THE MIDDLE AND LATE WOODLAND TRANSITION IN SOUTHERN ONTARIO: SMOKING CULTURE AS AN INDEX OF SOCIAL CHANGE IN THE CONTEXT OF SEDENTISM

THE MIDDLE AND LATE WOODLAND TRANSITION IN SOUTHERN ONTARIO: SMOKING CULTURE AS AN INDEX OF SOCIAL CHANGE IN THE CONTEXT OF SEDENTISM

By: LENA ZEPF, B.A.

A Thesis Submitted to the School of Graduate Studies in Partial Fulfillment of the Requirements for the Degree Master of Arts

McMaster University MASTER OF ARTS (2014) Hamilton, Ontario (Anthropology)

TITLE: The Middle and Late Woodland transition in southern Ontario: smoking culture as an index of social change in the context of sedentism

AUTHOR: Lena Zepf, B.A. (University of Waterloo)

SUPERVISOR: Dr. Tristan Carter

NUMBER OF PAGES: xi, 201

Abstract

This thesis puts forward a unique perspective for how we can view changes in the context of sedentism, specifically with regard to the Middle and Late Woodland periods (ca. 400 B.C. – A.D. 1650) in southern Ontario. The transition to a more sedentary way of life leads to significant socio-economic changes in settlement type, subsistence, demography, architecture, and material culture, and acts as an incentive for change as it pertains to ideological transformations. In this thesis I concentrate on how changing ways of living impacted people's ideology and related practices, focusing on the social habit of smoking, and its related material culture pre- and post-sedentism in southern Ontario. I suggest that the changes witnessed in this practice (and associated paraphernalia) are reflective of a means of social group maintenance, and by extent a different mechanism of how societies regulated themselves. My study further examines the role smoking pipes had for group and individual recreational use, alongside group communal practices. I propose that more pipes per site signify daily use, reflecting a shift away from the pre-sedentary communal practice of smoking led by ritual specialists, to a post-sedentary individual and occasional group experience. Moreover, I argue for a link between smoking, social relationships, and the promotion of social solidarity. The stimulus for certain practices, and the structure of the socio-cultural system within which they occur, is significant for they are interwoven into all aspects of society. The aim of this thesis is to add to our perception of change and transformation during the Middle and Late Woodland periods of southern Ontario, while providing a unique perspective for understanding sociocultural transformation in the context of sedentism more generally.

Acknowledgements

This thesis would not have been completed without the help and support of colleagues, family members and friends. I would like to give thanks to my supervisor Tristan Carter, and my committee members Gary Warrick and Robert MacDonald, for their encouragement, guidance, and assistance. Not only did they help shape the scope of my project, but also aided in the collection of information and site reports necessary for the bulk of this research. Special thanks also goes to Ron Williamson, for providing comments and direction as my external reader, and whose expertise in Ontario archaeology helped tease out the finer details for my thesis. I also need to thank Archaeological Services Inc. for providing me with site reports, as well as the University of Toronto Mississauga for granting me access to site collections and giving me space to conduct my own analysis. I especially need to give recognition and thanks to my best friend and partner, Rick Johnson, for whom I owe my sanity and optimistic outlook. It is through his love and support that I gained the courage to complete this thesis.

Table of Contents

List of Figures and Tables

CHAPTER 1: INTRODUCTION

1.0 Introduction

It is human nature to adapt. One's lifestyle is affected to some degree, consciously or unconsciously, by internal (e.g., personal motives, intra-group dynamics) or external stimuli (e.g., resource availability). This process of change occurs not only on the individual level, but in communal situations as well. Over time, the results of this adaptive process are reflected in individual and group behaviours and in the material culture they create. Sedentism is one such adaptation that causes social and cultural change, not least with regard to dynamics within the social group. The transition to a sedentary way of life took place in southern Ontario between the fifth and thirteenth century A.D, and is distinguished by variability in the timing and degree of sedentism. For example, some hunter-gatherer and early agricultural populations in southern Ontario did not consistently rely on long-term site residency and maintained some form of seasonal movement up until the time of European contact. There is archaeological evidence, that during the Middle Woodland and into the subsequent Early Late Woodland, some communities practiced group amalgamation in the winter months, followed by winter camp abandonment and seasonal dispersals. An additional settlement strategy scenario consisted of a sedentary central village with radiating seasonal satellite camps within close proximity (Kapches 1982:9). Over the long-term, and by the end of the Late Woodland period, there is an increasing degree of sedentism for all groups, and there appears to be a genuine change in the ways of living (e.g., site preferences, dwelling architecture) as populations' adjust to a different settlement strategy.

Southern Ontario is environmentally rich, containing an abundance of readily available food resources, allowing for a range of subsistence strategies to be practiced. In this context, populations actively, albeit gradually, transitioned to a sedentary lifestyle. Regardless of the stimulus (see Chapter 2), the transition to a more sedentary way of life is a significant behavioural change for previously mobile hunter-gatherer populations that practiced an annual seasonal round. It is during these times of transitions that the possibility for innovative ways 'of doing things' can occur. A great deal has been written on the impact of sedentism on subsistence, architecture, demography and social organization, but in this thesis I will be arguing that sedentism can also act as a significant catalyst for ideological transformations. I believe that the transformation of an existing selective smoking culture to one that was more readily accessible was a means of adjusting to a new lifeway by alleviating stressors, and providing an arena for social solidarity as various people came together and, were therefore, no longer related. Moreover, that this reconceptualization of smoking constituted a shift from previous, possibly ritual community engagements with smoking pipes. I propose that two smoking complexes existed concurrently in newly sedentary and post-sedentary contexts. One complex being the continuation of the previous engagements with smoking pipes seen in pre-sedentary times, that being special community smoking pipes being used in group communal situations, and in the possession of 'the few'. The second smoking complex consisted of the adoption of an ordinary/leisure smoking activity. Therefore, while there is a mundane smoking pipe complex, there also exists, superimposed, a special community ritual practice that is led by spiritual specialists.

1.1 Thesis questions

This thesis seeks to link changes in ideology / social practice to increasing degrees of sedentism, through an examination of tobacco smoking. While at first glance, smoking might not seem the most obvious way to document societal changes pre / post-sedentism, for smoking might be viewed as a "non-essential" act. By this I imply that it does not fit with our Western scientific understanding of 'what we need to do to survive' (e.g., caloric intake, shelter), but in some cultures the act of smoking (to achieve hallucinations, or altered states of consciousness) might be seen as a crucial practice for spiritual and social harmony and to help the world keep turning. It is for this reason that interest has been placed on investigating the social motivation for this cultural practice. Von Gernet (1995:68) points out that a certain strain of native tobacco (*Nicotiana rustica*), when consumed in large quantities, can produce altered states of consciousness, and for this reason smoking tobacco was linked to the spirit world (von Gernet 2000). Ethnographically we know that through smoking tobacco, people sought to commune with ancestors and supernatural beings to gain knowledge and power (von Gernet 1992:178-179), but a smoking culture can also be used as evidence for socio-cultural transformation. It is this author's belief that an active smoking culture promoted social cohesion in newly sedentary / amalgamated communities. It can be argued that sedentism produced new ways of doing things, as well as transformed existing lifeways. More unrelated individuals inhabiting the same village necessitate activities that promote social solidarity and ease tensions. Chapter 2.8 and 2.9 provides more detail as to how a study of smoking pipes might provide information concerning ideological / social transformations in the context of sedentism.

1.2 Statement of Objectives

This research has two specific goals: (1) to examine social changes in the context of pre, evolving, and post-sedentism during the Middle and Late Woodland periods (ca. 400 B.C. – A.D. 1650) in southern Ontario, specifically through the lens of smoking culture, focusing on the regions of the Credit River, Red Hill Valley and the Lower Grand River Valley; and, (2) to examine current modes of studying smoking pipes to better understand how archaeologists deal with, and think about, smoking paraphernalia.

1.3 Theoretical approach

As I shall review below, the investigation of socio-cultural adjustments to a more sedentary way of life have typically focused on changes in settlement types, demographics, and social complexity (e.g., Birch 2010, 2012; Kowalewski 2003, 2006, 2008). While historically archaeologists initially focused on sedentism being the product of external / 'natural' factors, such as climate change and resource availability (e.g., Binford 1983, 1972; Flannery 1973, 1972), more recent scholarship has tended to accord greater importance to human agency as central to the process and nature of sociocultural change (Hodder 1991; Sewell 1992; Shanks and Tilley 1988). By agency I refer to the actions and choices of individuals or groups, choices and actions that might indeed have been initiated by external factors, but ultimately drew on human experience and tradition to achieve those changes (i.e., a less ecologically deterministic view of cultural 'development'). I include groups in this definition for it is imperative to remember that people were part of a society that had relations, ideologies, and a collective conscious. To understand a period of temporality characterized by such a noteworthy transformation requires more than a "recipe-book" approach using predetermined methods (Johnson 2000:214).

Alternatively, emphasis should be on social strategies, power, and ideology, for they shape the configuration of everyday life (Shanks and Tilley 1987:180); either from external or internal stimuli (Bender 1978). Since the majority of archaeological interpretation is based on the artifacts left behind by past populations, one way such social strategies can be examined is through the material culture left behind by the groups we wish to study. Analysis of material culture form, decoration, and context can reflect conscious decision-making processes, and be used to determine patterns of preference and as evidence for behavioural trends.

Archaeologists, as Chapman (2003:13) would put it, have a tendency to classify everything, "even their theories to the point of having typologies of archaeologies." For example, a processual view of socio-cultural change claims that cultures adapt to external stressors (e.g., climate change, population growth). This is best evidenced by Binford (1962, 1965), who viewed socio-cultural modifications as an adaptive response to changes in the natural environment, and population pressure. In this context, cultural transformation is understood as a population's response to stressors brought about by ecological change, and this is sufficient for understanding ideological changes (Binford 1972). While humans are without a doubt part of the ecosystem, this does not mean that they should be evaluated in an analogous approach. External factors may play a part in socio-cultural change, but not exclusively. A population's view of *their* world is equally, if not more, important. Theory, according to Johnson (2000:214) and with whom I agree, should be used as "inspiration, not a substitute for thinking critically and imaginatively about the archaeological material we are working with." My specific aim in this thesis is to approach the topic of socio-cultural transformation through the lens of social theory, specifically that of practice theory. Essentially, all theories discussing societal variability, agency and change

can be called social theories, an exception being evolutionary theory. In this context, social theory is used to explain shifting ideologies in the context of changing settlement strategies. While rather eclectic, this approach can aid in explaining such human phenomena. I plan on 'bridging' across a long temporal span by examining smoking pipes in pre, evolving and post-sedentary societies. In this way sedentism can be viewed as the stimulus for the reinvention of traditions, including community practices such as a smoking culture.

In this thesis I will not be focusing on the processes that lay behind emergent sedentism, nor am I seeking to downplay the more traditional areas of discussion concerning the impact of sedentism, such as settlement type and demography. Instead, I have chosen to examine the *social* implications of sedentism. To achieve this aim I will be examining smoking culture through a multi-faceted analysis of smoking pipes. I employ a diachronic investigation to chart socio-cultural change as a means of engaging with those debates surrounding how mobile populations were transformed socially and culturally through their adoption of a sedentary way of life. This thesis draws from the practice theory approach to infer behaviour from archaeological data. The attraction of practice theory is that it implements agency, not just individual agency, but also the practice of many (Pauketat 2000:117). It is similar in some respects to Durkheim's "collective consciousness," for it includes the peoples' (e.g., a group, village population, nuclear family, etc.) traditions, customs, and behaviours, essentially all core cultural concepts. It is important to note that agency, while part of practice theory, is not the only core concept. To understand change it is essential to acknowledge agency, as well as the motivators of human behaviour and cognition. As Cowgill (2000:57) states, sociocultural transformations often occurs "when individuals or a group with enough influence *intend* to make change, even though the results are

often not, or not just, those intended." Therefore, behavioural changes, such as mobility patterns, derive from a conscious decision that directly impacts traditional lifeways.

1.4 Outline of thesis

This thesis begins with an overview in Chapter 2 of the conceptualization and significance of sedentism within the discipline of archaeology, ultimately focusing on how changes in a people's mobility may affect the social realm, and by extent be visible in the material culture associated with smoking. Chapter 3 presents an overview of pre-contact Aboriginal smoking culture in eastern North America with a focus on southern Ontario Iroquoian smoking pipes. This helps to give an impression of the nature of pipe use and the macro-scale similarity and variability in the material culture at the regional level. Chapter 4 reviews the culture history of southern Ontario, the purpose of which is to provide contextual background information for the study and the regional sites used herein. The study region, which includes a selection of Middle and Late Woodland sites located in three watersheds near the western end of Lake Ontario, is discussed in Chapter 5. These case studies present a micro-scale view of variation and similarity, and provide an opportunity to evaluate analytical methods and smoking pipe attributes appropriate to the aims of this project. When both macro- and micro-scale trends are woven together, an appreciation of smoking pipe transformation can be achieved. Next, Chapter 6 introduces the methodology and attribute analysis used in this thesis, as well as provides an overview of past smoking pipe typological studies; both published and unpublished literature is utilized. Chapter 7 acts as a symposium, from which the results of the smoking pipe analysis are interpreted and considered, as well as the possible sociocultural implications this

reveals. Lastly, Chapter 8 concludes with an overall summary of the thesis, its objectives, findings, and their significance to Ontario archaeology.

1.5 Summary

The Middle to Late Woodland periods of southern Ontario were a time of considerable socio-cultural change. Aboriginal populations gradually transitioned from strictly mobile lifeways to ones that were semi-sedentary, with gradual maize agriculture becoming incorporated into the subsistence economy. Alongside these shifting lifeways were changes in material culture, site architecture, settlement strategies and demography. I believe that it also follows that there were fundamental changes in how people viewed their world (e.g., notions of distance would have changed as people shifted from being mobile to sedentary). These changes would also have included how people related to one another; ways of being that would have been partly articulated via new/changing social and ritual practices. Therefore, it is the aim of this thesis to investigate the nature of social and cultural transformation over several centuries in the context of increasing sedentism through the lens of 'smoking culture' in southern Ontario.

CHAPTER 2: SEDENTISM

2.0 Sedentism: Its conceptualization and significance

The purpose of this chapter is to introduce the topic of sedentism, how it has been conceptualized by archaeologists and its alleged socio-economic significance. I commence with a global overview, before then turning to consider how this term has been conceptualized and employed in southern Ontario. I will then review how sedentism has been conceptualized by archaeologists; or rather the socio-economic *significance* accorded these changes in settlement strategies. I shall be demonstrating that for most archaeologists the impact of sedentism is viewed primarily in terms of changing settlement type and architecture (from mobile camps of temporary construction, to settled villages with more robust structures), via fundamental shifts in subsistence ('sedentism facilitated the origins of agriculture'), to demographic impact ('sedentism led to major population growth which had major repercussions for social organization'). Having undertaken this review I will highlight the lack of overtly *social* interpretations surrounding the impact of sedentism, with a few noted exceptions. This in essence is my point of engagement with sedentism in southern Ontario (albeit with potential implications for other areas), namely to consider the social / ideological changes in past populations in the context of shifting from mobile to settled life, and how these changes resulted in continuing cultural transformation. The rationale for this review of sedentism is to provide context for the primary aim of this thesis - the investigation of social and ideological changes in the context of the transition to sedentism in southern Ontario. I shall not engage with the various theories for

the emergence of sedentism (for a good review of this debate see Kelly 1992), since the main interest of this thesis lies in the *social/ideological* consequences of sedentism.

2.1 Sedentism: Defined

According to the Oxford English dictionary, sedentary refers to people "inhabiting the same locality throughout life; not migratory or nomadic." Essentially it is the shift from when people went from habitual mobility to settling for longer periods of time in one location. It is commonplace for researchers to utilize a basic definition, like the one above, as a foundation upon which to construct complex definitions that mesh with their methodological framework (Eder 1984; Rafferty 1985). Early anthropological definitions of sedentism conceptualized it in terms of the "process of abandoning mobility" (Bar-Yosef and Belfer-Cohen 1989:490), but the concept of sedentism gradually changed to a more multi-dimensional and nuanced view of mobility and settlement permanence (Bernbeck 2008:47; Kelly 1992:50). An example of a multidimensional definition, as provided by Rice (1975:97), defines a population as sedentary if a portion of the population remains in one location year-round, while the remaining move to seasonal camps. Sedentism can also refer to "groups in which all major segments of the population – infant, adolescent, and adults as well as males and females – use facilities and structures within a village during all seasons of the year" (Plog 1990:180). Differences in definitions illustrate that sedentism can be perceived in multiple ways; one author's definition of sedentary may very well be another author's semi-sedentary (Kelly 1992:49). As such, sedentism can be broadly understood as a continuum of differing mobility levels that shift from continuous movement to periods of stasis. This has been likened metaphorically to a battery powering down,

whereby a population's mobility gradually decreases until movement has ceased (Kelly 1992:49).

2.2 Sedentism: Its early conceptualization

The adoption of permanent sedentary lifeways is an occurrence that arose independently at different times in various locations globally (Kelly 1992). It is not my aim here to discuss *why* or *how* sedentism came to be in these different locations, but instead to consider *what* impact this shift is meant to have had on past people's ways of life. I will begin with the alleged changes in peoples' subsistence practices, or the recurrent causal link scholars have drawn between the emergence of village life and the origins of agriculture. One of the earliest and most famed proponents of this theory was Gordon Childe (1956), who, focusing on the Near East / Fertile Crescent, coined the concept of the Neolithic Revolution and the Neolithic Package, which consisted of the development of pottery, the origins of agriculture, and sedentism. Instead of appearing all at once, Childe (1956) proposed that these changes occurred in a specific order, with village life appearing before agriculture. Sedentism would have seen an increase in a group's population, which would require a stable and readily available resource base to feed the growing population. It is for these reasons that Childe believed people began agricultural pursuits, after they settled down in order to provide a surplus of resources for a growing population. Conversely, Braidwood (1960) argued that sedentism was a by-product of practicing agriculture. He reversed the causal link based on his "hilly flanks" theory that hunter-gatherer familiarity with local wild resources would grow until eventual crop manipulation would require storage and settlement permanence. Unlike some wild resources, such as wild rice, certain crops, such as emmer wheat and einkorn, require routine maintenance to guarantee a healthy harvest. If

a population was largely diet-dependent on a resource, then staying in one place, or becoming sedentary, would allow for crop tending and ensure a steady food supply. Therefore, in this scenario, settlement permanence becomes necessary to maintain crops in which populations were greatly invested. According to this model of agricultural origins, material culture specific to crop manipulation and food production, such as innovative lithic technology (e.g., sickle blades), permanent storage for extensive surpluses and built domestic structures, was used as evidence for a sedentary population. Not all scholars accepted this rationale, for agriculture-specific material culture, such as the examples provided, could be attributed to an intensive use of wild resources prior to agriculture (Bar-Yosef and Belfer-Cohen 1989:470). The archaeological record also documents semi-sedentary foragers in Upper Jordan where large settlements were exploiting wild resources (Bender 1975:38), as well as in the Tehuacán Valley in Mexico where highly mobile populations employed scattered resource cultivation for 3,000 years (Bender 1975).

In essence, research on sedentism and origins of agriculture prior to the 1990s tended to focus on the origins of sedentism and its link to other subjects, such as environmental changes leading to the concentration of mobile populations in one area, demographics, settlement patterns, social organization and economic strategies, as motivators for the initial steps towards fully permanent villages (e.g., Bender 1978; Braidwood 1960; Flannery 1973; Redding 1988; Wright 1971). While Childe posited that sedentism occurred prior to agriculture, we now know that many areas and cultures (e.g., the Natufian and Jomon cultures of the Near East and Japan) experienced the emergence of settled village life without agriculture. These early archaeological discussions concerning sedentism were regionally focused on the Levantine region of the Near East. Arguably one of the most influential archaeologists to discuss the emergence and

significance of settled life was Childe (1956), who envisaged sedentism in this context as part of a 'Neolithic package' which also included the origins of agriculture (domesticated plants and animals), plus the invention of pottery and new types of stone tools. In his vision farming and village life went hand-in-hand; it was not related to a hunting-gathering lifestyle. In this setting sedentism was envisioned as part of a 'package', which was initially established by Childe (1956), and was thought unsuitable to a hunting-gathering lifestyle. Indeed the idea of sedentism occurring as part of a 'package' is today largely viewed as redundant, for there is ample evidence sedentism, agriculture and ceramics each emerged independently of the others in several parts of the world, and at different times (Barnett and Hoopes 1995; Kelly 1992:49; Marshall 2006). In turn, a site's permanence should not heavily rely on the presence or absence of specific material culture (e.g., ceramics). Moreover, to further deconstruct this notion of bundled sedentism, there is evidence for the development of early cultivation practices in the absence of either pottery or sedentism (Marshall 2006). Furthermore, not all sedentary farmers manufacture pottery; there is no pottery associated with early farmers in southwest Asia (Bender 1975:38). As evidenced globally, different sequences of events (e.g., in the Near East where there is a temporal gap between cereal cultivation and pottery production) preclude the likelihood of 'packages' or simple correlations.

