontario Iroquois Tradition Longhouses*. Master's Thesis, Department of Anthropology, Simon Fraser University, Burnaby.

Dodd, Christine F., Dana R. Poulton, Paul A. Lennox, David G. Smith & Gary A. Warrick

1990 The Middle Ontario Iroquoian Stage. In *The Archaeology of* Southern Ontario to A.D. 1650, edited by C. J. Ellis and N. Ferris, pp. 321-360. Occasional Publication of the London Chapter, Ontario Archaeological Society 5. London, Ontario.

Edens, Christopher

1999 The Chipped Stone Industry at Hacinebi: Technological Styles and Social Identity. *Paléorient* 25(1):23-33.

Emerson, J. Norman

1956 *Understanding Iroquois Pottery in Ontario*. Ontario Archaeological Society, Toronto.

Ferris, Neal

1999 Telling Tales: Interpretive Trends in Southern Ontario Late Woodland Archaeology. Ontario Archaeology 68:1-62.

Ferris, Neal and Aubrey Cannon

2009 Capacities for a Sustainable Archaeology. Paper presented at the Ontario Archaeological Society Annual Meeting, Waterloo.

Goodby, Robert G.

1998 Technological Patternings and Social Boundaries: Ceramic Variability in Southern New England, A.D. 1000-1675. In *The Archaeology of Social Boundaries*, edited by Miriam Stark, pp. 161-182. Smithsonian Institution Press, Washington, D.C.

Gosselain, Olivier P.

2008 *Breaking the Mould: Challenging the Past through Pottery.* Prehistoric Ceramics Research Group: Occasional Paper 6. BAR S1861, Oxford.

2011 Chapter 11: Fine if I Do, Fine if I Don't. Dynamics of Technical Knowledge in Sub-Saharan Africa. *Investigating Archaeological* Cultures, edited by B.W. Roberts and M. Vander Linden, pp. 211-227. Springer New York, New York.

Hally, David J.

1983a The Interpretive Potential Of Pottery from Domestic Contexts. *Midcontinental Journal of Archaeology* 8(2):163-196.

1983b Use Alteration of Pottery Vessel Surfaces: An Important Source of Evidence for the Identification of Vessel Function. *North American Archaeologist* 4(1):3-26.

Harris, M.

1968 Comments. In *New Perspectives in Archaeology,* edited by S.R. Binford and L.R. Binford, pp. 359-361. Aldine, Chicago.

Hart, John P.

2000 New Dates From Old Collections: The Roundtop Site and Maize-Beans-Squash Agriculture in the Northeast. *North American Archaeologist* 21(1):7-17.

Hayden, Brian

1976 Corporate Groups and the Late Ontario Iroquoian Longhouse. *Ontario Archaeology* 28:3-28.

1982 Recognizing Intact Iroquoian Domestic Refuse: The Draper Case. *Ontario Archaeology* 38:47-50.

Hayden, Brian and Aubrey Cannon

1984 Interaction Inferences in Archaeology and Learning Frameworks of the Maya. *Journal of Anthropological Archaeology* 3(4):325-367.

Hegmon, Michelle

2000 Advances in Ceramic Ethnoarchaeology. *Journal of Archaeological Method and Theory* 7(3):129-137.

Hegmon, Michelle, Margaret C. Nelson, and Mark J. Ennes

2000 Corrugated Pottery, Technological Style, and Population Movement in the Mimbres Region of the American Southwest. *Journal of Anthropological Research* 56 (2):217-240.

Henrickson, Elizabeth F. and Mary M. A. McDonald

1983 Ceramic Form and Function: An Ethnographic Search and an Archaeological Application. *American Anthropologist* 85(3):630-643.

Herbich, Ingrid

1987 Learning Patterns, Potter Interaction and Ceramic Style among the Luo of Kenya. *African Archaeological Review* 5(1):193-204.

Heron, Carl and Richard P. Evershed

1993 The Analysis of Organic Residues and the Study of Pottery Use. *Archaeological Method and Theory* 5:247-284.

Holterman, Carrie

2007 *So Many Decisions! The Fonger Site: A Case Study of Neutral Iroquoian Ceramic Technology.* Master's Thesis, Department of Anthropology, McMaster University, Hamilton.

Horvath, S.

1977 A Computerized Study of Princess Point Complex Ceramics: Some implications of Late Prehistoric Social Organization in Ontario. In *The Princess Point Complex*, edited by D. M. Stothers, pp. 309–317. Mercury Series, Archaeological Survey of Canada Paper No. 58. National Museum of Man, Ottawa.

Howie-Langs, Linda

1998 *The Praying Mantis Site: A Study of Ceramic Variability and Cultural Behavior at an Early Iroquoian Village.* Master's Thesis, Department of Anthropology, The University of Western Ontario, London.

Johnson, Matthew

2010 *Archaeological Theory: An Introduction.* John Wiley & Sons, New York.

Jones, Andrew

2002 *Archaeological Theory and Scientific Practice.* Cambridge University Press, London.

Kapches, M.

1990 The spatial dynamics of Ontario Iroquoian longhouses. *American Antiquity* 55:49–67.

1995 Chaos Theory and Social Movements: A Theoretical View of the Formation of the Northern Iroquoian Longhouse Cultural Pattern. In *Origins of the People of the Longhouse*., edited by Andŕe Bekerman and Gary A. Warrick, pp. 86–96. Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society 1994, Toronto.

Kenyon, Ian T.

1968 *The Miller Site.* Royal Ontario Museum Occasional Paper No. 14. University of Toronto, Toronto.

Knapp, A. Beranrd and Peter van Dommelen.

2008. Past Practices: Rethinking Individuals and Agents in Archaeology. *Cambridge Archaeological Journal* 18(1):15-34.

Knappett, C.

2004. The affordances of things: a post-Gibsonian perspective on the relationality of mind and matter. In *Rethinking Materiality: The Engagement of Mind with the Material World,* edited by E. DeMarrais, C. Gosden & C. Renfrew, pp. 43-51. McDonald Institute Monographs, Cambridge.

LaMotta, Vincent M. and Michael B. Schiffer

1999 Formation Processes of House Floor Assemblages. In *The Archaeology of Household Activities,* edited by P. M. Allison, pp. 19-29. Routledge, London.

Lechtman, Heather

1977 Style in Technology – Some Early Thoughts. In *Material Culture: Styles, Organization, and Dynamics of Technology,* edited by H Lechtman and R Merrill, pp. 3-20. West Publishing Co., New York.

Lemonier, Pierre

1993 Introduction. In *Technological Choices: Transformation in Material Cultures Since the Neolithic*, edited by Pierre Lemonier, pp. 1-35. Routledge, New York.

MacNeish, Richard S.

1952 Iroquois Pottery Types: A Technique for the Study of Iroquois Pottery. National Museum of Canada Bulletin 124. Canada Department of Resources and Development, Ottawa.

Martelle, Holly

2002 *Huron Potters and Archaeological Constructs: Researching Ceramic Micro-Styles.* PhD Dissertation, Department of Anthropology, University of Toronto, Toronto.

Michelaki, Kostalena

1999 *Household Ceramic Economies: Production and Consumption of Household Ceramics Among the Maras Villagers of Bronze Age Hungary*. Unpublished Ph.D. dissertation, Department of Anthropology, The University of Michigan.

2007 More than Meets the Eye: Reconsidering Variability in Iroquoian Ceramics. *Canadian Journal of Archaeology* 31(2):143-170.

Milnar, C. Jill and Patricia L. Crown

2001 Learning and Craft Production: An Introduction. *Journal of Anthropological Research* 57(4):369-380.

Morton, June D. and Henry P. Schwarcz

2004 Palaeodietary Implications from Stable Isotopic Analysis of Residues on Prehistoric Ontario Ceramics. *Journal of Archaeological Science* 31:503-517.