2.3 Sedentism and subsistence: Villages and agriculture

As discussed above, sedentism and agriculture have been routinely coupled; the early writing's of Childe (1956) believed sedentism occurred before the onset of agriculture, and that agriculture led to changes in everyday life, while Braidwood (1960) believed sedentism to be a by-product of early agricultural pursuits. In the Near East and Japan, two areas often discussed

with regards to the emergence of agriculture, sedentism is viewed as a precursor for the origins of agriculture. We now have numerous instances globally to show that such a relationship is not always true, with sedentary pre-agricultural populations now documented in Oman (Biagi and Nisbet 2006), Mexico (Arnold 2000; Clark et al. 2007; Wendt 2003:548), Japan (Matsui and Kanehara 2006; Pearson 2006; Watanabe 1986), the American Southwest (Wills 1988) and the American Midwest (Brown 1985; O'Brien 1987). Indeed, even in the Levant, it is now clear that village life, as represented by the Epi-Palaeolithic Natufian culture, preceded the domestication of plants and animals (Bar-Yosef and Belfer-Cohen 1989, 1991; Byrd 1989). These studies provide evidence for sedentism occurring prior to, at the advent of, or after the adoption of agriculture.

The Jomon, for example, a sedentary hunter-gatherer population from Japan, had settlement strategies that consisted of permanent year-round settlement at a definite site, and fixed gathering sites for staple foods, such as chestnuts, that were in close proximity to their main settlement site (Watanabe 1986: 251). This is the opposite of traditional seasonal movement of other hunter-gatherer populations. Moreover, in the Levant, there were populations of Epi-Palaeolithic hunter-gatherers with sedentary villages that subsisted on hunting and gathering with a small amount of cereal cultivation around 7000 B.C. (Bender 1975:137). Additionally, evidence for pre-agricultural sedentary populations/hunter-gatherers occurs in both inland and coastal contexts in areas with rich resource bases. Resource rich areas allowed populations to settle down for a period of time for exploitation purposes (Marshall 2006:155).

2.4 Sedentism and settlement type: Villages and architectural developments

If a population is to remain in one place for a long period of time then it makes sense to invest more in permanent well-built structures and dwellings, to have designated external activity and midden areas for the deposition of refuse, and have an organized burial strategy. As I shall be discussing in greater detail below, one of the recurrent correlations with sedentism is both an overall demographic increase within the cultural region, and the greater numbers of people living together in a social group. It is argued by many (Byrd 1994; Kelly 1995; Varien 1999), that this increased population size – from mobile band, to village community – led to various social stresses and the need for the invention of new strategies through which the community regulated itself. This is a key theme of this thesis. The manifestation of such social strategies is believed to be represented by what have been interpreted as the construction of 'public architecture' and permanent houses to act as a social innovation to mark boundaries and territories (Boyd 2006; Flannery 1972; Wilson 1988). In an Ontario context, architecturally, locationally and functionally distinct structures interpreted as sweat lodges, are believed to have emerged as populations began to amalgamate and organize themselves into semi-permanent base camps. Sweat lodges are large circular, keyhole features that are attached to longhouse walls so that their main body lies outside the structure and the entrance projects through the wall (MacDonald 1988:19-21; 1992:323). They are regarded as acting as social mechanisms to facilitate for group management in larger settlements where not all the inhabitants were related. Therefore, public architecture might be viewed as a new context within which group cohesion was facilitated, through communal decision making, and conflict resolution (Byrd 1994). Sedentary populations accumulate much refuse, such as chipped stone tool debitage, remains of foodstuffs, and broken

ceramics. To keep pests (e.g., house mice) out of settlement and dwellings the disposal of debris would be deliberate and organized in the form of middens (refuse pits or dumps). It can also be said that burials change in the context of sedentism. Living in one area for long spans of time requires an organized process for coping with the deceased. Often, sedentary populations have external burial locations, and/or cemeteries located outside of the settlement, either for hygienic reasons, or as a designated place for ancestor worship that can be revisited year-round. Additionally, site locations may differ pre and post-sedentism. Due to the mobile nature of hunter-gatherer populations, seasonal site locations reflect a larger variation of site preferences. Sedentary populations appear to be in regions with rich concentrations of resources, so called "hot spots" (Bintliff 1999), and are often by waterways.

2.5 Sedentism and material culture: Villages and increase in / changes to material culture

The suggestion that sedentary populations would have ceramics, whereas hunter-gatherer populations would not (Childe 1956), is not supported by archaeological evidence. The proposed link between sedentism and ceramics was based on ease of transport and energy expenditure, for pots were viewed as fragile and heavy, and thus were not conducive for long-distance travel across the landscape (Rice 1999:8; Eerkens 2008:309). For this reason pottery was viewed as a characteristic of sedentary populations. Therefore, an archaeological site lacking in pottery would have been regarded as a mobile population; an unmerited conjecture. Additionally, it was suggested that mobile populations would not remain in an area long enough to complete pottery production (e.g., collecting clay, forming, and firing), for it can be a lengthy process spanning several days to several weeks (Eerkens 2008:309-310). It is now agreed that this view is no longer viable, for there is evidence for hunter-gatherer populations manufacturing, using, and

transporting pottery (e.g., China, southern Ontario). The archaeological record provides evidence for pottery prior to the advent of sedentary populations, as well as prior to the emergence of agricultural practices. In Japan pottery appears 8,000 years before the adoption of agriculture in the Pre-Jomon mobile hunter-gatherer culture (Barnett and Hoopes 1995). Moreover, in southern Ontario pottery occurs prior to the advent of sedentary populations and agricultural practices.

Fundamentally, more people in a single location for longer periods of time results in the accumulation and innovation of 'more stuff' - material culture. A sedentary site will most likely contain a wide assortment of material culture, including, but not limited to, ground stone artifacts, some, if not all, stages of chipped stone tool production, ceramics, innovative technology such as smoking pipes, and decorative artifacts such as beads. Sedentism, when coupled with a resource surplus, allows for craft specialization to emerge (Bender 1975:10). A resource surplus allows for attention and energy to be placed on material culture innovation and fine-tuning instead of on resource procurement. It is also suggested (Bar-Yosef 1998; Belfer-Cohen 1988) that the intensification of artistic activities acts to alleviate the scalar stresses brought on by the intensive social interactions commonly found in larger groups.

2.6 Sedentism and demography: Villages and population growth / social organization

Sedentism, whether supported by hunter-gatherer or agricultural subsistence economies, is believed to have a marked impact on population, specifically a demographic increase, in part due to a resource surplus. The addition of a resource surplus suggests a more consistent and nutritious food supply (e.g., complex carbohydrates). More nutritious food can decrease the long birthing intervals frequently seen in hunter-gatherer populations, and also lower infant mortality rates (e.g., Binford and Chasko 1976; Hitchcock 1982; Rafferty 1985; Warrick 2008). Mobile

societies are known to have birthing intervals that are spaced further apart, while sedentary societies have 'relaxed' birth intervals that are much closer together encouraging population growth (Bender 1975:7). On the whole, nuclear family sizes, in sedentary contexts, increased.

Sedentism leads to new practices (or a reworking of old social practices) as a mechanism for dealing with more, often unrelated, people living closely together. Kelly (1995) suggests that reduction in residential mobility was the "kick" that started dramatic sociopolitical change. An increased sedentary population concentrated in one area has all the factors necessary for the beginnings of early community formation (many unrelated nucleated familial units as opposed to a group of related individuals). Early community formation was likely in response to a need for political organization as more and more people began to live with one another (Varien 1999:20). Once a population reaches a certain threshold, people are not kin-related anymore, so conflict resolution by an elder member of a lineage is no longer a viable mechanism to run the group (as with smaller hunter-gatherer groups). New social mechanisms for intra-group reorganization, community maintenance, and conflict resolution are necessary to alleviate the stresses of large group sizes and stasis. Given that sedentary populations require long-term stability, an organizational framework in place promotes cooperation and a sense of community. As well, there is a need for social mechanisms, such as an active smoking culture, possibly with specifically decorated kin-related pipes, or sweating ceremonies, to promote group bonding and control strife within larger populations.

Moreover, more people in an area can lead to territoriality as competition for resources escalates with population growth (Cohen 1977). Mobile hunter-gatherers had a large home range of several kilometers, while some early sedentary populations have significantly smaller ones;

more populations in closer proximity leading to the intensification of resources. Naturally, there are exceptions to this for some southern Ontario 16th century villages had large hunting territories and great spans of agricultural fields, all necessary to feed and clothe their large populations (Birch and Williamson 2013:87, 115-116). It is possible that concepts of ownership and boundaries would emerge in this scenario to ensure that the resources needed to survive could be maintained. Increased territoriality brought on by sedentism necessitates alliances with neighbouring populations to ensure access to another group's resources. Alliance creation and maintenance requires social bonding, which can be accomplished through competitive feasting (Hayden 1990), group gatherings/ceremonies (e.g., calumet/peace pipe ceremonies), group identity and maintenance (e.g., effigy pipes), trade, exogamy, or other social practices.

2.7 Sedentism and the social: Villages and the shift in cultural perceptions and practices

There has been a noticeable shift in archaeological discussions concerned with sedentization from those focused on environmental stressors, and/or subsistence strategies, to ones concerned with the agency of sedentization (Bender 1978; Garcea 2006; Hayden 1990, 1992; Kelly 1992). Exploration of these more social questions have gained popularity in the hopes of understanding how early sedentary societies organized themselves and dealt with change. This trend for the reconceptualization of sedentism lends itself to our understanding of the multi-faceted dimensions of this transition. Some of the first investigations (Bender 1978; Hayden 1990, 1995, 1998) into sociality and sedentism explored its significance through the lens of communal feasting, long-distance trade networks and ‘prestige technology’. Central to these investigations was the belief that social competition would arise as populations settle down and aggregate, which would lead to the development of ranked societies in order to regulate

population organization and resource procurement. Feasting, gift exchange and trade is essentially based on the competitive nature of human society, and the desire for power (Bender 1978). It is proposed that individuals would engage in competition, whereby extra resources are used to promote personal status and gain influence in the population.

Engaging with 'the social' can provide insights into coalescence of communities, by which we mean the coming together of multiple small populations into one (Birch 2012; Creese 2011, 2013; Kowalewski 2008), the emergence of social differentiation, and changes to socio-economic and socio-political strategies. There is a significant link between sedentism, subsistence economy, and the development of social complexity and inequality. This does not mean that being mobile lacks complexity, for agricultural pursuits and sedentism are not essential for the development of social complexity (Arnold 1993: Brown 1985; Keeley 1988; Price and Brown 1985). It merely refers to a shift in how those complexities are organized. The mobile hunter-gatherer system of resource sharing and generalized reciprocity is replaced in a sedentary context by a system of resource storage and delayed return. This eventually involves concepts of ownership and a reorganization of traditional mobile social systems (Belfer-Cohen and Bar-Yosef 2000). The notion of subsistence resources becoming the private property of those that maintain and harvest it may have led to the conceptualization of a new socio-economic system based on social networks for sharing production (Flannery 1972; Plog 1990; Wilson 1988). It is argued, then, that sedentism lays the groundwork for social inequality (Kelly 1992:58). It is also suggested (Keeley 1988) that a reduction in mobility and the reliance on select resources leads to wealth distinctions and encourages social inequality. Sedentary hunter-gatherers reliant on a single resource or area on the landscape may restrict sharing networks to

increase household production (Cohen 1981; Hayden 1990). Nucleated familial units may well have become semi-independent economic units independent of the group allowing for potential disparities in wealth/resource distribution leading to social stratification (Flannery 1972:48; Wilson 1988). Luxury goods in the hands of select community members allow for the emergence of positions of power and prestige, and stimulates/encourages trade (Bender 1975:9). Consequently, sedentism is connected with the control of access to resources by select community members and increased wealth and status differentiation (Kelly 1985:312).

2.8 Sedentism in southern Ontario

Discussion of sedentism in Ontario has varied, largely focusing on the how/why/when it happened, with agricultural, environmental, and community coalescence (e.g., the coming together of people) considered to be the major means of negotiating changes brought on by sedentism. Essentially, there has been a focus on how early village life / early sedentary villages, in an Ontario context, were characterized by an adaptable socio-political structure. The evolution to village life in southern Ontario began in the Middle Woodland with hunter-gatherer populations practicing a seasonal subsistence strategy, often revisiting the same sites year after year engaging in seasonal resource procurement, and most likely in extended or nuclear family groups (Williamson 1990:318). It is suggested, then, that village development may have resulted from large, seasonally reoccupied spring macroband sites found in the Middle Woodland period (Chapdelaine 1993; Spence et al. 1990; Trigger 1985). Gradually, this settlement-subsistence strategy transformed to include base settlement sites in the Transitional Woodland. These early base settlements were typically occupied year-round, and are usually associated with satellite / seasonal special purpose camps. This type of settlement strategy is typified by a malleable socio-

political structure as people came and went between the camps. It is in the Early Late Woodland that these base settlement populations begin to pre-coalesce into early village life. These early villages, of the Early and Middle Late Woodland, can be considered to be in an 'in-between' stage of pre-coalescent and coalescent villages. It is by A.D. 1400-1500 that post coalescent populations established themselves on the southern Ontario landscape. In summation, the Iroquoian settlement pattern is best summarized as including a fixed base village occupied year-round, with seasonal special purpose sites for agriculture, hunting, fishing, and gathering within its periphery (Warrick 2000). The main sedentary village had a constant population, although interchanging, as members switched between the main camp and the seasonal short-term camps (Creese 2013). This is mirrored elsewhere in northeastern North America (e.g., New York, central Pennsylvania), where the transformation to sedentary populations began with a shift from small special purpose camps to farming hamlets (early short-term, semi-sedentary settlements) in A.D. 800 and 1000 (Ritchie 1994; Ritchie and Funk 1973; Stewart 1990; Wright 1966). This was followed by larger villages focused on maize horticulture ca. A.D. 1000-1300, and is thought to correspond to the union of smaller populations coming together into larger groups (Ritchie 1994; Williamson 1990; Wright 1966).

2.8.1 Southern Ontario: Sedentism and agriculture

Similar to the early theories of sedentism in the Old World, increased sedentism in southern Ontario was believed to be linked with maize agriculture, and was thought to occur alongside one another. These early studies concentrated on populations in the Great Lakes Region, specifically the Grand River valley ca. A.D. 500-1000 (Kapches 1982; Noble 1975a; Stothers 1977; Trigger 1985; Wright 1966). Noble (1975:44) openly associated the emergence of

maize horticulture with early village development, even comparing it to a 'Neolithic' type transition. He believed these horticultural pursuits were connected to demographic growth and social changes, such as the beginnings of matrilocality. Similar to Childe's (1956) 'Neolithic package', maize, sedentism, and population growth were collectively termed "formal village life", and were believed to have emerged somewhat collectively.

Either directly, or indirectly, sedentism in Ontario has never fully disassociated itself from agriculture. This is one of the main reasons that the adoption of cultigens, specifically maize (*Zea mays*), across eastern North America has been a topic of interest among archaeologists (Crawford et al. 1998; Crawford et al. 1997; Hart et al. 2003, 2007; Katzenberg et al. 1995; Schwarcz 1985). In North America focus has been centered on investigating the emergence and spread of maize, its cultivation, and its role as a possible catalyst for settled communities and socio-political organization. In southern Ontario early evidence for maize is often associated with the Princess Point complex (A.D. 500-900). The earliest macrobotanical (e.g., kernels, cobs, and cupules) evidence of maize is found at the Princess Point, Grand Banks site, near Cayuga, Ontario. Initially the site was excavated by Stothers (1977), and the macrobotanical sample was accelerator mass spectrometer (AMS) dated to the sixth-century A.D by Crawford et al. (1997). This date confirms the presence of maize in the Lower Great Lakes region during the transition from the Middle to Late Woodland period (A.D. 500 to 1000), and that maize was in use here by at least A.D. 500 (Crawford et al. 1997; Crawford et al. 1998). This is further reinforced by the results of stable carbon isotope analyses of human bone collagen and apatite, which reveal that maize was consumed by some individuals in the Lower Great Lakes region ca. A.D. 500 (Harrison and Katzenberg 2003). Further isotopic studies of maize

macrobotanicals for sites between Lakes Erie and Ontario indicates that maize was incorporated into the diets of these populations by A.D. 700, and that maize consumption increased by A.D. 1000 (Katzenberg 2009: 263).

Moreover, much research has been conducted in the States neighbouring southern Ontario, especially New York (Hart 1999, 2000; Hart et al. 2003, 2007; Thompson et al. 2004). Research here has tended to focus on the introduction of maize to the area. For example, Hart et al. (2007), conducted phytolithic analyses on charred food residues adhered to the interior of pottery sherds to trace the adoption of maize through New York State. Analyses, such as the one previously mentioned, have determined that maize was being cooked in central New York by at least ca. cal. 300 B.C., which is earlier than the date provided by the macrobotanical record (that being A.D. 1000) (Hart et al. 2003; 2007; Thompson et al. 2004). It appears as though the adoption of maize into subsistence strategies in New York was a gradual one. Likewise, the movement to agriculture in southern Ontario was equally as gradual, and not caused by population pressure (Chapdelaine 1993; Smith and Crawford 1997; Warrick 2008). Instead, it is suggested that the adoption of agriculture was used to stop the need to disperse in the winter months to small hunting camps, allowing for groups to stay together year-round (Trigger 1985:109). This is interesting for a few reasons. First, this suggests that agriculture was indeed a precursor for the beginnings of sedentism, at least in this context. Second, this example can be used to contradict the debate that populations can be sedentary without agriculture. It is not until the Middle Late Woodland, when maize agriculture began to dominate subsistence practices that the traditional seasonal dispersal patterns began to fade in favour of a growing reliance on crop agriculture (Williamson 1990: 313). Therefore, sedentism in Iroquoia is best described as “semi-

permanent sedentism" (Chapdelaine 1993), or "semi-sedentism" (Trigger 1976) since early Jesuit ethnographic accounts note communities (e.g., Wendat or Huron) only remained in a location upwards of 12 years before having to move due to soil depletion from intensive maize agriculture.

2.8.2 Southern Ontario: Sedentism and architecture

In the past the designation of a site as sedentary or semi-sedentary in Ontario has often relied on the presence of specific architecture, specifically the longhouse (a long, narrow communal dwelling structure). As well, there was thought to be a connection between a site's permanence and the overall size of the site, whereby smaller sites would equate to a shorter occupation span. In reality it can be difficult to categorize a site as sedentary or mobile, for aggregated settlements are caught in an 'in-between' stage, where they are neither a traditional mobile hunter-gatherer campsite, nor are they a fully established village. The Holmedale site (Pihl et al. 2008) is one such example. Depending on the criteria used it can be considered either sedentary or semi-sedentary. It can be deemed sedentary for there are many storage features, and a large presence of maize in settlement features. But, it can also be regarded as a non-sedentary site, for structures are not as formal or well-defined compared to those of fully settled villages (Pihl et al. 2008:167). Therefore, the designation of a site as sedentary or semi-sedentary requires a close examination and should be approached cautiously. What can be agreed on is that the decision to change from a lifestyle of seasonal mobility to one that is more permanent appears to have led to the investment in more enduring structures. In southern Ontario, long-term village sites often contain longhouses of varying lengths, some form of refuse disposal organization, and a burial system to deal with the deceased members of the population. Furthermore, early village

sites that are in the process of, or are newly amalgamated, occasionally have evidence for the use of semi-subterranean, and above ground sweat lodges; a type of building and associated practices that will be discussed further in the following chapters, and are linked to an increased need for group solidarity during times of transition, or stress.

2.8.3 Southern Ontario: Sedentism and material culture

For southern Ontario populations, ceramics were not a product of sedentization, for they appeared during the Early Woodland period while populations retained a mobile hunter-gatherer lifestyle. What does occur with semi-sedentism is a shift in pottery morphology and decoration, as well as the general production of more material culture, such as an active smoking pipe complex. More detail on the evolution of southern Ontario material culture is provided in Chapter 4.

2.8.4 Southern Ontario: Sedentism, demography and social organization

Populations pre-sedentary most likely emulated other hunter-gatherer groups, in that band sizes were relatively small, consisting of approximately 35-50 people that followed an annual seasonal round splitting into smaller groups and coming together again as the seasons changed (Spence et al. 1990:166). As time progressed, and populations began to change to more semi-sedentary to sedentary ways of life, population sizes grew. There are various methodologies for calculating population size, and population estimates differ by what criteria one uses. Ethnographic studies of roofed-floor area, numbers of structures, and household size suggest that each adult person in a sedentary agricultural and horticultural context generally requires between 9 and 10 m^2 of floor space (Leblanc 1971; Naroll 1962). One can also use complex mathematical formulae that estimate demographics based on artifact and food remains found at a site (Schiffer

1976), or skeletal remains/burial counts (Ubelaker 1974). Additionally, settlement longhouses and room numbers (Plog 1974) have been used, as well as overall hearth counts (Ritchie and Funk 1973; Warrick 1990). Demography in southern Ontario has traditionally been determined by hearth counts. Hearths counts may not always be reliable, for deep ploughing can remove any trace of them since fired soil layers are thin and faint. Historical accounts of 17th century longhouses states that each longhouse contained a central row of hearths (approximately 4-5), and that each hearth was shared by two families (Thwaites 1896-1901, 15:153). Therefore, site size can essentially be estimated by counting the number of hearths per longhouses; as long as preservation (i.e., ploughing) is not too much of an issue. One such example is provided by Gary Warrick (1990), who estimated that population size for the Wendat (i.e., the Huron) of Simcoe County. Warrick (1990:204-207) calculated that the Wendat population for this area went from 750 individuals to 3,000 between A.D. 1330-1355, and that the population was distributed in a minimum of nine settlements. Complementary to this data, archaeological evidence indicates that during A.D. 1330-1355 settlements and houses double in size. It is suggested that this is a result of small villages coalescing together, since population growth in such a short amount of time is not a viable explanation for growth on this scale (Pearce 1984; Warrick 2008; Williamson 1985).