Nauman, Alissa L.

2007 *Learning Frameworks and Technological Traditions: Pottery Manufacture in a Chaco Period Great House Community on the Southern Colorado Plateau.* Master's Thesis, Department of Anthropology, Washington State University, Pullman.

Noble, William C.

1973 Van Besien (AfHd-2): A Study in Glen Meyer Development. *Ontario Archaeology* 24:3-95.

Noble, William and Ian Kenyon.

1972 Porteous (AgHb-1): A Probable Early Glen Meyer Village in Brant County, Ontario. *Ontario Archaeology* 19:11–38.

Orton, Clive, Paul Tyers, and Alan Vince

1993 *Pottery in Archaeology*. Cambridge University Press, Cambridge.

Pough, Frederick H.

1976 *A Field Guide to Rocks and Minerals.* Houghton Mifflin Company, Boston.

Prehistoric Ceramics Research Group

2011 The Study of Later Prehistoric Pottery: General Policies and Guidelines for analysis and Publications. *Occasional Paper No 1 and No 2.* Prehistoric Ceramic Research Group, Norwich.

Ramsden, Peter

1977. *A Refinement of Some Aspects of Huron Ceramic Analysis.* Mercury Series Paper No. 63. National Museum of Man, Ottawa.

2009 Politics in a Huron Village. In *Painting the Past with a Broad Brush*, edited by David L. Keenlyside and Jean-Luc Pilon, pp. 299-318. Canadian Museum of Civilization, Quebec.

Rice, Prudence

1987 *Pottery Analysis: A Sourcebook.* University of Chicago Press, Chicago.

Richards, Cara

1967 Huron and Iroquois Residence Patterns. In *Iroquois Culture, History and Prehistory: Proceedings of the 1965 Conference on Iroquois Research,* edited by E. Tooker, pp. 51-56. University of the State of New York, State Education Department, and New York State Museum and Science Service, Albany.

Roddick, Andrew P.

2009 Communities of Pottery Production and Consumption on the Taraco Peninsula, Bolivia, 200 BC-300 AD. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Berkeley.

Roddick, Andrew P. and Christine A. Hastorf

2010 Tradition Brought to the Surface: Continuity, Innovation and Change in the Late Formative Period, Taraco Peninsula, Bolivia. *Cambridge Journal of Archaeology* 20(2):157-178.

Roe, George

1995 Style, Society, Myth, and Structure. In *Style, Society, and Person: Archaeological*

and Ethnological Perspectives, edited by C Carr and J E Neitzel, pp. 27-76. Plenum, New York.

Rye, Owen

1981 *Pottery Technology: Principles and Reconstruction.* Taracaxum, Washington, D.C.

Sagard, Gabriel.

1939 *Long Journey to the Country of the Hurons.* Translated by G. Wrong. Champlain Society, Toronto.

Shennan, Stephen

2000 Population, Culture History, and the Dynamics of Culture Change. *Anthropology* 41(5):811-835.

Shepard, Anna O.

1985 *Ceramics For The Archaeologist*. Publication 609. Carnegie Institute of Washington, Washington.

Sillar, B. and M. S. Tite

2000 The Challenge of 'Technological Choices' For Materials Science Approaches in Archaeology. *Archaeometry* 42(1):2-20.

2003 Comments III: Technological Choices and Experimental Archaeology. *Archaeometry* 45:173-181.

Skibo, James M.

1992 *Pottery Function: A Use-Alteration Perspective.* Plenum Press, New York.

Smith, David G.

1997 Recent Investigations of Late Woodland Occupations at Cootes Paradise, Ontario. *Ontario Archaeology* 63:4-16.

Smith, Patricia

2003 When Small Pots Speak: Exploring An Archaeology of Children. *Occasional Papers in Northeastern Archaeology No. 13*. Copetown Press, New Foundland.x

Spence, Michael W, Robert H. Pihl, and Carl R. Murphy

1990 Cultural Complexes of the Early and Middle Woodland Periods. In *The Archaeology of* Southern Ontario to A.D. 1650, edited by C. J. Ellis and N. Ferris, pp. 125-169. Occasional Publication of the London Chapter, Ontario Archaeological Society 5. London, Ontario.

Stark, M. T.

1999 Social Dimensions of Technical Choice in Kalinga Ceramic Traditions. In *Material Meanings: Critical Approaches to Interpreting Material Culture*, edited by E.S. Chilton, pp. 24-43. University of Utah Press, Utah.

Stark, Mirriam, Ronald Bishop and Elizabeth Miksa

2000 Ceramic Technology and Social Boundaries: Cultural Practices in Kalinga Clay Selection and Use. *Journal of Archaeological Method and Theory* 7(4):295-331.

Stoltman, J.B.

1991 Ceramic Petrography as a Technique for Documenting Cultural Interaction: An Example from the Upper Mississippi Valley. *American Antiquity* 56(1):103-120.

Stothers, D.

1977 *The Princess Point Complex.* Mercury Series Paper No. 58. National Museum of Man, Ottawa.

Timmins, Peter

1985 *The Analysis and Interpretation of Radiocarbon Dates in Iroquoian Archaeology.* Research Report No. 19. Museum of Indian Archaeology, London.

1997 *The Calvert Site: An Interpretive Framework for the Early Iroquoian Village.* Mercury Series Archaeological Survey of Canada Paper 156. Canadian Museum of Civilization, Quebec.

Tite, M.S.

2008 Ceramic Production, Provenance and Use – A Review. *Archaeometry* 50(2):216-231.

Trigger, B.G.

1976 *The Children of Aataentsic: A History of the Huron People to 1660*. McGill-Queen's University Press, Montreal.

2006 *A History of Archaeological Thought*. 2nd Ed. Cambridge University Press, New York.

Trigger, B.G., L. Yaffe, M. Dikšic, J. L. Galinier, H. Marshall and J.F. Pendergast

1980 Trace-Element Analysis of Iroquoian Pottery. Canadian Journal of Archaeology 4:119-145.

van der Leeuw, S.E.

1993 Giving the Pottery a Choice. In *Technological Choices: Transformation in Material Cultures Since the Neolithic*, edited by P. Lemmonier, pp 238-288. Routledge, London.

Velde, B. and Isabelle C. Druc

1999 *Archaeological Ceramic Materials: Origin and Utilization.* Springer, New York.

Warrick, Gary

1984a Reconstructing Ontario Iroquoian Village Organization. National Museum of Man Mercury Series Paper No. 124. National Museums of Canada, Ottawa.

1984b *The Fonger Site: A Protohistoric Neutral Community,* Revised Version of Original Report Submitted to the Ontario Heritage Foundation in January 1982, in accordance with the Ontario Heritage Act of 1974.

1996 Evolution of the Iroquoian Longhouse. In *People Who Lived in Big Houses: Archaeological Perspectives on Large Domestic Structures,* edited by G. Coupland and E. Banning, pp. 11-26. Prehistory Press, Madison.

2000 The Precontact Iroquoian Occupation of Southern Ontario. *Journal of World Prehistory* 14:415 - 466.

2008 *A Population History of the Huron-Petun, A.D. 500-1650.* Cambridge University Press, Cambridge.

Watts, C. M.

2008 *Pot/Potter Entanglements and Networks of Agency in Late Woodland Period (c. AD 900-1300) Southwestern Ontario, Canada.* British Archaeological Reports International Series S1828. Hedges Ltd., Oxford.

Wills, W.H.

2009 Cultural Identity and the Archaeological Construction of Historical Narratives: An Example from Chaco Canyon. *Journal of Archaeological Method and Theory* 16:283-319.

Williamson, Ronald F.

1985 *Glen Meyer: People in Transition.* Unpublished Ph.D. dissertation, Department of Anthropology, McGill University, Montreal, Quebec.