2.8.5 Southern Ontario: Sedentism and the social

More recently, debates concerning the outcomes of post-sedentary populations have centered on how populations amalgamated and coalesced into village communities (Birch 2010, 2012, 2013; Creese 2011; Kowalewski 2006, 2008). As previously discussed, demography and sedentism are linked in that sedentary populations have higher populations than do hunter-gatherer groups. Pre-sedentism populations were dispersed in small groups that practiced

seasonal settlement patterns, with an annual gathering the purpose of which were for trade, information exchange, and marriage. These small groups gradually transformed into small base settlements that were occupied year-round by a revolving number of people. With time, these base camps evolved into larger, more complex social formations, such as villages (Birch 2013). As populations settled they gradually grew in number due to shorter birthing intervals, and the amalgamation with nearby populations. The results of two/or more differing populations coming together can create tension, stress, and disorganization, for people are no longer related to each other, and the formalized social organization seen in chiefdoms and states is not yet instituted (Birch 2013). These newly sedentary societies can be considered in between mobile hunter-gatherers and fully established villages. Therefore, a large community might not be able to solely rely on age-based distinctions, such as elders, for setting social rules and decision making processes. More people, such as in coalescent populations, necessitate social mechanisms, such as collective decision-making structures, to achieve group harmony in times of stress brought about by new integration (Kowalewski 2006:117). Kowalewski (2003, 2006), for instance, states that the coalescence of populations goes hand-in-hand with cultural transformation, for it necessitates the intensification of social integration and economic strategies. It is possible that the social and organizational mechanisms employed in egalitarian societies with small populations (e.g., no more than 500 people) would be stretched too thinly in larger groups. Ultimately, more unrelated people in one area need complex social mechanisms to mediate between many individuals, and to organize into social units, such as matrilineages and clan segments. An active smoking culture may have been one such way to manage potential stressors through the integration of all members of the populations. In this sense, smoking acts to

integrate, and manage tensions of the intermingling of different populations; it was an act that everyone could socially do together. Seeing as, "Peoples do not immediately become a people" (Birch 2013:7), the use of smoking pipes would have aided in the creation of a common group identity. Effigy pipes (smoking pipes that are decorated with either an animal or a human on the pipe bowl) in early sedentary and coalescent contexts, may have grown in importance, especially if they acted as social unit identifiers. Wobst (1977) indicates that differences in material culture may have been symbolic representations of a community, and that stylistic differences could have been used to reflect and communicate their autonomy to other, unfamiliar, populations. In this vein, effigies promote group commonality, as well as identifier for individual social groups within a larger population. Additionally, a classic example of material culture used to alleviate tensions is the well-known 'peace pipe', also known as a calumet pipe; calumet, from the French *chalemel* or *chalumean*, meaning reed. While the most common pipes of the Middle and Late Woodland periods are obtuse angled (also known as Iroquoian one-piece pipes) individually smoked pipes, calumet pipes consist of two pieces (a separate bowl and stem), and are considered a special pipe used for ceremonies and rituals (Paper 1988:9; Rutsch 1973:103). The stems, rather than the bowls, of these pipes can be decorated in elaborate manners with feathers and porcupine quillwork, and can be upwards of 18 inches in length (King 1977:13). Images of peace pipe ceremonies are familiar to us through ethnographic literature at the time of European contact. Often these ceremonies saw the gathering of community members, and/or outsiders, in a recognized context for conflict resolution, alliance formation, and group decision making.

In the context of this thesis, smoking pipes are used as a proxy to investigate change in newly emerging sedentary societies. First, the number of pipes per site can indicate communal

use vs. individual use. If individuals were manufacturing pipes for their own personal use, then this reflects a shift away from the communal practice of smoking led by ritual specialists, allowing for smoking to be a solitary, as well as a group, experience for those seeking personal connections with ancestors and spirits (Irwin 2004:51; Robertson 2005:40; von Gernet 1995:68). Second, as discussed above, it is possible that smoking was conducted within extended families found within larger settlements for the purposes of easing tension between different social groups within the same community (Braun 2012). The act of smoking may be considered symbolic of social relationships that could have acted to promote social solidarity and bonding, especially between non-related males (Smith 1992:18). Moreover, ethnographic accounts indicate that pipe smoking facilitated socializing and served to promote solidarity between individuals (Thwaites 1896-1901 27:249, 301; 40:207; 58:187-9; 59:119). Therefore, it can be said that smoking pipes can reveal underlying social ideologies, for differences in aesthetics can display a conscious cognitive awareness and a desire to reflect the maker's surroundings and social context as it changes through time. It is this author's belief that studying smoking pipes in varying settlement contexts may offer an appreciation of social transformation.

2.10 Summary

The impact of early settled life is a major debate in archaeology. While sedentism was once causally linked with the emergence of agriculture, we know now that this was not always true. For the most part the adoption of sedentary lifeways is a societal process that, depending on the context, may or may not be independent of agriculture (this is not to say that they do not impact upon one another, but that the relationship is more complex that originally claimed), and took place globally in various contexts at varying times. It has been only in recent years that in-

depth investigations have been conducted into this mobility transition, posing many questions that still remain to be answered (Berelov 2006:123). Investigations into the significance that sedentism has on the social sphere have thus far tended to focus on new patterns of social interaction, increased social complexity, and the emergence of stratified society (e.g., Bender 1978, 1990; Hayden 1990, 1995; Hodder 1990). Examination of these more 'social aspects' is important for sedentism not only changes the dynamics of social life by grouping more unrelated people together, but also affects human perceptions and ideologies.

Engaging with issues of sedentism requires one to consider the significance of the act of settling down itself. Sedentism comprises significant changes and major re-adaption to lifeways. In turn archaeologists have considered how reduced mobility caused changes, sometimes dramatic, in storage, trade, territoriality, social and gender inequality, ideology, subsistence and demography (Kelly 1992; Price and Brown 1985; Rafferty 1985; Wilson 1988). The shift towards sedentism is often viewed as leading to (or at least preceding) a transformation to existing practices, such as burials, as well as a range of new practices, such as feasting, group activities (e.g., pipe smoking), as a mechanism for social regulation in the context of higher populations (due to decreased child mortality rates). These in turn facilitate, or drive, the emergence of new social structures to regulate society (e.g., organization, resources, conflict management), since no longer is everyone related to each other as kin. Overall, the demographic changes that accompany a shift towards a more sedentary lifestyle are supported by social mechanisms and group organization, which deal with the pressures of larger groups of people. In the context of southern Ontario, I shall be arguing how an existing (pre-sedentary) smoking culture came to change in nature as it became one of the mechanisms by which society regulated

itself through a practice that promoted gathering and bonding. As will be detailed in Chapter 3, I suggest that smoking pipes can point towards shifts in social organization as the social habit of smoking can be employed as a means of decreasing the tensions found in village life.

CHAPTER 3: SMOKING CULTURE

3.0 Smoking culture

In the previous chapter I outlined the significance Ontario archaeologists have accorded sedentism. In a southern Ontario context, sedentism led to an increase in population, more and innovative material culture (e.g., smoking pipes), a diminishment in territory size, the appearance of new and permanent architecture (e.g., long houses), and the reconfiguration of social dynamics within a population. It has been argued above that emergent sedentism leads to population growth, which means that the social group has to find new mechanisms for management of the community (as you go from where everyone knows each other to types of management via elders/kin, to more 'artificial' / complex mechanisms such as clans). Robert MacDonald (1988, 1992) has for example argued that the appearance of sweat lodges, a recognized place of gathering for certain individuals, represents just one such innovative practice (or a pre-existing practice that was then developed). I shall be arguing in a similar vein that smoking practices were transformed from hunter-gatherer communal gatherings with larger pipes for cyclic coming together or ritual gatherings, to a more individualized / occasional group experience.

In this section I will be focusing on the *social* implications of sedentism, by addressing smoking culture (by which I mean the material culture pertaining to the practice of smoking) in the context of eastern North America, and specifically southern Ontario. In undertaking this research I will be considering smoking culture as a lens through which to view social change in the context of emergent sedentism. By smoking I refer to the practice of burning a product in

something that then allows the person or people to inhale (directly or indirectly) the gaseous products emitted. In order to help the reader understand smoking culture, a review of smoking is provided with emphasis on southern Ontario Iroquoian smoking practices during the Middle and Late Woodland periods. Naturally, pipe smoking in southern Ontario was not exclusive to the Iroquoians, for Anishinaabeg pipe smoking also occurred, and included special pipe carriers. Having said that, the central focus of this thesis is on Iroquoian, and ancestral Iroquoian, pipe smoking practices. Smoking culture is a pertinent area to study as a means of engaging with the topic of 'social changes in the context of sedentism', for I start with the premise that an active smoking complex reflects shifting ideological frameworks. Considering that this thesis is largely concerned with an analysis of pipe assemblages from various archaeological contexts as a means to understanding cultural transformation, an in-depth appreciation of the artifacts themselves is necessary to understand the complexity of their development through time.

3.1 Smoking: A brief history

The act of smoking burning plant substances has a long heritage and occurs globally in many cultural contexts (Rafferty and Mann 2004:7). Historically, a wide range of materials have been smoked, including tobacco, cannabis, opium, and laurel, but in the Americas the ethnographic and archaeobotanical evidence would seem to suggest that tobacco - a famed product of the New World - sumac, and dogwood, were the primary choices of smokers (Rutsch 1973). According to Setchell (1921), some 14 tobacco species are found in North America, and of these, nine varieties are known to have been used by indigenous populations. Tobacco was chewed, snuffed, drunk, but most commonly it was smoked. The strain commonly grown by indigenous populations of the eastern United States and Canada was *Nicotiana rustica* (Linton

1924:3). Tobacco is not a native plant to southern Ontario or the north-eastern Woodlands in general, and either it was gathered wild or cultivated. It could also be that tobacco was a product of trade, and therefore, its presence on archaeological sites can signify human interaction. Tobacco, specifically *N. rustica*, is believed to originate from South America, and was distributed northward through human cultivation, and/or trade (Hall 1983:52). The oldest dates we have for tobacco are from northern Peru and date between 2500-1800 B.C. (Pearsall 1992:178). The earliest archaeobotanical evidence of the use of tobacco in eastern North America comes from the central Mississippi Valley between A.D. 100 and 200 (uncalibrated), such as the Middle Woodland Smiling Dan site which has carbonized tobacco seeds that date to A.D. 150 (Asch, 1991; Asch, 1994:45; Brown 1997:474; Haberman, 1984:271; Wagner, 2000; Winter, 2000a). The remainder of the eastern Woodlands has evidence for tobacco at a later time; between the 5^{th}-8^{th} centuries A.D. (Asch and Asch 1985:196; Haberman, 1984:272-273; Von Gernet, 1992; Wagner 1998:840). Paleobotanicals are not the only source for evidence of tobacco consumption, for Rafferty (2006), using gas chromatography / mass spectroscopy, provides evidence for tobacco use in north-eastern North America as early as 300 B.C. from a tubular smoking pipe from the Boucher cemetery site in Vermont. This was followed up by a comparable study by Rafferty et al. (2012), using similar techniques on residues found on smoking pipes. Analysis was able to provide further evidence for an Early Woodland introduction of tobacco into the Eastern Woodlands, between 2500 and 3000 B.P. In Ontario, paleobotanical evidence for tobacco dates to A.D. 850-950 (Crawford and Smith 2003), although it does not appear in considerable quantities in the archaeological record until approximately A.D. 1200 (Fecteau 1985; Monckton 1992; Ounjian 1997; Stothers and Yarnell 1977). While

tobacco was popular it was not the only material smoked, for the inner bark of red osier, sumac leaves, and the leaves of bearberry were also consumed. Moreover, in eastern North America a mixture of tobacco and various herbs called ‘kinnikinnick’, an Algonquian word meaning "that which is mixed", was smoked. The recipe for this mixture varied regionally, but it commonly consisted of tobacco, sumac leaves, and the inner bark of dogwood (Linton 1924:8; Yarnell 1964:180-182). These materials could be inhaled as smoke when heated on fires or in bowls, although it seems that pipes were the primary media in which these organic products were smoked.

Early pipes, in both an Ontario and global context, were made of organics, such as wood, leather, bone, or horn (Turnbaugh 1980), and due to their organic properties, these early pipes are rare in the archaeological record. In Ontario, archaeologists almost exclusively work with the remains of ceramic and stone pipes. Most of these remains are fragmentary, either a combined result of the material’s fragility and post-depositional factors, or the result of the pipe being deliberately and ritually broken. Archaeologically there is evidence for purposeful breakage, such as at the Coal Draw site in Wyoming (Frison and Van Norman 1993), where smoking pipes showed signs of impact scars consistent with deliberate breakage, one of which was packed with red ochre. Pipes that are fragmented post-deposition often have the stem separated from the bowl since this is the weakest part, and thus most susceptible to breakage; stone pipes (e.g., soapstone and limestone) have a better survival rate than those of fired clay.

3.2 Smoking in Eastern North America: A brief overview

The earliest forms of smoking may have been as cigars (torn up tobacco leaves wrapped in a large leaf or corn husk), so archaeological evidence of its use is hard to come by. As well,

the first tubular pipes may have been made of reeds before the medium switched to stone and clay. The earliest pipes we do find in the archaeological record of the Eastern Woodlands are tubular pipes made of stone that date to the Late Archaic period, and are associated with complex mortuary ceremonialism (Dragoo 1963:241). One of the earliest is dated to 2000 B.C. and found at the Eva site in Tennessee (Lewis and Lewis 1961:66). Blocked-end tubular smoking pipes continue in the Early Woodland, such as with the Adena/Hopewell culture of the central Ohio Valley and New York (Rafferty 2004:2; Ritchie and Dragoo 1960; Rutsch 1973). The Hopewell people were primarily hunter-gatherers who experimented with maize agriculture, and they are best known for their construction of sophisticated earthworks, mortuary ritualism and exotic grave goods (e.g., mica, galena, copper weapons and tools, beads, and platform effigy pipes). Hopewellian pipes are platform pipes made of both clay and stone (e.g., steatite), and depict either an animal or a human effigy that usually faces the smoker (King 1977:15). Platform pipes can have either a curved or a straight base, on which a bowl sits in the centre, and are comparably different from Iroquoian elbow angled pipes. Additionally, it is in the northeastern United States, specifically Illinois, where the earliest evidence for tobacco is found, and dates to the Middle Woodland period (Asch 1994:45; Haberman 1984:271). Early pipes often show signs of intentional breakage or cremation in caches (Rafferty 204:3), such as at the Early Woodland Rosenkrans site in New Jersey, where many pipes were cremated in a cache (Kraft 1976). As well, the Tremper Mound site had a large cache with an MNI of 136 pipes broken and cremated (Otto 1992). The deliberate burial of smoking pipes as grave goods also occurs. It is possible that these individuals were associated with ritual acts, such as shamans, and the pipes were the possession of those they were buried with (Dragoo 1963:211). If pipes are imbued with spiritual

power, then their intentional breakage and/or burial with an individual alludes to their social significance to past populations.

Tobacco and smoking play central roles in many ritual rites of North American societies, possibly rooted in shamanistic practices. Ethnohistoric and ethnographic accounts discuss smoking as a formalized ritual behaviour for the community and the individual. Iroquoians looked to tobacco as the link between the spirit world and the smoker (von Gernet 2000; Winter 2000:3-4), offering tobacco to the spirits, Great Spirit, and/or ancestors as a physical offering or as smoke (Paper 1988:5). Furthermore, the material smoked is of interest, since it appears certain materials were selected for their hallucinatory properties. The Ojibwa and Potawatomi are known to have smoked sumac to achieve vivid dreams (Smith 1933:38). Similarly, *N. rustica* is distinct from contemporary smoking tobacco, for it has properties that when inhaled in large quantities can make the user hallucinate (von Gernet 1995:68). It is this altered state that has led some scholars to propose that Iroquoians had a unique relationship with tobacco, possibly using tobacco to engage with the spirit world (von Gernet 2000; Winter 2000:3-4), in order to contact ancestors and gain knowledge and spiritual power (von Gernet 1992:178-179). Accordingly, tobacco was believed to have symbolic and ritualistic connotations, and therefore was featured largely in ceremonial activities (Fenton 1978:306; Hewitt 1928:537; Tooker 1964:80; von Gernet 1988:127). Ethnographic accounts (Thwaites 1896-1901; 10:159; 13:209; 23:55) also indicate that tobacco was thrown on fires in the form of tobacco ‘cakes’, the purpose of which was to ensure a good harvest of maize, and to accrue favour of spirits and ancestors. The tobacco would be sacrificed in the flames, sometimes accompanied by an invocation such as the following: “Listen, O sky! Take my tobacco; have pity on us” (Thwaites 1896-1901; 23:55). Therefore, it

can be said that smoking, for the Native American in southern Ontario at the time of European contact, was mainly an individualized practice, with the occasional communal gathering in specific contexts, such as for alliance creation and maintenance (Wrong 1939:99).

Indeed, much of what we know about smoking is from historical records. Many references to smoking were made by missionaries and explorers in the early post-contact period (seventeenth and eighteenth centuries) of eastern North America, especially in southern Ontario. These descriptions aid to our understanding of smoking, detailing the material culture used, the participants, and significance of smoking to the communities involved. Historical accounts, specifically the Jesuit Relations (Thwaites 1896-1901 5:113; 7:131,139; 11:81,83, 127; 18:187;20:Hl7; 29:157; 44:279; 65:209), indicate that the practice seems to have been relatively inclusive with regard to who took part, and involved men and women of all ages. Furthermore, the literature indicates that individuals in southern Ontario populations possessed their own personal smoking pipes (Thwaites 1896-1901 7:l37). Generally, they point towards Native American pipe-use and tobacco consumption as frequent and habitual, although sometimes in an iniquitous manner (Wrong 1939:121). A large part of the missionary/explorer records contained descriptions of the calumet pipe (i.e., peace pipe), a large well-decorated pipe used for socio-political maintenance and ritual ceremonies, as well as vasiform stone bowl pipes (Linton 1924: 24). It is highly likely that these pipes were discussed in greater detail than others for they appear much later in time (after the 17th century), and therefore it is possible the original authors got to witness the pipe ceremonies. Seeing as this thesis is concerned with smoking pipes that are in use pre, during and post-sedentism prior to European contact, the calumet pipe will not be further delved into.

3.3 Smoking pipes in southern Ontario: The pre-sedentary / hunter-gatherer origins

It was originally claimed that smoking pipes were introduced to southern Ontario via an existing interaction exchange network from the southeast, specifically from New York during the Late Woodland (Trigger 1976:126; Wright 1966:55-56). But, archaeological evidence now points towards pipes being used at a much earlier time, albeit less commonly than in later periods. Smoking pipes during the Archaic period (7000 – 900 B.C.) of southern Ontario remain rare. Originally thought to be a reflection of the low number of excavated camp sites for this period (Ellis et al. 1990:66), this is no longer the case as many Archaic sites have been excavated in the past 20 years through Cultural Resource Management (CRM) work. Therefore, the small number / lack of smoking pipes in Archaic period contexts probably reflects an absence of smoking activity.

Smoking pipes are documented from Early Woodland sites, although they remain relatively uncommon. Some of these early pipes are rather distinct from later pipe styles in that they are tubular in shape (also known as blocked-end pipes) and are often associated with southeastern Ontario burial contexts, such as the burial mounds found at Rice Lake near Peterborough, Ontario. As well, a blocked-end stone tube pipe was found as a grave good in a burial at the Peace Bridge site in Fort Erie, southwestern Ontario (ASI 2006a). Due to their resemblance to pipes from New York, as well as the context in which they were found (New York blocked-end pipes are also found in burial contexts), their presence in the region could be the product of physical exchange, or the migration of ideas through interaction (Ritchie and Dragoo 1960; Spence and Fox 1986:32). The burial context of these early pipes hints at their underlying social significance, one that appears to transform as populations themselves

transform. The smoking pipes that we commonly associate with southern Ontario (i.e., right/obtuse angled, one-piece pipes) appear during the Middle Woodland period, and their adoption is gradual. Generally, pipes pre-sedentism have an overall small size, highlighted by short bowls and stems. The bowl morphology is commonly cylindrical or conical, although barrel are sometimes known to occur in later contexts, stems are round or D-shaped, elbows are either right or obtuse angled, and the majority of pipes or either plain or with simple decoration (Emerson 1954). Moreover, juvenile and effigy pipes are for the most part absent at these pre-sedentary sites. Juvenile pipes are interpreted to have been made by youths (hence the name) practicing as they learn to manipulate the clay medium. This is based on a number of nonfunctional features, such as stems without bore holes, irregular decoration, rough exterior surfaces, or being tempered with large pieces of grit. Small, miniature pipes that are nonfunctional, but appear better made have been interpreted as charms, or tokens of exchange (Kapches 1992:78). Overall, Middle Woodland smoking pipes do not show the same amount of variability in their design and morphology as Late Woodland pipes.