1990 The Early Iroquoian Period of Southern Ontario. In *The Archaeology of* Southern Ontario to A.D. 1650, edited by C. J. Ellis and N. Ferris, pp. 291-320. Occasional Publication of the London Chapter, Ontario Archaeological Society 5. London, Ontario.

Wright, J.V.

1966 *The Ontario Iroquois Tradition.* National Museum of Canada Bulletin 210. National Museums of Canada, Ottawa.

1967 Type and Attribute Analysis: Their Application to Iroquoian Culture History. *Ontario Archaeology* 111:65-69.

1972 *Ontario Prehistory.* National Museums of Canada, Ottawa.

1974 *Nodwell Site*. Mercury Series Archaeological Survey of Canada Paper 22. Canadian Museum of Civilization, Quebec

1980 *The Role of Attribute Analysis in the Study of Iroquoian Prehistory***.** Proceedings of the 1979 Iroquois Pottery Conferences. Research Records No 13(3):1-26. Rochester Museum and Science Centre

Appendix

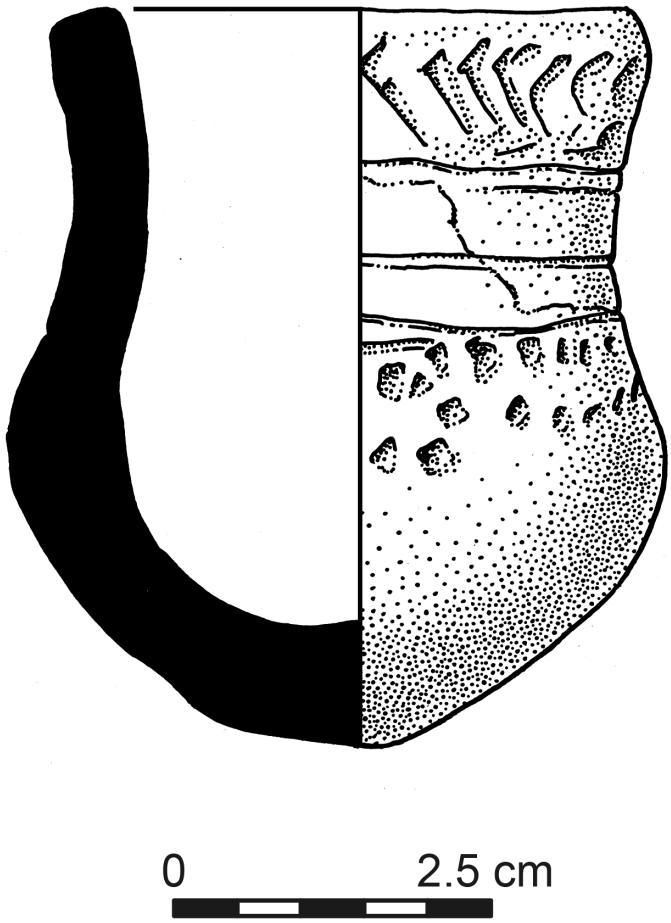


Plate 1: Illustration of a Miniature Pot (D121; Diameter: 4.5 cm) (Drawing Credit: Kathryn Killackey)

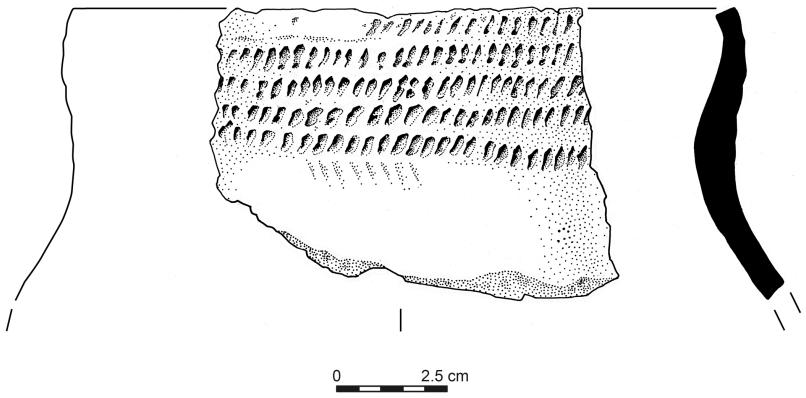


Plate 2: Sherd Illustration (D207; Diameter: 14 cm) (Drawing Credit: Kathryn Killackey)

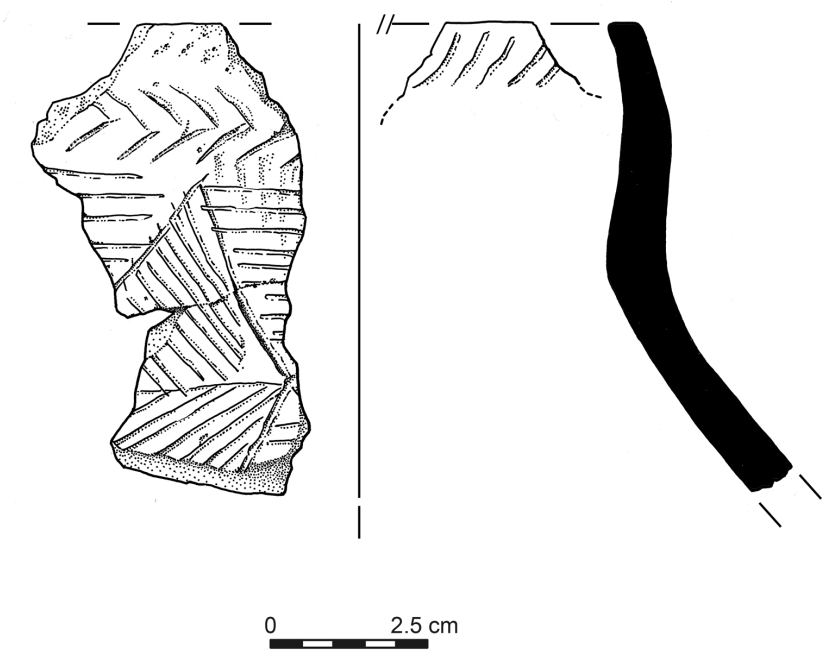


Plate 3: Sherd Illustration (D120) (Drawing Credit: Kathryn Killackey)

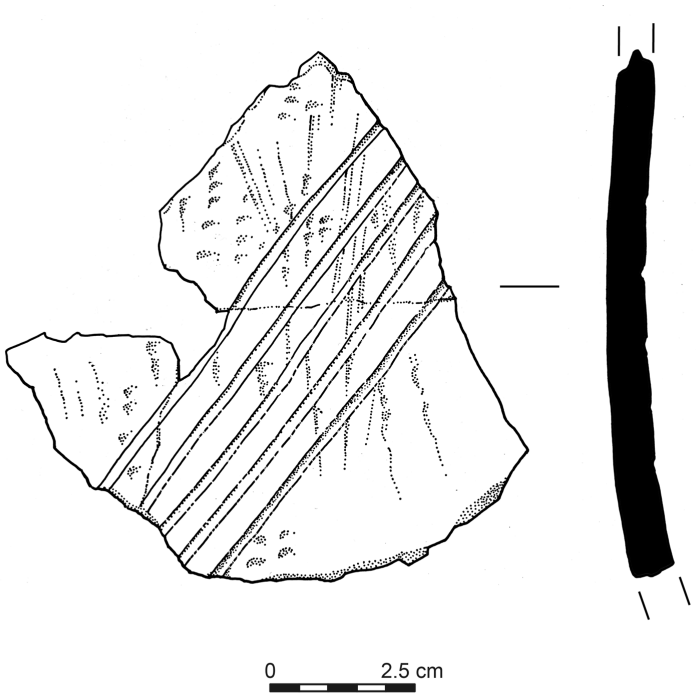


Plate 4: Sherd Illustration (C164) (Drawing Credit: Kathryn Killackey)