3.4 Smoking pipes in southern Ontario: The sedentary / agricultural development

It is not until the late 13th century and early 14th century, alongside the appearance of true settled villages, that pipes appear in abundance (ASI 2008, 2010; Wright 1966: 55). This could be a reflection of the greater number of archaeological sites dating to this period, and/or better manufacturing processes, or reflects their increased importance to everyday social interactions. While Middle Woodland mobile seasonal settlements and early pre-sedentary sites contained few, if any, smoking pipes, Early Late Woodland base camp settlements have a higher frequency of pipes in site assemblages. These smoking pipes also are more diverse in their design and

morphology, for example pipe stems are smoother and come in many cross-sections, such as round, ovoid, D-shaped, tri-corner or rectangular. Whereas pre-sedentary sites characteristically contain smoking pipes with a cylindrical morphology, post-sedentary sites have a large assortment of bowl types, including conical, barrel, bulbous, trumpet, and coronet. The barrel and conical types are most popular in the Early Late Woodland, while the Middle Late Woodland has a mix of all pipe styles, and trumpet and coronet dominate Terminal Late Woodland assemblages (Kapches 1981:208; Ramsden 1990b:369). Furthermore, decoration occurs more regularly, and is found on both bowls and stems (Fox 1990:175; Stothers 1977). Decoration appears more frequently in the Early Late Woodland, and is of rather simple motifs (e.g., horizontal rings, punctates). A one moves through the Late Woodland period decoration becomes more common, and simple motifs change to include more designs (e.g., horizontal lines associated with a series of punctates), as well as new designs (e.g., obliques). The prevalence, higher numbers, and greater variability in design and morphology of smoking pipes in site assemblages can be tied to the movement from pre-coalescent (Early Late Woodland), to coalescent (Middle Late Woodland), and finally post-coalescent (Terminal Late Woodland) populations. One notes examples such as the Keffer site, which alone had 377 bowl fragments (Smith 1991), and the Draper site that contained 587 identifiable bowls in its assemblage (von Gernet 1985), both of which date to A.D. 1450-1500, and are coalescent sites with larger populations (up to and more than 1000 individuals). When groups amalgamate into larger sedentary villages the obvious result is a larger population, and subsequently more material culture. The higher diversity of smoking pipes in pre and post-coalescent populations could be explained as the result of two regional styles coming together in one place.

Furthermore, effigy pipes, both anthropomorphic (consisting of human traits) and zoomorphic (consisting of animal traits), appear prominently in Middle Late Woodland and Terminal Late Woodland site assemblages (Kapches 1981:208; Noble 1979; Wright 1966: 71). Animal effigies commonly depict power animals (e.g., bear, wolf) and animals associated with shamans (e.g., snakes, turtles, birds); animals with special connotations for Iroquoians (Mathews 1976:27-28; 1978). Bird effigies are the most common, possibly the result of psychological effects from high tobacco consumption producing the sensation of 'soaring/flying' (Rafferty 2006:457; von Gernet 1995:68). The depiction of power animals is significant, for other seemingly more common species are not portrayed on effigy pipes. For example, there are no deer depictions, and hardly any fish, both animals important to subsistence practices (Mathews 1980:297). Therefore, the depiction of these specific animals, animals associated with other ritual imagery and artifacts, is noteworthy. The human effigies characteristically focus on facial features, with eyes, noses and mouths being emphasized, similar to later period medicine masks used in ritual dances and ceremonies (Noble 1979; Wintemberg 1936: 75), as well the top of the head, such as coiled hairdos and top-knots. In later periods (European contact), Janus (Iroquoian pipes with two or more faces) effigies, and stylized faces (also called 'Roebuck') with puffy eyes, and circular open mouths appear. Janus pipes are believed to have been property of religious specialists (Mathews 1981), and are interpreted as representing the link between the Great Spirit and man (Wardle 1949), or dualism, opposition and transformation.

As previously elucidated, effigy pipes may be symbolic of the relationships formed during early population amalgamation as groups of people (e.g., many groups of extended family members; related and non-related) began to settle in one place for longer periods of time. It is

conceivable that effigies were used to unite extended family members and to provide social solidarity between kinsmen, or clans, by providing a symbol of group identity that could be used in conflict resolution scenarios, and ritual ceremonialism.

3.5 Smoking pipe manufacture

Some scholars have tried to determine whether smoking pipes were the products of individuals, craft specialists, or shamans who distributed their pipes in the community (Noble 1979). The early stylistic similarities between pipes suggest a small, if not individualistic, manufacturing circle. It is also possible that a particular pipe style represented a shared ideology by a few skilled craftsmen. It could equally be the result of many individuals retaining a carefully respected tradition of manufacture. Additionally, pipes may have been made by individuals for their own personal use, with materials from certain locations that may have been personally significant. It has also been suggested that there was gendered division of labour concerning ceramic manufacture. It is generally acknowledged that women constructed pottery, while males constructed smoking pipes (Smith 1992:17; Woolfrey et al. 1976). Evidence for this argument is based on historical accounts of ceramic manufacture, as well as stylistic differences (e.g., preferred temper, decorative motifs) between pots and pipes (Boucher 1644:101; Ramsden 1975:267). Sagard (1939:197) and Boucher (1644:150) also reported that smoking, for the Iroquois at least, was restricted to adult males. Contradictory to this, the Jesuits observed both men and women participated in smoking (Thwaites 1896-1901 5:113; 7:131,139; 11:81,83, 127; 18:187;20:Hl7; 29:157; 44:279; 65:209). While what missionaries and explorers recorded may be true, this does not necessarily mean that the same can be said for hundreds of years earlier.

3.6 Summary

The aims of this chapter have been to provide a review and an appreciation of smoking culture for past populations with an emphasis on southern Ontario. The act of smoking is global and has widespread appeal as an important social practice, as witnessed by many modern populations. In the earlier Woodland periods, smoking appears to have been exclusive in terms of practice and perhaps manufacture. The recurrent recovery of smoking pipes in Early Woodland burial contexts suggests that there was some underlying social significance tied to them; the origins for these habits may arguably have come from the northeastern United States. Seeing as smoking pipes are such a ubiquitous item of material culture, a closer examination of their role in past populations is necessary to understand their position in sociocultural transformation. In-depth investigations and analysis of this material culture can clarify the role smoking had to these past populations, be it either for social solidarity or personal ritual use. It is for these reasons that the author believes smoking pipes are an appropriate line of query to understand the social impact that sedentism had on past Aboriginal populations in southern Ontario. To investigate these hypotheses, it is necessary to undertake a detailed typological and contextual analysis of smoking pipes. Prior to presentation of the analysis of pipes, the culture historical context and sites used in this study will be covered in Chapter 4 and 5.

CHAPTER 4: SOUTHERN ONTARIO CULTURE HISTORY

4.0 Woodland culture history of southern Ontario

In the previous chapters I introduced and outlined the fundamental research questions of this project, whose purpose is to use smoking pipes as indicators of sociocultural changes that accompanied incipient sedentism in southern Ontario during the Middle and Late Woodland periods (ca. 400 B.C. – A.D. 1650). A summary of the Ontario Woodland periods is presented as it concerns settlement-subsistence strategies, material culture, and burial strategies, the purposes of which is to temporally situate and set the stage for this research project. These were chosen for they provide context for smoking culture pre- and post-sedentary populations, and aid in our overall understanding of the big picture (i.e., socio-cultural change).

4.1 Setting the stage: Traditional culture history perspective

Traditionally, southern Ontario archaeology was discussed in terms of cultural-geographical markers, such as the Ontario Iroquois Tradition introduced by Wright (1966). These were defined on the basis of the presence of specific forms of material culture (or their absence) within a particular region, a pattern that was considered to have both chronological and cultural ramifications (Wright 1966). The purpose of employing this system was to group local variability together to understand regional patterns. This divided the Late Woodland into three periods. The first period is the Early Ontario Iroquoian period A.D. 1,000-1,300), was spatially divided by the Niagara Escarpment into a western ‘Glen Meyer’ branch, and an eastern ‘Pickering’ branch. The next period is the Middle Ontario Iroquoian period (A.D. 1,300-1,350) and includes the Uren and the Middleport branches. The final period is the Late Ontario

Iroquoian period (A.D. 1,400-1,650), divided geographically into the Huron in central Ontario and the Neutral in the west. For an in-depth overview of Ontario Iroquoian culture history, see the work of Wright (1966) and Ramsden (1977). These well-defined chronological periods have been challenged (Spence 1986; Spence et al. 1990; Wilson 1991; Williamson et al. 1994), leading to an alternative approach where southern Ontario archaeology is discussed in terms of numerous distinct populations, and without such broad chronological cultural labels (Smith 1990:287-288; Williamson 1990:295). Discussing southern Ontario prehistory in this manner more accurately reflects the nature of change, since populations can change at different rates, and so called "cultural traits" may persist in some areas but fade away in others (Fox 1990; Spence et al. 1990). As well, in light of the large amount of interaction between populations (e.g., trade and exogamy) it is impractical to trust that such clear cultural borders did not overlap. Following Ferris and Spence (1995), this thesis will not concern itself with traditional labels for cultural complexes. While this approach may be challenged as not able to relate to wider Ontario research, this thesis does not confine itself to these broad labels, since the subject being addressed is not concerned with cultural group identification.

4.2 Woodland culture history of southern Ontario: An overview

Prior to sedentary societies, southern Ontario was populated by mobile hunter-gatherers. Hunter-gatherer societies are generally described as "small-scale groups of 15-50 people related by kinship, generally egalitarian (no "big men"), but with some instances of individuals recognized for their skill and/or prowess but with no fixed leadership" (Barker 2006:54). In traditional hunter-gatherer societies, women typically married into their husband's bands (patrilocality), and therefore social boundaries were flexible, since group composition was

continually changing. Mobility patterns consisted of intermittent large groups that practiced seasonal dispersals for cyclic resource procurement, as well as social exchange (Williamson 1990).

The temporal focus of my study is the Woodland period of southern Ontario (1000 B.C.-A.D 1610), more specifically the Middle and Late Woodland (400 B.C. – A.D. 1650), as it is during this time that indigenous populations transitioned from traditional mobile hunter-gatherer ways of life to semi-sedentary / sedentary, agricultural / amalgamated societies. The temporal framework used herein follows Spence et al. 1990. In southern Ontario this period is divided into three sub-phases, namely the Early (900 – 400 B.C), Middle (400 B.C. – A.D. 900) and Late Woodland (A.D. 900 – A.D. 1650) periods, which are characterized by distinct changes in material culture, subsistence practices, settlement systems, and burial patterns (Spence et al. 1990). As I shall summarize below, these changes did not all occur simultaneously, and there is evidence for fluctuations in the degree and pace of change. It should also be mentioned that the period dating to A.D. 500-1000 has been singled out as a time of considerable transformation, especially in the Great Lakes Region. This time frame straddles the Middle and Late Woodland periods, so it has been difficult to fit into the already established southern Ontario framework. Due to its temporal span, it has been referred to as the Transitional Woodland (Ferris and Spence 1995), late Middle Woodland (Chapdelaine 1993), early Late Woodland (Haines et al. 2011), Late Woodland 1 (Smith 1997), or the Middle to Late Woodland (Ferris 1999b; Fox 1990; Spence and Pihl 1984; Williamson and Robertson 1994). In this thesis I will be referring to this span of time as the Transitional Woodland. During this period, south-central Ontario was occupied by people commonly referred to as the Princess Point culture. This term was first

defined by Stothers (1977) as an Early Late Woodland manifestation similar to Middle Woodland lifeways, although with the addition of maize agriculture and a certain ceramic style: cord-wrapped stick decoration on the rims, and necks encircled with punctates (Crawford and Smith 1996; Stothers 1977). Princess Point is mainly concentrated in south-central Ontario, extending from Long Point to the Niagara River along the north shore of Lake Erie and around the western end of Lake Ontario (Crawford and Smith 1996). Known Princess Point sites indicate that settlement patterns are characteristically linked to lacustrine, riverine, and wetland environments, with the majority of sites being found in the lower Grand River area, either on alluvial floodplains or terraces (Crawford et al. 1998; Smith and Crawford 1997; Warrick 2000), as well as in the Cootes Paradise area at the western end of Lake Ontario, and Long Point on Lake Erie (Smith 1997). Archaeological investigations point towards Princess Point sites being year-round villages of approximately 75-100 people (Warrick 2000:430-431).

The temporal ranges for the periods above are not 'set in stone', and one should not assume that when one period ends, the other begins. David Smith (1997), having reviewed radiocarbon dates in southern Ontario, confirms that there is overlap between periods, more specifically the terminal Middle Woodland and the commencement of the Late Woodland. The dates are arbitrary, and vary depending on the cultural features used to define the 'boundaries' between periods, such as the introduction of maize manipulation and/or the first evidence of semi-sedentary living. If one were using the introduction of maize horticulture to determine the beginning of the Late Woodland, then the period would begin approximately A.D. 500. Otherwise, the period is said to begin around A.D. 900 with the first evidence of Iroquoian lifeways (e.g., semi-sedentary villages and longhouses). For the purposes of this project the latter

date is used, since the main concern lies in the investigation of pre and post-sedentary communities.

During the Middle to Late Woodland period, populations began to gradually shift to a sedentary lifestyle. In addition there was a shift in site location preference, with the sandy soils of earlier Middle Woodland sites abandoned in favour of loam and clay loam soils that were better suited for agriculture in the Late Woodland (Dodd et al. 1990:357). However, alongside these instances of change are examples of cultural continuity, with components of these cultural periods blending into each other. For example, the lacustrine areas that were favoured in the Middle Woodland times were also exploited in the Late Woodland period. Furthermore, the fishing sites and villages found along the shores of lakes and edges of streams dating to the Middle Woodland are occupied well into the Late Woodland (Williamson 1990:313). The following section is intended to provide the reader with a brief overview of the phases of the Woodland period, focusing on the aspects of the archaeological record detailed in Chapter 2, namely settlement and subsistence practices, material culture, and burial practices.

4.3 Early Woodland Period (900 B.C. – 400 B.C.)

The Early Woodland is a continuation of Archaic (7000 – 900 B.C) lifeways in the sense that populations consisted of mobile hunter-gatherers following seasonal subsistence rounds. What differentiates the Early Woodland period from its predecessor is the first appearance of ceramic vessels, distinct bifacially worked lithics, and assorted grave goods. Early Woodland sites are not as abundant as preceding Late Archaic sites. Ritchie and Funk (1973: 348) suggest that domestic sites would be located near riverine and lacustrine resources for ease of resource

exploitation, and perhaps are not visible archaeologically due to acidic soils or fluctuating shorelines.

4.3.1 Settlement and subsistence practices

The Early Woodland period in southern Ontario is generally believed to have been a time of slow population growth. Bands consisting of 35-50 people would follow an annual seasonal round splitting into smaller groups and coming together again as the seasons changed (Spence et al. 1990:166). The few Early Woodland settlements found in the archaeological record are season-specific sites for resource procurement and short-term activity sites, for nut processing, butchering, and fishing (Spence et al. 1990). The majority of excavated archaeological sites of this period are fall deer and nut processing camps, and spring season water-based sites to exploit spawning fish populations (Spence and Fox 1986). Early Woodland sites appear to have a noticeable preference for areas adjacent to waterways (site clusters have been found along the southeast shore of Lake Huron, Lakes Erie and Ontario, and the St. Lawrence and Ottawa River valleys), as well as along the edges of valleys (Ritchie and Funk 1973:348). In sum, archaeological evidence points to these populations as being quintessential mobile hunter-gatherers', continuing the Late Archaic subsistence practices of hunting, fishing and gathering.

4.3.2 Material Culture

The Early Woodland period in southern Ontario is distinguished by the first appearance of ceramics, referred to as Vinette 1. Vinette 1 ceramics are undecorated, and are coil constructed (walls built from a series of clay coils), with an elongated form, a conical base, and wide necks (Spence et al. 1990; Williamson 1990). Vessel walls tend to be thick and crude in manufacture (e.g., friable with large temper inclusions), though there is some regional variation in thickness

with some being thin walled (Jackson 1980; Spence et al. 1990). The interior and exterior surfaces are cord roughened as a result of vessel manufacture using cord-wrapped tools (Jackson 1980). Chipped stone assemblages of the period are dominated by point preforms and projectile points that are thin and skillfully manufactured, with diagnostic types of the period including side-notched points with straight or slightly convex bases and blades (Fox 1981, 1984). Additionally, numerous netsinkers (hand-sized ground stones with notches on the sides to attach to fishing nets) found on Meadowood sites, points towards regular marine resource exploitation. Lithic analysis indicates a preference for local southern Ontario resources, such as Onondaga chert, which is geographically widespread throughout the area. Often, projectile points show signs of repurposing into other tools for a variety of purposes, such as scrapers (Kenyon 1980). The archaeological context within which formal lithics, such as projectile points and blades, are often found is either in burials, or in caches. There are pipes present in the Early Woodland period. They are made of stone, are plain, and are rare. It appears that these stone pipes are, similar to formal lithics, mainly found in burial contexts, possibly mirroring burial complexes found elsewhere in the Eastern Woodlands. Their incorporation as grave goods may represent their importance to the individual buried, or they may have been considered a prestige item that was buried with select community members. Other period-specific material culture includes pop-eyed birdstones (stylized bird figurines interpreted as atlatl weights typically crafted out of good quality and aesthetically pleasing banded sedimentary rock), and gorgets (long, flat groundstone pendants with two holes) (Spence et al. 1990; Wright 1972). On the basis of their form, technology, and raw materials (e.g., exotic resources), small quantities of artifacts, such as

copper beads, can allude to distant exchange with groups in the northeastern United States, but the extent of these networks is not clear (Spence et al. 1990).

4.3.3 Burial Practices

The burial practices of the Early Woodland period are variable, and include intra-mural cremations along with articulated and disarticulated burials, all of which can be found together at the same site. Cemeteries do occur but rarely, and the lack of grave variability (form/content) does not seem to indicate any differentiation of social status (Spence et al. 1990). Of note is the application of red ochre (crushed hematite) to human remains in burials, such as at the Liahn II site (Williamson 1980), which can be interpreted as a symbolic act. Grave goods of the period include projectile point preforms, copper beads, faunal maxillae (jaw bones), marginella shell bead necklaces, gorgets, stone pipes, and birdstones. If lithic debitage is present it is most likely a by-product of grave offering production, such as cache blades (Williamson 1980). Cache blades (triangular bifaces with square bases and straight un-notched sides) have been found in large quantities and often times accompanied burials as possible offerings. In some instances cache blades have been recovered outside of burial assemblages, the motif for which is not quite understood, but it may possibly be a deliberate act of caching for later recovery (Spence et al 1986). Some grave goods are of exotic raw materials, such as cherts from Ohio. Uncommonly, stone pipes were found in burial contexts, but have also been found in domestic/midden contexts. This could indicate that pipes were thought of as both regular and special material culture.

4.4 Middle Woodland Period (400 B.C. - A.D. 900)

The Middle Woodland is similarly poorly represented in southern Ontario. Middle Woodland sites are typically located on major rivers and lakeshores and their scarcity may be

best explained by fluctuating water levels flooding these riverside sites. Since the Middle Woodland was a time of transition pinpointing an exact beginning and ending date is a topic of debate. The general consensus demarcates the end of the period with the appearance of the first longhouses and changes in ceramics from conoidal to globular. Middle Woodland sites are distinguished from the Early Woodland by changes in projectile point types, raw material preferences, and the addition of decoration to pottery. Additionally, pottery is found in more abundance and on a greater percentage of sites than the Early Woodland, suggesting an increased desire for this material culture. Site occupations differ significantly from the preceding period with the appearance and prevalence of semi-permanent sites, defined on the basis of intra-spatial analysis of house structures. Internal spatial dynamics of house structures examines the number of, and intensity of use of, features such as hearths and post moulds (Kapches 1990). The appearance of semi-permanent sites is significant for it is evidence of a gradual move towards full sedentism. Many sites tend to be either multi-period sites that were consistently occupied for long spans of time, or short occupations. These multi-period sites were most likely highly frequented due to their locations in resource-rich areas, although ideological reasons cannot be ruled out (e.g., location holding specific spiritual meaning). Thus, the Middle Woodland is characterized by gradual transitions in lifeways.

4.4.1. Settlement and subsistence practices

Middle Woodland settlements differ significantly from those of the previous period. Sites tend to be larger, are usually found by a water source (e.g., a lake and its tributaries), and have a higher concentration of artifacts and middens (Ferris and Spence 1995:98; Finlayson 1977; Johnston 1968). A possible explanation for these larger, richer sites is prolonged seasonal

occupations by a larger group over generations, or as a semi-permanent base camp (Ferris and Spence 1995; Finlayson 1977; Kenyon 1980; Spence et al. 1984; Wilson 1990, 1991). It has also been suggested that larger sites are the result of larger populations 'packing in', that is populations being concentrated in a smaller geographic area (Spence et al. 1990:167), possibly the beginnings of group amalgamation. Larger sites also point to demographic growth, either a result of more people being born, or more people coming together (Warrick 2008).

As previously discussed in Chapter 2, it is also during this period that the first instance of maize horticulture appears. In neighbouring New York there is phytolithic evidence for maize in the form of encrusted residues on cooking vessel that are more than 2000 years old (Hart et al. 2007; Thompson et al. 2007). There are also AMS dates of maize residues on ceramic vessels from Middle Woodland period (ca. 200 BC to AD 500) sites in the neighbouring westernmost St. Lawrence Valley (Hart et al 2003). The earliest evidence for maize in southern Ontario comes in the form of carbonized kernels and have been AMS dates to 1400 years ago (Crawford et al. 1997). Additionally, a date of cal. A.D. 650 taken from charcoal found in association with a maize kernel may indicate the introduction of maize into southeastern Ontario, specifically the Rice Lake region (Jackson 1983). While maize may have been present it does not necessarily indicate that it was a staple part of the Middle Woodland subsistence regime. Isotopic analysis, conducted by Morton and Schwarcz (2004), indicates that maize did not comprise 50% of diets until A.D. 1200. It is in the Late Woodland, when villages are established, that maize horticulture becomes a staple to subsistence strategies (Morton and Schwarcz 2004; Timmins 1985; Warrick 2000).

4.4.2 Material Culture

Middle Woodland ceramics are referred to as Vinette 2, and show a large degree of techno-typological continuity from Early Woodland Vinette 1 ceramics (Jackson 1980). The main difference is that Vinette 2 ceramics are decorated, while their predecessors were not. Techniques used to create decorations include impressing, incising (drawing and/or carving a line across the clay with a pointed object), and stamping (circular/square impressions in a row) (Ferris and Spence 1995:97). Decorative variability is witnessed through time with certain elements used to help date assemblages within the Middle Woodland period. This period also sees the appearance of fired clay right and obtuse angled smoking pipes. These smoking pipes are found at only a few sites and are small, right angled and plain in appearance. While most Middle Woodland pipes are made from clay there are some instances of stone still being used as a medium, suggesting continuity in raw material / technical traditions from the Early Woodland (Emerson and Noble 1966). The pipe shapes vary and many ranges of styles have been documented, including short, tapered stem, angled pipes, as well as some with barrel shaped bowls, while others have short, round and smooth pipe stems (Stothers 1975: 41). Chipped stone assemblages also show some continuity from the Early Woodland tool kit, although change is noted in projectile types, with points now dominated by expanded stem, corner notched and side notched types with convex bases (Kenyon 1979). Preference for local southern Ontario chert continues, although now we also see more in the ways of exotic cherts from the south (e.g., Ohio), attesting to an expansion and/or shift in exchange networks (Spence and Fox 1986:37; Spence et al. 1990:148). Non-utilitarian material culture is similar to the preceding Early Woodland period, albeit with the addition of some new forms, and the use of an expanded range

of new raw materials alongside the old ones, e.g., pendants, gorgets, and beads made of stone, shell, and clay.

4.4.3 Burial Practices

As with the preceding Early Woodland, the burial practices of the Middle Woodland consisted of a variety of interment styles including articulated and disarticulated burials, as well as cremations. One main difference is the appearance of extramural burial practices. A higher degree of extramural burials is considered to relate to either ideological motivations (separation of the deceased from the still living), or for logistical reasons (Finlayson 1977; Spence 1984, 1986; Spence et al. 1984). Variability in burial style is considered by some to potentially reflect foreign influences introduced via expanded interaction networks that were already established in the preceding period (Ferris and Spence 1995:107), or act as territorial identifiers (Spence 1986:92). In a continuation with Early Woodland burial practices, Middle Woodland burials have been associated with red ochre, such as at the Donaldson site (Finlayson 1977). We also continue to witness the inclusion of grave goods, exotic and local. Given that there is no discrepancy between burials, in that grave goods are distributed in a nondescript manner, scholars have posited that the evidence points to an egalitarian society. Burial mounds, although not found in abundance, are established across the southern Ontario landscape up to the Canadian Shield, with concentrations located around the southern edges of the province (Kenyon 1986: 1), especially in the Rice Lake area near Peterborough. Site settings for burial mounds appear to favour prominent high elevation locations that overlook large bodies of water (Kenyon 1986: 73). Excavation of select mounds has revealed a range of burial types consisting of flexed, bundled, cremated, individual, or group burials (Kenyon 1986: 73). Eventually, there is a decline

and ultimate disappearance by around A.D. 250 of this type of burial complex. The motivation for the disappearance of this burial complex remains unclear. They are thought to reflect foreign influence / expanded worldview from existing interaction networks from the Ohio valley, as well as changing social complexity (Spence et al. l990:168).

4.5 Late Woodland Period (A.D. 900 - A.D. 1650)

As mentioned at the beginning of this chapter, the dating of the Late Woodland period is debatable, and depends on what criteria are being used to determine the transitions from Middle to Late Woodland. It is an unfair assumption to suggest such a specific date, but for the purpose of this thesis the Late Woodland period is regarded to have started around A.D. 900, and ends with European contact ca. A.D. 1650. Research in southern Ontario has tended to focus on the Late Woodland period. This may be due to better preservation of material culture since it is later in time, or because more permanent settlements allowed for a higher degree of material culture to collect in any one area. It is more likely that this period garners much attention due to the due to the emergence of Iroquoian cultures. The origins and development of the Iroquois are of great interest to many archaeologists for they are essentially an island in a sea of Algonquian speakers. Since the Late Woodland Period spans such a large temporal period, it is broken up into sub-periods. These sub-periods are the Early Late Woodland (A.D. 900 – A.D. 1300), the Middle Late Woodland (A.D. 1300 – A.D. 1400), and the Terminal Late Woodland (A.D. 1400 – A.D. 1650). These periods have also been labeled the Early, Middle and Late Ontario Iroquoian periods, since many scholars believe that it is in the Late Woodland, more specifically after A.D. 1000 (Ferris 1999a) and possibly not until A.D. 1300 (Warrick 2000), when “Iroquoian” cultural traits began to emerge. These traits included established larger settlements, maize horticulture,

well-defined longhouses, matrilocality, and year-round residency (Kapches 1994; Ritchie 1994; Ritchie and Funk 1973). The idea of an 'Iroquoian package' is unrealistic, for the reality is that these traits do not emerge everywhere at the same time. Different elements of Late Woodland village lifeways appeared at different times and in different regional areas (Smith 1997). For many, the emergence of Iroquoian features is due to the arrival of the Iroquoian people themselves. The debates surrounding the appearance of Iroquoians can be conceptualized as three distinct theories. The first theorizes that Iroquoians *migrated* into southern Ontario from neighbouring areas (e.g., New York) around A.D. 900 (Bursey 1995; Snow 1995; 1996), and possibly got their foothold through conquest (Wright 1966, 1990, 1992). A second theory is an *in situ* development of new cultural practices from the local indigenous populations (Crawford and Smith 2002; Ferris 1999a; Fox 1990; Warrick 2000). The last theory supposes that Iroquoian traits were a by-product of *diffusion* as a result of influence from neighbouring populations (Dodd et el. 1990; Noble 1975a; Pearce 1984; Smith 1990; Spence 1984; Jamieson 1991). These debates are ultimately beyond the remit of this thesis. More recently, there is a growing interest among First Nations in their people's ancestral origins. This has provided the opportunity for an ethnogenetic approach focusing on mtDNA to explain Iroquoian origins. Pfeiffer et al. (2014) conducted an isotopic and mtDNA analysis on teeth from various northern Iroquoian sites, and suggest that Iroquoian populations genetically derive from Algonkian-speaking peoples. This is significant for it could mean that an Iroquoian way of life and language was adopted by them.

4.5.1 Settlement and subsistence practices

The Late Woodland period is characterized by distinct settlement changes from the previous periods, with villages now the dominant settlement type. By village I refer to a semi-

permanent to permanent settlement consisting of more than two longhouse structures with some form of internal and external organization. As well, a village can be defined as a base site with a minimum size of 0.25 ha (Warrick 2008:96), or of 1 ha (Pearce 1984; Williamson 1985). Early Late Woodland sites are usually found in clusters on sand plains, with 20-30 km of vacant land between them (Williamson 1990). Within these clusters, sites are typically found at a distance of 300-1000 m from one another, with each cluster containing two distinct villages that average 0.4 ha in size (Warrick 1990: 337; Williamson 1990), These early villages exhibit an increase in the number of structures, as well as the appearance of partially or fully encircling palisades (Kapches 1982). Originally, palisades were thought to represent defensive walls, but it is suggested that their original purpose was to represent a manifestation of an awareness of settlement permanence (Birch 2010; Williamson 1990:291). It could also be possible that palisades acted as wind-breaks or as a preventative measure against snow drifts (e.g., snow fence). Initially, villages were small and randomly structured with an almost disorganized quality to them; longhouses are often superimposed on one another, and unevenly distributed (Warrick 1984:54-61). Early versions of longhouses, such as those found in the Early Late Woodland, are initially elliptical in form and rather small (shorter than 25 meters), but gradually get longer over time (upwards of 120 meters in the Middle Late Woodland and Terminal Late Woodland), and the interiors become dense with feature activity (Dodd 1984:289; Dodd et al. 1990; Kapches 1982). Moreover, evidence for rebuilding episodes at some sites (e.g., low feature densities inside structures and overlapping structures) points towards short-term, possibly multiple, occupations over a long span of time (Birch 2012; Creese 2013; Warrick 1984; Williamson 1985, 1990). Often hamlets or special purpose camps would ‘bud off’ from the central village to exploit resource-rich areas.

It is not until the Middle Late Woodland (MLW) that villages appear to have formalized orientation as evidenced by the parallel alignment of houses in closely spaced groupings, and a reduction in the number of overlapping houses (Dodd 1984; Dodd et al. 1990). Larger longhouses that are organized into parallel alignment, especially those found in early 14th century villages, has been used as evidence for the solidification of formal matrilineages, as well as that commencement of early clan formation in Ontario (Pearce 1984; Trigger 1985:92-94; Warrick 1984:6). These characteristics, specifically the decrease in the number of overlapping houses, also imply a transition from village abandonments and reoccupations over an extended period of time to more permanent year round settlements (Dodd 1986). There also appears to be instances of expansion, on either one or both ends of longhouses that may have been driven by demographic growth (Warrick 2008:185). Semi-subterranean sweat lodges begin to appear on sites. At first they are few and far between, but by the 14th century they are abundant, such as at the Alexandra (ASI 2008) site. Seeing as sweat lodges can be frequently found wherever large amounts of people are in the process of coming together they should be thought of as part of the evolution of community sequences, instead of period specific criteria. (MacDonald and Williamson 2001), and in this sense are not exactly period specific.

It is during the Terminal Late Woodland (TLW) that settlement sizes increase, and longhouse extensions become common and reach their maximum lengths, indicating population growth and possibly settlement amalgamations (Pearce 1984:377; Warrick 2008; Williamson 1985:343). One theory for this community coalescence is that it was a defensive action during times of hostility (Birch 2010; Warrick 1984:66). This may be since this time was marked by the colonization of new territories (Warrick 1984; Wright 1966). As well, there are instances in 15th

and early 16th century villages of one or two substantially long (e.g., more than 50 m) longhouses, that have been interpreted as chiefly residences (Warrick 1996:19). It is also during this period (ca. A.D. 1480) that semi-subterranean sweat lodges begin to become less common, although they continue to be present in the 15th century in the southern region of Simcoe County at the Hubbert (MacDonald and Williamson 2001) and Dunsmore (Roberston and Williamson 2003) sites. It is suggested that these sweat lodges aided in decision making, acted as a way to communicate with sacred being, and promoted and maintained social solidarity in an attempt to mediate conflict from shifting community organization, e.g., hunting and gathering to farming (MacDonald 1988; Paper 1988:40). Just as sweat lodges are one of the ways in which people have discussed new mechanisms for social maintenance, I suggest that smoking is another arena within which this occurs.

Early Late Woodland populations continued to practice a diverse subsistence strategy of both hunting and gathering, as well as the beginnings of crop manipulation, either as wild resources or as planned agricultural pursuits. This was an important transitional stage between Middle Woodland hunter-gatherers and the fully agriculturalist populations found in the Late Woodland. Studies of paleobotanical and stable isotopes found in human bone collagen of the period (e.g., Fecteau 1985; Katzenberg 1984; Schwarz et al. 1985) points towards the adoption of an agricultural lifeway as a gradual, possibly cautious process that eventually led to a reliance on maize as a staple subsistence resource (Williamson 1985, 1990:312). It is during the MLW that the adoption of 'three Sisters' (corn, beans, and squash) agriculture begins to appear regularly. As the period progresses, agriculture becomes more widespread and fully integrated into some village subsistence practices.

4.5.2 Material Culture

Morphologically, ceramic vessels transform from the thick-walled elongated shapes with conical bases popular in the Middle Woodland, to thin-walled globular forms with rounded bottoms, collars (a thickened rim), castellations (projections on the top of the rim), and paddled vessel construction gradually replacing coil construction (Fox 1990; Noble 1975b; Williamson 1990). New forms of decoration appear and are organized in specific zones on the vessel (Dodd et al. 1990; Ramsden 1990b:176; Ritchie and MacNeish 1949). These morphological changes represent an aesthetic shift and differently constructed vessels (Williamson 1990:296). Collars and castellations are new to the ceramics and are initially rare, becoming more commonplace as time progresses (Fox 1990). The Middle Woodland coil construction technique is gradually replaced in favour of paddled vessel production, whereby ceramic vessels are fashioned from a large individual portion of clay instead of building-up of a thin coil on top of its self (Noble 1975b; Williamson 1990). As well, decoration appears in a new manner. Late Woodland decorations appear limited to distinct zones (i.e., rims and necks) on the vessels, whereas in the Middle Woodland decoration was not centralized and appeared all over the vessel (Dodd et al. 1990; Ramsden 1990b:176; Ritchie and MacNeish 1949). Common decorative motifs include horizontal lines, oblique lines, and hatched triangles (Warrick 2000:442). Smoking pipes represent a regular component of archaeological assemblages, and increase in number throughout the period. There is continuity in the sense that stone pipes are still found at sites, but clay fired pipes appear to be more abundant. Pipes are found in a larger variety of contexts, including middens, features, either on their own, with other ceramics, or with paleobotanicals, and sweat lodges. As well, there is an increased range of forms and decoration, alongside higher

occurrences of effigy pipes (as discussed in Chapter 3). The chipped stone assemblage consists of thin, side-notched triangular projectile points that diminish in size during the period (Fox 1990:172; 1982c) found in various archaeological contexts. Tool production appears to be largely dependent on local chert sources with a fall-off in the relative quantity of the exotic cherts that were previously seen in the Middle Woodland period (Fox 1990:172).

4.5.3 Burial Practices

It is during the Late Woodland period in southern Ontario that burial strategies transform. Ossuaries (structures for multiple inhumations) make their first appearance and become the dominant ancestral Wendat burial system ca. A.D. 1300 (Ramsden 1990a: 175). Ancestral Wendat burial practices tend to involve two phases: a primary burial followed by a secondary one, the sequence of acts believed to be linked to community cycle and village relocation patterns (Johnston 1968; Williamson and Steiss 2003). Primary burials often occurred beneath longhouse floors, and became more common towards the end of the thirteenth century, such as at the Myers Road site (Williamson 1998). Ossuaries are often the secondary burials of a two part burial system, and are characterized by the collection of hundreds to thousands of disarticulated individuals into one large mass burial (Dodd et al. 1990:353; Ramsden 1990a; Spence 1994). Ancestral Neutral burial strategies differ in that they are not comingled. Instead they include large extramural cemeteries with intramural features containing cremations, and individual, paired and multiple burials (Spence 1994). While burial assemblages in the Middle Woodland contained a mixture of exotic and local grave goods, Late Woodland burials tend to lack grave goods, a shift in funerary traditions that might be related to the promotion of community solidarity over the celebration of specific individuals. Furthermore, Historic period (post A.D.

1580) Wendat and Neutral burials contain European trade goods, which is a departure from the previous periods where few artifacts are found in a burial context.

4.6 Summary

The purpose of this chapter has been to detail the nature of change and continuity that occurred during the Woodland period of southern Ontario, especially as it pertains to the transition from the Middle Woodland to the Late Woodland periods, during which we witness the first appearance of settled village life. The 'unplanned nature' of Early Late Woodland sites gives the appearance of an autonomous community without formalized government (Timmins 1992; Trigger 1976, 1981; Warrick 1984; Williamson 1985, 1990). Changes to this in the MLW are seen as longhouses appear to have formalized orientation, and a decrease in the number of overlapping structures. It is possible that this represents further political integration and the promotion of intervillage alliances. Overall, as time progresses, there is a general trend of shifting lifeways witnessed in the material culture, burials, architecture, and settlement strategies of Middle to Late Woodland populations. Table 1 provides a simplified version of this review.

Table 1: General overview of Southern Ontario Woodland material culture

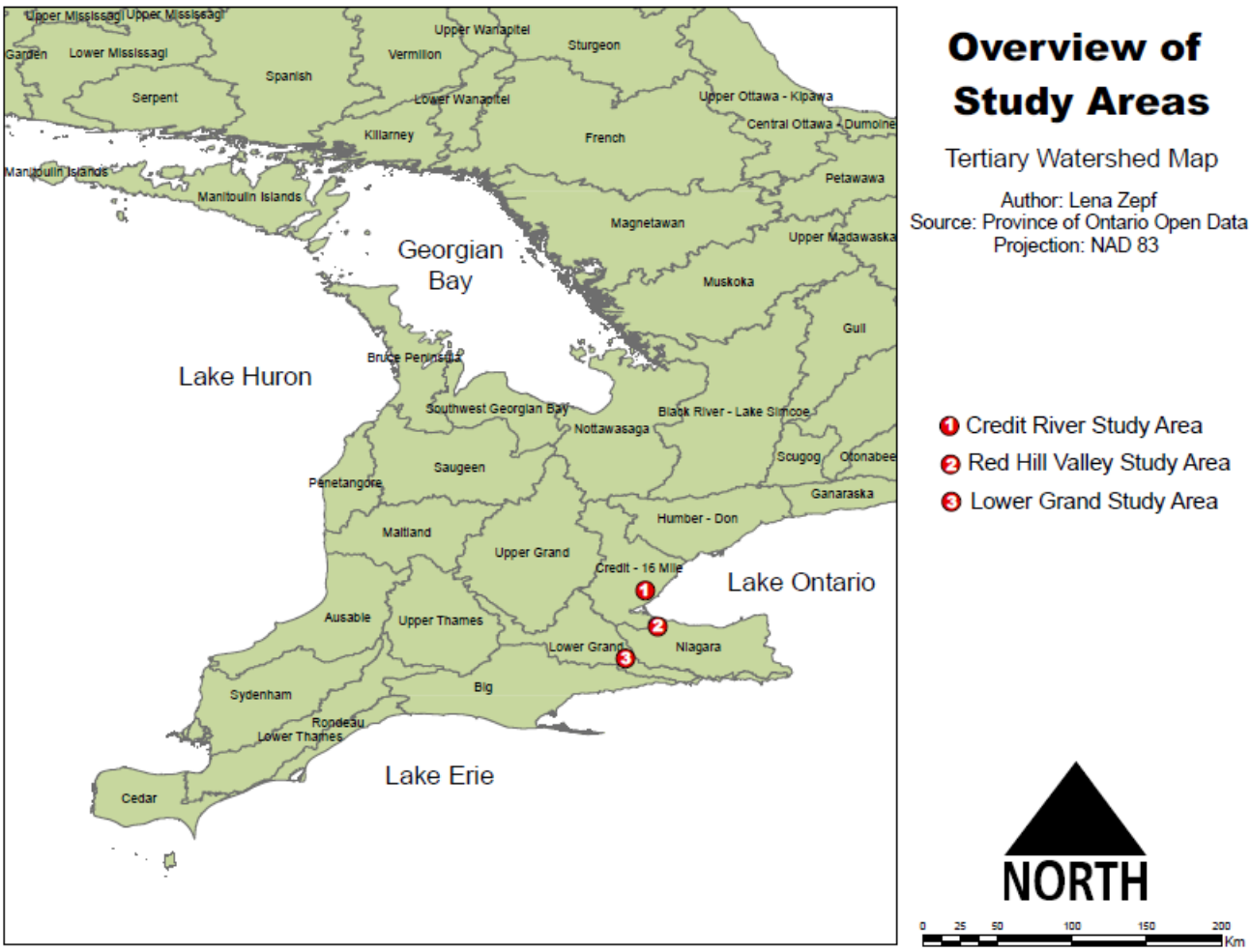
Material Culture		Early Woodland	Middle Woodland	Late Woodland		
				Early	Middle	Terminal
Ceramics	Construction	Coil	Coil	Paddled vessel	Paddled vessel	Paddled vessel
	Decorated	No	Yes	Yes	Yes	Yes
	Form	Elongated Conical base	Elongated Conical base	Globular Rounded base Castellations Mostly collarless	Globular Rounded base Castellations Collars	Globular Rounded base Castellations Collars
Lithics	Raw material	Local	Local and exotic	Local	Local	Local
	Form	Side notched	Corner notched Side notched	Triangular and side notched triangular	Triangular and side notched triangular	Mainly triangular; some side notched triangular
Burial	Type	Variable	Variable	Variable, family groupings	Ossuaries and cemeteries	Ossuaries and cemeteries
	Grave goods	Yes (exotic and local)	Yes (exotic and local)	A few to none	Singular	European trade goods in the post-1580 period
Pipes	Frequency	Rare	Few	Frequent	Abundant	Abundant
	Decorated	No	No	Yes	Yes	Yes
	Effigies	No	No	Yes	Yes	Yes

CHAPTER 5: RESEARCH AREA

5.0 Research area

The purpose of this chapter is to introduce the research area and the archaeological sites used in this thesis. The sites used in this analysis are situated in south-central Ontario. As a reminder, the purpose of this analysis is to examine the sociocultural effects of sedentism through smoking pipes, specifically, changes to pipe style and use through time, namely the Middle to Late Woodland periods. It thus follows that the analysis needs to involve assemblages from sites that span pre and post-sedentism. It was eventually decided upon to focus on sites from three drainage areas in southern Ontario, namely the Credit River, Red Hill Valley, and Lower Grand River Valley (Figure 1). The Credit River sites can be argued to be ancestral Neutral or Wendat, The Red Hill Valley sites are ancestral Wendat, while the Lower Grand River Valley sites belong to the Princess Point complex. While these drainage systems are located in different regions, and belong to ancestrally different groups, a comparison between them is still constructive, for it may shed light on regional differences in smoking pipes, or lack thereof.

Figure 1: Summary of study areas

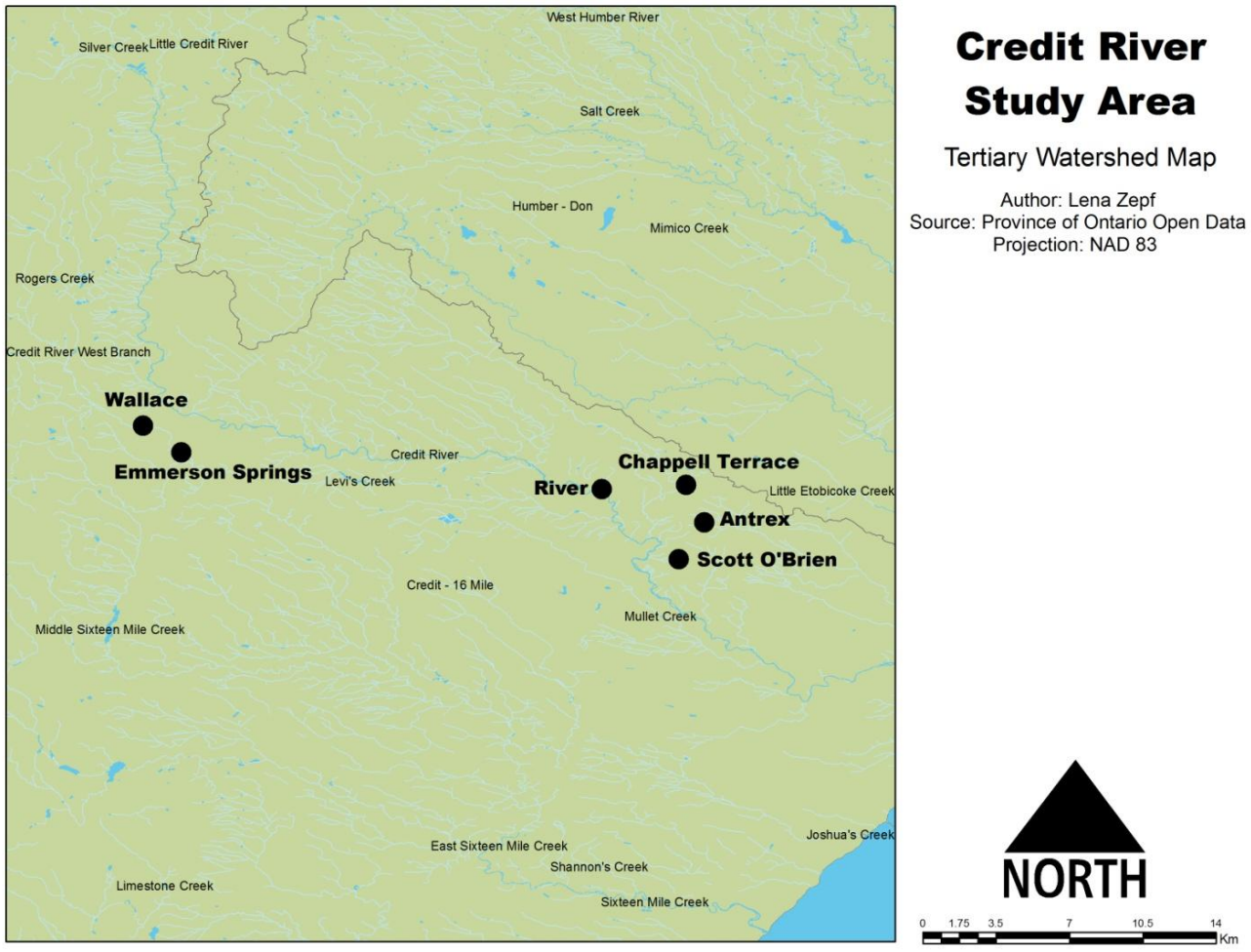


5.1 Credit River

The Credit River flows from Orangeville and drains into Lake Ontario at Port Credit. The Credit River Valley, circa A.D. 800, is suggested to have been a boundary marker between ancestral Neutral and ancestral Wendat-Tionontaté (Warrick 2008:15), hence the hesitation of labeling sites as one or the other. For instance, the River and Pengilley sites are both 15th century villages that, based on pottery and settlement patterns appear to be ancestral Neutral, while the 16th century Emmerson Springs site appears to be a mix of the two (Warrick 2008:15). The

valley is archaeologically rich, with sites dotting its east and west banks. One of these, the Merton site (AjGv-24), is an Iroquoian village less than 10 km from a cluster of sites including two small camps and a possible burial site. Also, nearby are the Hogsback (AjGv-3), a Late Woodland burial site and Maracle (AjGv-27), a Princess Point Iroquoian and historic Mississauga campsite, both of which are on the east bank of the river. One of the densest areas of sites is in a 2 square km area on both banks of the river, which contains six Late Woodland sites: the Pengilley site (AjGw-66), a transitional Late Woodland site, AjGw-168 and AjGw-169, both Late Woodland findspots, the Lightfoot site (AjGw-5), an Iroquoian camp of unknown date, the River site (AjGw-68), and the Davidson site (AjGw-4). Approximately 4 km south of the Credit River on two tributary creeks are two Early Late Woodland sites; AjGw-153 a find spot and the New Parcel site (AjGw-205), which is a camp site. The sites pertaining to this thesis from the Credit River region include the Scott O'Brien, Antrex, River, Chappell Terrace, Wallace, and Emmerson Springs sites (Figure 2).

Figure 2: Credit River sites of interest



5.1.1 Scott O'Brien (AjGv-32): A Middle Woodland site without the presence of pipes

The Scott O'Brien (AjGv-32) site was discovered in 1988 as part of an archaeological assessment. It is located inland from Lake Ontario by a string of terraces overlooking the Credit River, and adjacent to a feeder creek. It is a 0.4 hectare multicomponent site with the earliest occupation dating to the Middle Archaic (ca. 3000 B.C.), and the latest being ca. A.D. 1650, though it was not used consistently before 800 B.C. or from A.D. 1000 onwards. The

archaeological assemblage is primarily made up of Early and Middle Woodland seasonal camp occupations (Williamson and Pihl 2002). Being multicomponent, the site was repeatedly visited by small mobile groups, consisting of a few families, possibly for spring fishery purposes since the area is resource rich (Williamson and Pihl 2002:74). Excavations of the upper and lower terraces totaled 120, one-metre units covering the extent of the site (Williamson and Pihl 2002:76). Excavations revealed a total of 95 features, consisting of middens and hearths, as well as 148 post moulds (Williamson and Pihl 2002:77). There were no pipe fragments found in the Scott O'Brien assemblage, but this does not mean it should be excluded from the analysis; the absence of presence is still valuable evidence. This will be discussed in depth in the interpretation portion of this thesis. What the assemblage is dominated by are lithics (n=3,000), such as projectile points, blades, and bifaces, ceramics (n=2,600), mostly Middle Woodland but also some Vinette 1 and Princess Point, and netsinkers (Williamson and Pihl 2002).

5.1.2 Antrex (AjGv-38)

The Antrex site is located at the edge of a field on top of a broad ridge between two small tributaries of Cooksville Creek, and is adjacent to a wetland (Robertson and Williamson 2002:91). It is within the Peel plain physiographic region (Chapman and Putnam 1984) overlying a continuous clay deposit (Braun 2012:4). It is important to note that one-third of the site is in an undisturbed woodlot context, while the remainder lies in a ploughed field, and that the site was only partially excavated. An archaeological assessment for subdivision development in the area resulted in the site being discovered in 1990, and led to its excavation by Mayer et al. (1991), followed by excavation by Archaeological Services Inc. (ASI) from 1992-1994. The closest site is the Merton site (AjGv-24), an Iroquoian village. Less than 10 km to the west is a dense area of

sites in a 2km² area on both sides of the Credit River, which includes the River and Pengilley sites amongst others. Also in close proximity are the Hogsback (AjGv-3), Maracle (AjGv-27), Chappell Terrace (AjGw-222) and Scott O'Brien (AjGv-32) sites. Antrex has been radiocarbon dated to A.D. 1253 (ASI 2010), and has been interpreted as an agricultural settlement with a population of 200-400 people that was occupied for approximately 20 years (Robertson and Williamson 2002). The site includes a non-encircling palisade, sweat lodges, six longhouses, two middens and many external activity areas, although the longhouses were not all occupied simultaneously. A few of the longhouses appear well-planned and run parallel to each other, while the remainders overlap to some degree, which points towards a history of re-building and site re-use (Robertson and Williamson 2002). One of the longhouses contained the disarticulated remains of three individuals, found in a feature directly under a hearth (ASI 2010:22), possibly the first part of a two-part burial system. The material assemblage for the Antrex site is rich, and boasts 40,000+ artifacts, of which 351 are pipes and pipe fragments. The other material culture includes ceramics, flaked lithics, ground stone artifacts, and floral and faunal remains. The paleobotanical assemblage includes maize, bean, sunflower and a single tobacco seed. In addition to the majority of the site context being undisturbed, the Antrex site is significant, for MLW sites are a rarity in the area (Robertson and Williamson 2002).

5.1.3 River (AjGw-68)

Initially registered as the Ian Davidson site, the River site is a multiphase occupation consisting of Middle Archaic, Late Archaic, Early Woodland, Middle Woodland, Transitional Woodland, Late Woodland and Historic occupations. It was initially discovered in 1986 during an archaeological assessment for the construction of a pipeline by D. R. Poulton Ltd., after which

it was salvage excavated by Dillon Consulting Ltd. before the construction of Highway 407. Based on ceramic seriation the main occupation date is suggested to be A.D. 1400-1450. It is located on a wide alluvial terrace along the east bank of the Credit River where the river flows through the Peel Plain (Chapman and Putnam 1984:74-75). The area seems to be popular, with 44 sites known to be within a 3 km radius of the River site. One of the more notable sites, the Pengilly site, an Early Late Woodland village, lies 500 m to the southwest. The northern site boundary is a wet swale, to the south is a gas pipeline, the CPR railway marks the eastern site boundary, and the western boundary is determined by the Credit River. The original report (Dillon Consulting Ltd. 1997) points out that all the nearby Late Woodland sites are situated on the west side of the Credit River, while the River site is on the east side. Being located on such a low terrace is surprising for other sites in the area dating to this period are atop bluffs overlooking the river (e.g., the Pengilley site).

The site consists of five longhouses, four of which were excavated by Dillon Consulting Ltd. (1997), and the fifth from the previous excavation in 1986 (Mayer, Poulton and Associates 1991). The four longhouses are perpendicular to the Credit River, and grouped together at the north end of the site, two of which exhibit signs of extensions, while a 30-40 metre gap separates them from the fifth longhouse found in the southern end of the site. There is the possibility for more longhouses at the River site since the area between the group of four longhouses and the single longhouse was not excavated (Dillon Consulting Ltd. 1997). Surprisingly, there are few hearths inside the longhouses, the total number for the site being eight, and only two were located near the midline (Dillon Consulting Ltd. 1997). As well, nine human elements were found in various contexts on the site. Five of them represent individuals of various ages (i.e.,

infant, adolescent, and adult), while the remaining four are believed to have come from the same individual (Dillon Consulting Ltd. 1997). The archaeological assemblage includes a wide variety of artifacts, the most abundant being chipped lithics (comprises 50%), followed by ceramics, faunal remains, and pipes (n=155). Smoking pipe deposition is site-wide, and fragments are found within longhouses, outside of longhouses, and in the southern midden. Many of the artifacts belong to the Late Woodland period, but there are several Middle Woodland artifacts as well. The chipped stone assemblage contains many projectile points, formal tools, and debitage made of various local Ontario cherts (e.g., Kettle Point), with Onondaga being the primary raw material choice, and some exotic cherts from Ohio. The paleobotanical assemblage consists of maize, bean, squash, tobacco, sunflower, blueberry, sumac and dogwood, among others, with maize being the most abundant. Faunal evidence indicates a greater preference for mammals than fish which is surprising considering the proximity to the waterway. Based on the material evidence along with the settlement plans it is suggested that the River site was a year-round occupation most likely by a Late Woodland population, but was also visited in the earlier Middle Woodland period.

5.1.4 Chappell Terrace (AjGw-222)

Chappell Terrace is a small campsite that is found on a terrace promontory on the east side of the Credit River floodplain in the Peel Plain physiographic region (Chapman and Putnam 1984). The integrity of the site was severely compromised due to extensive landscape alteration for dairy pasture, and an estate home (ASI 2002), so not much can be learned from settlement patterns, and makes population estimates difficult. It is a multi-period site as it appears to have been used intermittently during the Middle to Late Archaic as well as the Middle Woodland,

Middle Late Woodland and the Terminal Woodland periods (ASI 2002). The main occupation dates to A.D. 1400, although this date is based on a few ceramic sherds. Additional, early long-term occupations should not be ruled out. In its later occupations it looks to have been used as a seasonal hunting and processing camp, and it is possible that is was a satellite camp of a nearby base village. In total 106 one-metre units were excavated, 60 in the northern area and 46 in the southern area. Lying between the two areas was unexcavatable space, and it is possible that the site may have been larger and contained more artifacts. The material culture includes ceramics, lithics, faunal elements and smoking pipes (n=21). The chipped stone assemblage includes four projectile points, and various detritus, all of which is Onondaga chert. There are a high proportion of deer remains and some charred maize kernels, leading ASI (2002) to believe that it was a seasonal hunting and processing camp, or a village hamlet.

5.1.5 Wallace (AkGx-1)

The Wallace site is located on Rogers Creek in the Niagara Escarpment region, and is 27 km north of Crawford Lake. The site stands out for it straddles the Canadian and Carolinian biotic provinces, so it has a mixture of flora and fauna from both zones; this could explain the sites occupation despite the poor soil. To the north lies the Late Woodland Glen Williams ossuary (approximately 10 km), which may have been contemporaneous. The Emmerson Springs site is also nearby. While the field report states the site dates to the 15th century (Crawford 1985:9-15), ceramic seriation and the presence of European copper indicates the site was occupied during the early to mid-16th century (Williamson 2014 personal communication). A date for the Wallace site is tentative, and since the majority of the site is in a plough disturbed area an exact date cannot be accurately assessed; although it can be agreed that it was a Late

Woodland site. The site was initially excavated in the 1960's by W. D. Donaldson. It was during this excavation that numerous amounts of carbonized plant remains were recovered from the only unploughed context. Much of the field report was dedicated to the analysis and identification of plant and animal remains; it is only recently that interest has focused on the remaining material culture. There have been multiple excavations of the site beginning with OAS excavations in the 1960's, followed by a partial excavation as a University of Toronto field school project in the mid 1980's, which uncovered a total area of 224m^2 (Crawford 1984:17). Excavation of the site revealed longhouses, although with unclear house walls, hearths, and a possible palisade. Nine hearths in total were excavated, but none were associated with longhouses, possibly a result of deep ploughing in the area. The archaeological assemblage consists of ceramics, chipped stone tools, pipes (n=128), plant remains, faunal remains, and miscellaneous items. The large plant assemblage consists of squash, bean, maize, hawthorn, sunflower and sumac, with many other plant varieties. The main faunal remains are deer, and the bone assemblage is consistent with a year-round occupation (Crawford 1985).

5.1.6 Emmerson Springs (AkGx-5)

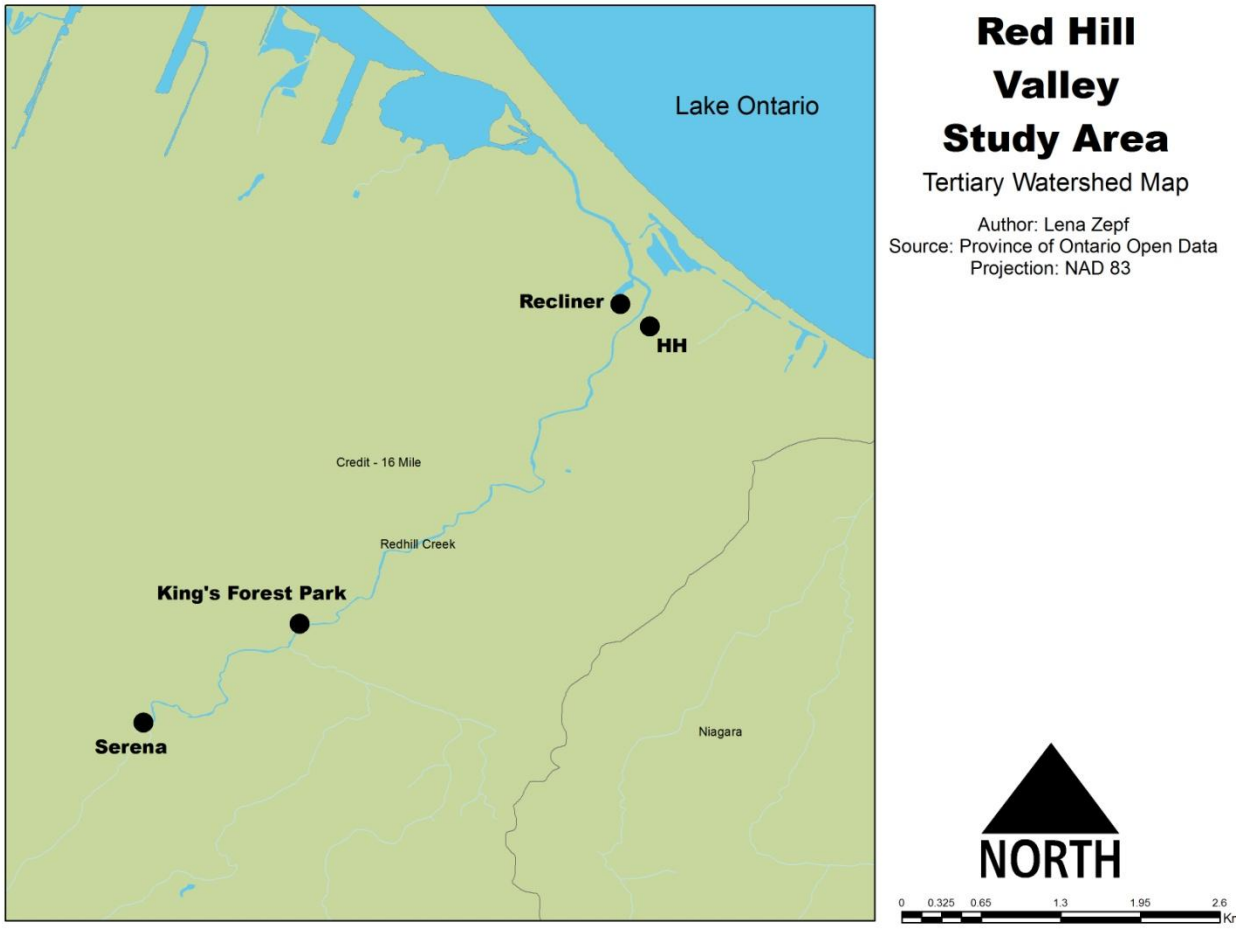
The Emmerson Springs site was discovered on Scotsdale farm in Halton County after the property was donated to the Ontario Heritage Foundation (now the Ontario Heritage Trust). It is located on a promontory that overlooks Owl Creek, which is a tributary of the Credit River (Hawkins 2004). Similar to many of the sites used in this analysis, the Emmerson Springs site is in a disturbed context. It is considered, based on ceramic seriation with other 16th century sites, to be a one-hectare Neutral village that dates to the 16th century (Hawkins 2004), although it is more likely to be a Wendat village with Neutral influence. There have been six separate

investigations of the Emmerson Springs site, the most recent being part of a University of Toronto field-school, run from 2002-2004. While the site lies in close proximity to the Wallace site and has a similar ceramic assemblage, the relationship between the two remains uncertain. The material culture assemblage consists of ceramics, pipes (n=86), lithics, faunal remains, and paleobotanicals, while site architecture includes longhouses, and a possible sweat lodge. Excavations remain uncompleted, so the likelihood that more longhouses and smoking pipe fragments will be found is high.

5.2 Red Hill Valley

Many sites in the Red Hill Valley were the result of CRM investigations over the past 30 years. An archaeological assessment conducted by ASI in 1996 found many of the sites listed herein. The assessment was done for the City of Hamilton to identify sites that would be impacted by the Red Hill Creek Expressway. The historic forest for this region was made up of oak stands with intermittent areas of pine (ASI et al. 2003:7). The rich environment attracted a wide variety of fauna, making the Red Hill Valley a popular occupation area. Sites from the Red Hill Valley used in this thesis include the HH, Recliner, King's Forest Park, and Serena sites (Figure 3).

Figure 3: Red Hill Valley sites of interest



5.2.1 HH (AhGw-81): A Middle Woodland site without the presence of pipes

The HH site was excavated by the Ontario Ministry of Transportation (MTO) from 1989-1990. AMS dates for the site range from A.D. 400–650. It is suggested that there were two occupations ca. A.D. 400–485 and A.D. 540-650 (Woodley 1996:28-29). These dates point towards a Middle Woodland occupation, and the site has been interpreted as being a campsite/fishing station. The HH site is on the east bank of Red Hill Creek directly across from the Recliner site, which is on the west bank. Occupation dates for the HH and Recliner sites are

similar, and ceramics are comparable in vessel manufacture, morphology, and decorative attributes (ASI 2006b:30). This combined with their closeness, suggests that the two sites were linked in some manner, maybe even being occupied by the same population. A likely situation was that the HH site was occupied first, after which the population moved to the Recliner site. This assumption is based on the small amount of Transitional Woodland ceramics at the HH site, and their prevalence at the Recliner site (ASI 2006b:62). It is also possible that the HH and Recliner sites were contemporary occupations that straddled the waterway. The archaeological assemblage is primarily flaked lithics, but also includes ceramics, netsinkers, and nine projectile points made of Onondaga chert. Similar to the Middle Woodland Scott O'Brien site, there is an absence of pipes in the assemblage, which will be addressed in the discussion part of this thesis.

5.2.2 Recliner (AhGw-80)

The Recliner site was discovered as part of the Red Hill Creek archaeological assessment. It is east of Red Hill Creek, on the west side of the QEW, and located in the Saltfleet Township nearby a small ravine with a creek. As mentioned above, the HH site lies directly across from Recliner on the east side of the creek (ASI 2006). The eastern and northern boundaries of the Recliner site were determined by disturbances, the east by construction of the QEW, and the north by gradation and fill, while the southern boundary is determined by the creek. Like the majority of sites in this study, it is plough disturbed and there was a trail constructed through some of the site, but there remained some areas with intact cultural deposits. In total 755 one-metre units were excavated (34 in 1989 and 1990, 62 in 2003, and 659 in 2004) in a 40 x 25 m block, which revealed 17 features (e.g., possible hearth, pits, middens, and netsinker caches), seven post moulds, and 35,165 artifacts (ASI 2006b:13). The majority of the site ceramics are

Middle Woodland, as well as a few Transitional, and only three Late Woodland sherds. The lithic assemblage consists of 44 projectile points with various formal tools (e.g., drills, gravers, scrapers) and debitage, some dating to the Archaic, with the chert of choice being Onondaga. There are three pipe fragments in the assemblage, all of which are clay (ASI 2006b:39). It is also likely that one of the features contains tobacco seeds, but due to preservation it is uncertain (ASI 2006b:52). Based on the material culture and settlement patterns, the Recliner site is believed to have been a campsite/fishing station occupied during the Middle-Early Late Woodland Periods, although the amount of deer remains would point more towards a fall hunting camp (ASI 2006b:9). It is because of all the above evidence that it is suggested the Recliner site belongs to a pre-agricultural hunter-gatherer population.

5.2.3 King's Forest Park (AhGw-1)

The King's Forest Park site has undergone many surveys and excavations by several organizations due to development in the area. It was found by Bill Fox (1967) who excavated an unploughed midden at the edge of a woodlot. It was in the 1960's that the Ontario Archaeological Society (OAS) conducted salvage excavations on areas of the site impacted by city storm sewers projects. Although there have been many surveys and test excavations, a full excavation was not performed, for the eastern edge of the site was heavily impacted by City of Hamilton works. The site is situated on the western bank of the Red Hill Creek in what is now Rosedale Park, and has been radiocarbon dated to the 13th century (ASI 2003).

Limited Stage 4 excavations were conducted in areas that would be impacted by restoration of the creek or further landscape alteration. In total 570 one-metre units were excavated, and a series of Gradall trenches were dug to strip off topsoil to view soil profiles.

These excavations revealed two aligned longhouses, one with five centrally aligned hearths and a sweat lodge, while the second had one hearth (ASI 2003:20, 22). Additionally, series of post moulds, and what appear to be open area sweat lodges, would suggest that there were more longhouses present; sweat lodges rarely occur as standalone structures (ASI 2003). The material assemblage contains a large collection of ceramics (n=85,390), 49 of which appear to be stained to some degree, either from a slip (a glaze of either clay or pigment to decorate and decrease porosity) or from regular use. The large chipped stone assemblage includes formal and informal tools, including projectile points dating to the Archaic and Paleo periods, and debitage primarily of Onondaga chert (98.9%) (ASI 2003). There are also 87 pipe fragments, some of which have been interpreted as juvenile pipes. Miscellaneous items include two rolled native copper beads, bone beads and a painted turtle shell. There is a substantial amount of paleobotanicals including maize, tobacco, sunflower, sumac, and cat-tail, with maize and tobacco being the most abundant. The faunal assemblage indicates the population relied on small fauna rather than large fauna, such as deer.

5.2.4 Serena (AhGx-274)

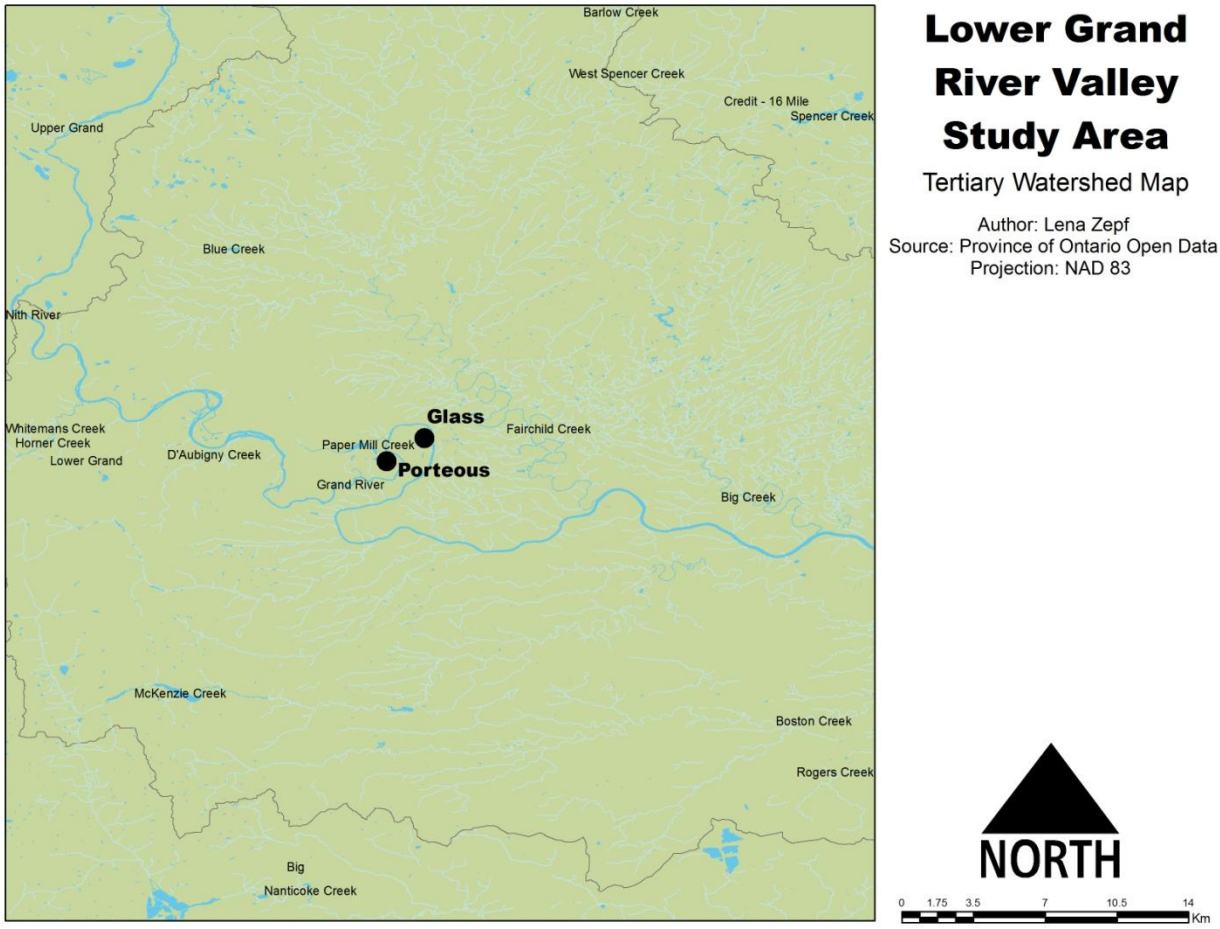
The Serena site is the product of another salvage excavation. It lies on the top of the Niagara Escarpment overlooking Red Hill Creek at the edge of the Haldimand Clay Plain (Chapman and Putnam 1984:255). The date of occupation is suggested to be ca. A.D. 1350, making it a Middle Late Woodland occupation. The site is in a resource rich area, which may explain the concentration of sites within a 9 km radius. There are eight sites in this area, all of which predate the Serena site, and includes the King's Forest Park site. Excavation of the site revealed six, possibly seven, longhouses, 112 subsurface features found within longhouses, 11

exterior activity areas, one of which is quite extensive, and a 140 m long palisade/fence line. Some of the longhouses appear unplanned, but show signs of extensions and repair, and point towards not being occupied simultaneously (ASI 2004). There are a total of seven, possibly eight, hearths spread between the longhouses. Material culture found within sweat lodges consisted of a large amount of bone, fire cracked rock, and projectile points. One longhouse contained human remains with red ochre. As well, there is a feature containing a human cremation with a MNI of two. Some of these remains are stained with green and blue consistent with copper oxidization, so it presumed a copper artifact was buried nearby or intentionally (ASI 2004). Akin to the King's Forest Park site, many of the ceramics have a slip, although at Serena it was either white or black, not red (ASI 2004:31). Lithics (86%) comprise the majority of the artifact assemblage, including 60 projectile points. The lithics are all composed of local Ontario chert (e.g., Ancaster, Haldimand), the primary material being Onondaga. The smoking pipe assemblage is composed of 30 pipe fragments, the majority from Midden 1, and five from features. Paleobotanicals consist of maize kernels and cobs, sunflower, squash, bean, and tobacco; tobacco occurring in four features (ASI 2004). Analysis (ASI 2004) of an exterior activity area suggests extensive tobacco use was practiced. One feature contained a complete pipe, another one contained charred plant seeds including tobacco, and an additional one contained charcoal, ash, and a pipe fragment. Based on the amount of exterior activity areas it is supposed that the site was occupied year round.

5.3 Lower Grand River Valley

The Grand River Valley is a very archaeologically rich and dense region in southern Ontario and is dominated by Princess Point (Transitional Woodland) sites. Almost all of the Princess Point sites that were first documented were clustered in three areas: the Lower Grand River Valley, Cootes Paradise in Burlington Bay, and Long Point on the north shore of Lake Erie (Smith and Crawford 2002:101). Princess Point components have now been documented elsewhere in southwestern Ontario (e.g., Niagara Peninsula and Credit River) and contemporaneous sites in other parts of southern Ontario are known by other cultural referents (Warrick 2012). What they seem to share are similar subsistence-settlement patterns of maize horticulture and floodplain locations. The sites from the Grand River area used in this thesis include the Porteous and the Glass sites (Figure 4).

Figure 4: Lower Grand River Valley sites of interest



5.3.1 Porteous (AgHb-1) and Glass (AgHb-5)

The Porteous site is a small half-acre (0.2 ha) base settlement that is radiocarbon dated to A.D. 700. It is east of Brantford and west of the Grand River. The site was first described by Waugh (1903:77) and was excavated by McMaster University (1969) as part of a salvage excavation due to the creation of a municipal dump. The site consists of at least five short longhouses, one circular, and the remainder square, with only 1 or 2 hearths inside, and are surrounded by a two-row palisade (Stothers 1977). Longhouses with internal features were

superimposed on one another in a ploughed context. The material culture consists of charred corn kernels found within a longhouse feature, lithics, primarily triangular projectile points made of Onondaga chert, and 29 pipe fragments (Noble and Kenyon 1972; Stothers 1977). The Glass site is situated in a clay-silt floodplain near Brantford on the western bank of the Grand River. The site was possibly a seasonal campsite, the result of a small band of hunter-gatherers that used the area as part of their seasonal round to exploit resources (Stothers 1974). Stothers (1974) describes the site as a Princess Point site with maize, pottery and five pipe fragments.

5.4 Summary

In order to understand the questions central to this thesis, an examination of sites before and after the development of sedentism is necessary, hence the selection of sites detailed above. Overall, all of the sites, except for portions of the Antrex and King's Forest Park sites, are within a disturbed context, or have experienced recent post-depositional disturbance. As well, tobacco is present on almost all sites, either in middens, features, or external activity areas. The aforementioned archaeological site descriptions are intended to provide site specific details and context for the smoking pipe analysis. The following table provides a summary of the sites used in this thesis with regards to their date, and number of pipes found during archaeological assessments (Table 2). The sites are divided into pre and post-sedentism to give the reader a visual appreciation of the increase of pipe frequency post-sedentism.

Table 2: Summary of archaeological sites

Pre-sedentary sites				
Site name	**Date of occupation**	**Location**	**Type**	**Pipes**
Scott O'Brien	Archaic, EW, MW (Multi-period)	Credit River	Campsite	0
HH	MW	Red Hill Creek	Campsite	0
Recliner	MW	Red Hill Creek	Base settlement	3
Porteous	MW	Grand River	Small village	29
Glass	MW and ELW	Grand River	Campsite	5
Post-sedentary sites				
Antrex	Mid-13th century	Credit River	Village	351
King's Forest Park	13th century	Red Hill Creek	Village	87
Serena	A.D. 1350	Red Hill Creek	Village	30
Chappell Terrace	Main occupation dates to A.D. 1400 also Archaic, MW, MLW (Multi-period)	Credit River	Hamlet	21
River	Main occupation dates to A.D. 1400-1450 (Multi-period)	Credit River	Village	155
Wallace	15th century	Credit River	Village	128
Emmerson Springs	16th century	Credit River	Village	86

CHAPTER 6: METHODOLOGY

6.0 Methodology

It is the goal of archaeology to discover information on past populations from the material traces left behind. The ethno-historic record tells us that smoking was a significant act for the people of southern Ontario. It provided a venue for intra and inter-group conflict resolution, the creation and maintenance of group camaraderie, and ancestor and spirit worship. The use of ethnographic analogy is a common tool to infer past behavior from material traces. However, the uncritical use of ethnographic accounts, especially the direct historic approach (directly applying ethnographic literature to ancient populations), in the interpretation of archaeological remains can be problematic, especially if ethnographic data is applied to archaeological remains that are of a different date and centuries older. The direct historic approach assumes that socio-cultural practices are relatively unchanging, an unfounded assumption. In order to avoid the inherent problems of ethnographic analogy in archaeology, archaeological data must be permitted to speak for themselves. The purpose of this smoking pipe analysis is to identify socio-cultural change in southern Ontario. The aim of this chapter is to provide detail on the past and current methods for the analysis of smoking pipes. The evolution of pipe typologies in southern Ontario is discussed alongside how Ontario archaeologists have quantified smoking pipes. Following this is an explanation of the pipe analysis used in this thesis and how specific attributes can explain pipe significance.

6.1 Smoking pipe analysis in southern Ontario: Typologies

Smoking pipes, being considered by most archaeologists to be 'non-utilitarian' material culture that was imbued with rich underlying social meaning, have been the interest of much research and analysis. Unlike pottery, a relatively small pipe fragment may represent a considerable percentage of the complete specimen. This makes the recognition of general morphological features much simpler and has led to the establishment of typologies based on form rather than on decorative technique or motif alone (von Gernet 1982:5). The earliest documentation of smoking pipes in field reports tended to simply consist of noting presence or absence. Since then, research conducted in southern Ontario has largely been concerned with the location of smoking pipes into a coherent typological framework. However, more than one typology has come to be developed over the past 20 years; where these typologies differ is in the nomenclature used for morphological descriptions, as well as the pipe characteristics the archaeologist has chosen to emphasize. Furthermore, in some instances the names of pipe styles are not always descriptive of their overall shape and design and can be confusing. It appears that early attempts at categorizing smoking pipes lacked the certainty of a standardized system, and as such, scholars often turned towards implementing their own terms instead of universal ones. Moreover, typological studies have a habit of overlooking some differences, or lumping, which can lead to important attributes being ignored. Lastly, many of these early studies focused solely on describing effigy and post-contact smoking pipes (Matthews 1976, 1978, 1979, 1980, 1981; Noble 1979), with earlier pre-contact pipes tending to receive much less attention.

One of the earliest pipe typologies was produced by Wintemburg (1936); it consisted of the identification and classification of five pipe bowl types categorized according to shared

morphological features (e.g., cylindrical, trumpet, ovoid, nearly tubular and conoid). This was eventually expanded to seven types; the addition of the "barrel" and "square" types, and the substitution of "vasiform" in place of the "nearly tubular" category (Wintemberg 1939). Wintemberg's typology, although based on small sample sizes, essentially created a foundation for which the discussion of smoking pipes could be based. Later, pipe typologies were modeled after MacNeish's (1952) ceramic seriation of Iroquois pottery types. The fundamentals of ceramic seriation rely on the comparison of decorative style in order to place material culture into a cultural historic framework that is divided further into cultural periods (e.g., Glen Meyer and Uren). One such pipe typology, and subsequently the most widely cited, is credited to Norman Emerson (1954, 1966) for his analysis of non-effigy (1954) and effigy pipes (1966). Although emphasis was placed on pipes dating to later periods, Emerson's typology still remains a constructive method of pipe identification. Smoking pipes were classified into types that were determined by the combination of morphological and decorative elements and placed into a chronological sequence (Emerson 1954). It should be noted, however, that pipes as chronological markers should be approached cautiously as there is regional variability of some styles 'dropping out of fashion' for a longer amount of time than others (Emerson 1954:64).

Eventually, southern Ontario shifted analytical interest from exclusively *classifying* pipe types to the *analysis* of pipe types using attributes (Latta 1976:318). As previously discussed, smoking pipe studies had largely focused on pipe typology that was quantified by specific nomenclature pertaining to overall bowl morphology. This does not imply that there are no additional ways in which to assess smoking pipe morphology. Pipes have been analyzed using complex alpha-numeric code (Smith 1992), whereby the alpha value denoted the morphology of

the pipe (e.g., conical, cylindrical) and the numerical value indicated the decorative style (non decorated plain-1, ringed-2, and decorated-3). Pipes have also been spatially analyzed to determine artifact deposition trends (von Gernet 1982), to investigate stylistic anomalies to determine trade, exogamy, etc, between sites, and to explain degrees of social interaction (Smith 1992). David Smith (1992) examined the variation between smoking pipes from two Late Woodland sites found in the same region. Each site had its own distinct style of smoking pipes. Therefore, the main research question was to determine if the sites were two distinct communities. The second line of inquiry was to then determine if the distinct pipe styles symbolically represented competition over resources. What drew Smith (1992) to this idea was the fact that the sites' pottery was similar but the pipes were not; what was popular at one site was the reverse at the other. In this sense smoking pipes are thought of as emblematic of the social sphere. If these two communities were competing for resources than there may have been trade/interaction involved, possibly in a ceremonial setting. Smith (1992:18) suggests that these ceremonies would have been the domain of the men, and if men made the pipes like the ethnographic record states that this would likely have involved the use of pipes and tobacco (Smith 1992:18). More recently, Braun (2012), by means of petrography, examined in detail smoking pipe mineralogy and temper size to clarify the manufacture's decision-making process and possible social contexts underlying these considerations. What this revealed was a seemingly marked preference for specific temper used in pipe manufacture. What these studies demonstrate is the wide variety of applications and questions that smoking pipe analysis can address

6.2 Methodology of analysis

The smoking pipe analysis implemented in this study is characterized by a set of standard measures and visual assessments. In order to gain the most information from smoking pipes, this author implemented an attribute analysis system, the basis of which borrowed recognized descriptive terms used in traditional typologies. By "attribute" I refer to Wright's (1968:67) definition, whereby an attribute is the "smallest definable feature and therefore should be the most accurate unit of analysis and indicator of time and space relationships." The strength of this type of analysis lies in its consistency, continuity and accuracy (Wright 1968:67). Attribute analysis allows for a valuable examination of trends through time and space, whereas a typology, which consists of a set of required attributes, would not properly reflect the temporal and spatial significance of specific attributes (Wright 1968:67). The one hindrance to this type of study is that too easily can the researcher be lost in a sea of descriptive terms. It is imperative to be selective and to justify each attribute being analyzed in order to answer the specific research question posed. In some instances it is not possible to view the material culture first hand, relying instead on site reports to gain an appreciation of the pipe assemblage. Much of the archaeological work in Ontario is conducted by CRM companies, and it is their reports that form the primary evidential basis of this thesis.

The purpose of this analysis is to examine pipe numbers, decoration and form, in order to understand socio-cultural change. I hypothesis that pre-sedentary pipes were uncommon and were used more for special community events. For post-sedentary pipes, I believe that they were more abundant, indicating a more personal practice, as well as being employed in group situations to ease tensions and bring people together in an act of group familiarity formation. If

pipes in a pre-sedentary context are low in number and have low variability in form and decoration then this could be indicative of a smoking practice that centers itself on special occasion occurrences. If my hypotheses are correct, then pipes in post-sedentary contexts will reflect a shift towards a more habitual practice, as well as being found in specific contexts, such as on the living floor of sweat lodges, and in burials. Further variation in decoration and morphology in a post-sedentary context can allude to a wide variety of pipe manufactures instead of a few craft specialists, or at least a wider acceptance of many pipe styles.

6.3 Attributes used in this study

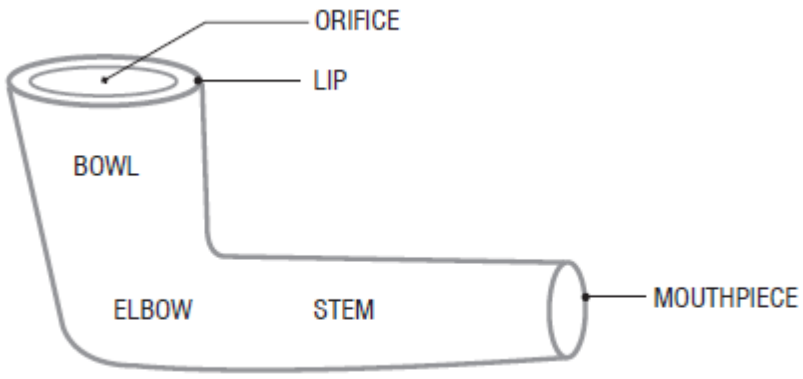
Each pipe fragment had an original catalogue number given at the time of the initial report. I decided to implement an additional project-specific identification number to each fragment to facilitate data manipulation. An informal photograph of each piece was also taken for reference, while all attribute information was entered into an Excel spreadsheet. Given that the majority of the pipes under consideration were fragmentary it was imperative to have sherd requirements, by this I mean a minimum length and width per fragment. Thus, I decided to implement a 1 cm x 2 cm sherd requirement to consider a fragment analyzable. This may be regarded as rather undersized, but considering that some pipes were themselves rather small, I felt that much information would be lost by not including these smaller fragments, especially if they were diagnostic in nature. The following is an overview of the attributes used in this study, and how they can be used to answer the questions posed in this thesis. Attributes that denote style and construction preferences are significant for they are visual representations of a cognitive choice, either as part of a traditional style template, possible group affiliation, or

individual preference. For visual representations of smoking pipe morphology and measurements please see Appendix A.

State

The first step in the analysis was to describe the pipe's state of completeness. Each piece was thus recorded as to one of the 18 following states: complete (where whole), almost complete (where 80% of the pipe is intact), complete bowl, bowl fragment, bowl and elbow fragment, elbow fragment, complete stem, stem fragment, stem and elbow fragment, stem with mouthpiece, juvenile complete, juvenile bowl fragment, juvenile bowl and elbow fragment, juvenile stem fragment, juvenile stem and elbow fragment, juvenile stem with mouthpiece, effigy, and miscellaneous fragment. Figure 5 defines the parts of a pipe. Recording the state of the pipe is important for it can aid in determining an MNI of pipes per site. When possible an MNI of each site was recorded to get a sense of the number of pipes per assemblage to see if there is an increase over time.

Figure 5: Anatomy of a southern Ontario smoking pipe



Sherd extent

As stated above, all pipe fragments available were measured to comply with the sherd requirements set out by the author. The sherd width and length was recorded in order to gain an appreciation of overall size, as well as for ease of future re-evaluation. All measurements were taken at the area of maximum sherd width and length.

Pipe bowl attributes

Pipe bowl attributes consisted of morphology, exterior and interior orientation, height, width, and orifice (Figure 6). For the purposes of the bowl morphology, I implemented terminology similar to Emerson (1954), with minor modifications of my own (Figure 7), for it is the most widely quoted nomenclature, allowing for ease of comparison. The exterior and interior bowl orientation was recorded if the fragment was intact in order to provide a detailed morphological depiction of the bowl curvature, or lack thereof. Bowl curvature points towards construction preference, and can aid in determining overall bowl morphology for highly

fragmented pieces. The interior and exterior bowl orientation consisted of the following categories: extra concave, concave, straight, convex, and extra convex. Height and width were only taken if the bowl was complete enough to provide an accurate measurement. Width was measured at the widest portion of the bowl, and height was measured from the top of the lip to where the bowl connects to the stem. Height and width measurements provide an appreciation of overall size of the pipe. Getting a sense of bowl size can show if pipes increased or diminished in size over time as populations became more sedentary. Maybe larger pipes were used pre-sedentary for group communal activities, and smaller pipes were used post-sedentary as the practice became more individualized and commonplace. As well, the larger the bowl, the more plant material could be placed inside. Lastly, the shape of the bowl orifice was only recorded for complete or 90% complete bowls. The categories used for this were round or oval. In addition, orifice diameter was measured if the orifice was complete. Variations in orifice diameter reflect a conscious manufacturing decision and can point towards manufacturing preference within a population. See Figure 7 for a visual representation of pipe measurements.

Pipe lip attributes

Lip refers to the uppermost portion of the bowl at the orifice. Pipe lip attributes consisted of lip thickness and lip shape. Lip thickness was measured at the thickest portion of the lip, and was recorded as a range. This measurement is useful for understanding overall pipe size (the significance of which is explained above), especially if the pipe is not whole and the bowl is fragmented. Larger pipes require thicker bowl walls, and therefore a thicker lip to support the structure, whereas a thinner lip would point toward a smaller pipe. Lip shape consisted of a visual assessment of the overall shape. The categories used for this are as follows: flat, slightly

rounded, rounded, or sloping in. If lip shape within a site does not vary than this can indicate that maybe a traditional manufacturing style was followed, or that construction was in the hands of the few. If the lip shape is variable than it may be the result of many manufactures within a community, or that there is no traditional style template being followed.

Pipe stem attributes

The attributes recorded for the stem consisted of stem length, stem shape, mouthpiece height and width, bore-hole diameter, stem cross-section, and stem tapering. Stem length was recorded for complete stems with mouthpieces. There were some exceptions to this, such as stems with partial mouthpieces (the remainder was fragmented), and stems with full mouthpieces but partially fragmented ends where the stem meets the elbow. Stem length is significant for it indicates construction preference for either a longer or a short pipe, and can reflect the overall size of the pipe. Stem shape was assessed visually and consisted of tapered, flared, cigar and straight (Figure 8). Similarly to bowl morphology the stem shape of the pipe can be used to indicate style preference; the more variation the more open to artistic expression. If the stem mouthpiece was intact the stem height and width at the mouthpiece was recorded. This measurement was taken at the areas of maximum height and width. In addition the mouthpiece thickness was measured at the area of maximum thickness. Mouth-piece measurements can give an indication of overall pipe size. The diameter of the pipe bore-hole was measured if the pipe was complete or close to completion (i.e., ¾ present). This measurement indicates construction preference for either large or small stem holes, often the result of the amount of organics placed in the pipe prior to firing. A larger bore-hole allows for more smoke to pass through the pipe, while a smaller one restricts the flow. The cross-section of the stem was assessed visually and

consisted of the following categories: round, ovoid, tri-corner, D-shaped, and rectangular (Figure 9). The cross-section of the pipe stem, along with other visual assessments, points towards style preference and can be evidence for a traditional style used by a population. Tapering of pipe stems was not measured and was instead recorded as present or absent, and also tells of style and manufacturing preference.

Pipe elbow attributes

The elbow angle was recorded on complete pipes and pipe fragments that retained partial stem, elbow, and bowl integrity. The elbow angle was visually recorded as either sharp (90°C), or sloped (45°C). Elbow angle points towards construction practice and preference.

Maximum pipe height and length

To get an idea of overall pipe size the maximum pipe height and length was measured on whole and partially whole pipes. The maximum pipe height was measured from the lip of the bowl to the base of the pipe where the bowl meets the stem at the elbow. The maximum pipe length was measured from the beginning of the stem mouth-piece to the base of the smoking pipe, the purpose of which was to gain an appreciation for overall pipe length. As stated above, overall pipe size can show increase or decreases in preferred pipe size over time. Maybe earlier pipes were larger and associated with group ritual practices, or if they were smaller maybe that points towards an early construction tradition as populations gradually adopted this innovative material culture.

Manufacture attributes

The attributes that were recorded as present or absent included collars, addition seams, burnishing, and cord-fired stems. Collars point towards manufacturing preferences, while

addition seams, if present, indicates that the pipe and bowl were constructed separately after which they were joined at the elbow. If there is no presence of an addition seam, this means that the pipe was manufactured from a single piece of clay. Cord-fired refers to the decision of using cord instead of other organics, such as reeds and grasses, to create the bore hole when the stem is fired. This attribute can only be recorded for stem fragments that have the internal bore-hole visible, and indicates manufacturing preference. Burnishing, polishing of the exterior surface of an artifact, is done to make clay less porous, or for aesthetic purposes of a smooth and shiny surface. If smoking pipes were constructed by individuals then there would be variation in surface treatment. Some individuals may have highly prized their pipes and created a burnished exterior for pipe longevity.

Use-wear

Use-wear was visually assessed and recorded for the interior and exterior of the smoking pipe. Use-wear categories included: sooting (interior and/or exterior), and carbon adhesions. If use-wear is present, it indicates that the pipe was used for smoking. If there is a large amount of external and internal sooting then the pipe was used frequently, whereas a small amount of sooting would indicate less frequent use. If there is no evidence of use-wear this may indicate that the pipe was not properly fired and therefore not fit for use, or possibly that it was used for decorative purposes such as a token or a charm. If a pipe is improperly fired and not fit for use, this can be evidence of many manufactures learning and practicing pipe-making skills as opposed to specialist craftsmen who have mastered the skill.

Decoration

Instead of coding decorative motifs, a decorative category was assigned instead. These consisted of the following categories: plain (devoid of decoration), simple (e.g. one or more horizontal or vertical lines), simple complex (one or more horizontal or vertical lines with a single row, or series of rows, of punctates), simple other (a combination of simple patterns), obliques (right or left slanting obliques either on their own or with punctates), complex obliques (right, left, or interchanging obliques along with horizontal lines, and/or punctates), and complex other (a combination of variable decoration patterns). Figure 10 provides a visual representation of these different decorative categories. Decoration is an essential unit for analysis, for not only does it point towards possible temporal style preferences, but also group and individual preferences. If early pipes are decoratively less variable and 'simple' in their decoration, this may be indicative of the initial adoption of smoking pipes and their manufacture being limited to a select few. If there is greater decorative variability in later pipes as populations ease into a sedentary lifestyle, this can reflect the shift to a more personal practice as individuals practice with decorative styles. As well, later pipes that appear to have a site-specific decorative motif theme can be evidence for group identification, as more people in one place attempt to identify with one another.

6.4 Summary

The purpose of this chapter is to familiarize the reader with the past and current methodological approaches to smoking pipe analysis in southern Ontario, in order to provide context for this study. As well, the methodology specific to this thesis, and the attributes used in the analysis were presented and detailed. Careful examination of each attribute per site will allow

for regional and site trends to be observed pre and post-sedentism. The analysis of these attributes aids in answering the hypotheses posed in this thesis, mainly that smoking pipes can be used to reflect socio-cultural changes in populations as they gradually shift to a sedentary lifestyle. The analysis of the above mentioned attributes is compared site by site in order to understand site pipe preferences, and smoking pipe changes through time. The majority of this is discussed in the following chapters.

CHAPTER 7: ANALYSIS AND DISCUSSION

7.0 Analysis and discussion

Increased sedentism, coupled with a growing population, is suggested to lead to social hierarchies, ritual ideology and the regulation of complex interpersonal, intragroup/intergroup relationships. Seeing as many scholars go for one side of 'the fence' than another, if one were to take a Darwinist approach, one would state that cultural systems change as a result of natural selection, for they "are pushed and pulled in different directions, and that the way in which change occurs is a function of how to solve problems" (Binford 1983:221). This assumes that systems stay 'stable', with any change being the result of external factors. So the question would be what is the increase in smoking pipes solving? In this context the increase of smoking pipes may be viewed as the movement to a more personal smoking experience, and to alleviate stress brought on by population crowding, and a substantial shift in household organization. Statements, such as the one above will be further explored in this chapter as the results of the smoking pipe analysis are discussed in detail. Of the assemblages detailed in Chapter 5, four were studied first-hand by the author; the Wallace, Antrex, Chappell Terrace, and River sites. The analysis of the material from the remaining sites involved drawing on secondary sources (publications and/or grey literature). For detailed descriptions of the pipe analysis results see Appendix B.

7.1 Smoking pipe analysis: Results from pre-sedentary sites

The Scott O'Brien and HH sites did not contain any smoking pipes in their material assemblages, thus there was no analysis to complete. While it might be considered redundant to

note this fact, I view the absence of pipes at these sites to be significant. It is also interesting to note that many other forms of material culture were found at the sites (i.e., ceramics, lithics, floral and faunal remains), as well as evidence for extended periods of occupation (i.e., hearths, middens, post moulds), while pipes were noticeably absent. The absence of smoking pipes at these campsites strongly suggests that smoking was an exclusive practice within communities of this period, with pipes conceivably in the possession of the few (and/or accessible to the few). By this I mean 'special' smoking pipe keepers, such as ritual specialists, as for example Anishinaabeg pipe keepers described elsewhere. Alternatively, seeing that the HH and Scott O'Brien sites are both special purpose campsites, it is likely that smoking pipes stayed in the hands of the few in the main base camps and for this reason did not make it out to the satellite camp sites.

The remaining pre-sedentary sites did produce pipes, albeit only in small quantities. The Recliner site pipe assemblage consists of three bowl fragments, and are most probably from the same specimen, giving the Recliner site a likely MNI of one (ASI 2006). The bowl fragments are small, finely manufactured, plain with round lips, and cylindrical in shape (ASI 2006:29). Small, plain cylindrical pipes appear to be common in Middle Woodland assemblages of southern Ontario, and the Recliner site typifies this nicely. The Porteous pipe assemblage consists of 29 ceramic pipe fragments. Similar to the Recliner site, the pipe bowls are cylindrical in morphology, while pipe stems are D- shaped (Stothers 1977:256). The bowl and stem fragments are short, giving the overall impression that complete pipes would be small. While the Recliner pipe fragments were plain, the Porteous assemblage contains some fragments with decoration. The decoration, when it occurs, is restricted to the bowl and is simple motifs (Figure 11). The

Glass site consisted of five pipe fragments, three of which are bowls, one stem, and one nearly complete pipe. The nearly complete pipe is plain, except for two rudimentary lines on the bowl, and the stem is tapered and rectangular. The three bowls are barrel shaped, and have complex other decorative motifs, two resembling a zig-zag pattern, while the other has two parallel horizontal bands, one of a criss-cross design and the other a `ladder' design (Stothers 1974). Therefore the decoration for the Glass site appears to be varied (Figure 12). The single stem fragment is plain with a round cross-section (Stothers 1974). Similar to the Porteous site, both bowls and stems are short, so the overall pipe would have been small.

7.1.1 Summary of pre-sedentary sites

The pre-sedentary sites used in the analysis were the Scott O'Brien, HH, Recliner, Porteous, and Glass sites. If smoking during the Middle Woodland was a ritual community event then one would expect smoking pips to be in the hands of the few, and low in circulation. Therefore, the fact that the Scott O'Brien and HH sites do not contain any smoking pipes can be used as evidence to support this theory. It is possible that smoking pipes related to these communities were in the possession of select individuals in the main base camp. As well, the Recliner site contained only a few pipe fragments in the material assemblage, all of which are most likely from the same pipe. Seeing as the Recliner site settlement pattern suggests it was a main seasonal base camp, and not a camp site for resource procurement, this could explain why pipe fragments were found in this context and not for the HH or Scott O'Brien sites. Furthermore, the larger number of pipes at the Porteous site can be best explained as its status of a small seasonal village. If, as previously suggested, smoking pipes began in the hands of the

few, than one would expect to see more pipes in a small village setting rather than a special purpose campsite.

Concerning pre-sedentary pipe morphology and style, it has been suggested (Emerson 1954) that small, plain, cylindrical pipes are characteristic of the Middle Woodland period. Indeed, small cylindrical pipes are present on two out of three pre-sedentary sites that contain smoking pipes in their material assemblages. The small size and lack of decoration for pre-sedentary pipes could be explained as experimenting with a relatively new type of material culture, which mirrors the adoption of ceramics (Vinette 1), which began as small, plain artifacts. Nonetheless, smoking pipes from the Lower Grand River Valley sites (i.e., Porteous and Glass) do exhibit decoration. There could be a few reasons for this. One option is that the original dates for the sites may need to be revisited. The second option is that the Porteous and Glass sites represent a distinct regional variation, likely Princess Point, or within the Princess Point interaction network. The most likely scenario is the latter, for the variation of the pipe assemblages retains characteristics of Middle Woodland material culture trends. It was quite common during this period that regional expression of material culture style occurred. Either way, the occurrence of ceramic smoking pipes on Princess Point sites is low, especially pre-A.D. 900 (Smith and Crawford 2002:111). Commonly pipes pre-sedentism have an overall small size with short bowls and stems, bowls are cylindrical and sometimes barrel, stems are round or D-shaped, elbows come in two forms; right and obtuse angled, and the majority or either plain or with simple decoration. In general pre-sedentary pipes are uncommon. They are small and plain, all of which is suggestive of the adoption of a smoking complex. Moreover, these pre-sedentary sites are lacking juvenile and/or effigy pipes. If the assumption that children constructed juvenile

pipes, than their nonexistence on sites could be explained as the children remaining in the larger base camps, or that the practice of pipe construction had yet to trickle down to the population's youngest members. Furthermore, the lack of effigy pipes could also be explained as them not being as prevalent, and being in the hands of the few in the main camp. An additional explanation is that effigy pipes only became more common as populations began to settle down and coalesce together, requiring a material culture that would strengthen the bonds of related kinsmen, while providing a group identity within a larger population.

7.2 Smoking pipes analysis: Results from sedentary sites

The sedentary sites used in the analysis were the Antrex, King's Forest Park, Serena, Chappell Terrace, River, Wallace, and Emmerson Springs sites.

The Antrex site

The Antrex pipe assemblage consists of 351 pipe fragments, with an MNI of 202. The Antrex assemblage witnesses a wide range of bowl types (Figure 13), of which the conical type was the most popular overall, greatly outnumbering the remaining bowl types. Generally, pipe bowls have a round orifice and flat lips, while stems are mainly round and ovoid. The majority of pipe bowls are plain, followed by simple motif decoration, as well as a few instances of decoration on bowl lips (Figure 14). Seeing as the Antrex site is an Early Late Woodland site it is no surprise that it shares continuity in decorative motifs with the preceding Middle Woodland pre-sedentary sites. What makes Antrex stand out from the other sites is the number and style of effigy pipes; there are four human effigies, one full pipe and three clay appliqué human faces. They are well made and would have faced the smoker. The complete human effigy pipe (Figure 27) is considered to possibly resemble a pregnant woman since the hands rest on the torso, as

well it seems the figure is carrying a basket on their back (ASI 2010:90). The three human face effigy fragments (Figure 28) appear to have broken off and are highly stylized, with punctated eyes and wide mouths. The wide, open mouths of the human face effigies are reminiscent of other 'blowing' effigy pipes found in later periods, or it could just be a matter of the manufacturer's preference for stylized features. If the human face effigies were preliminary to later period blowing face effigies than this is significant for it provides a glimpse into the transition to more ritualized pipe practices. As well, blowing effigies may correspond to curing practices performed by shamans, and may possibly be tied to the origins of 'false face' masks found in the historic period (Robertson and Williamson 2002:101).

The King's Forest Park site

The smoking pipe assemblage for the King's Forest Park site consists of 87 pipe fragments, seven from an excavation by Fox (1967), and 80 from a CRM excavation, with an MNI of 34 (ASI 2007). The woodlot midden excavation by Fox (1967) revealed seven clay pipe fragments, six stems and one effigy bowl fragment. The six stems varied in cross-section; one ovoid, one rectangular, three D-shaped, and one triangular. The original 1967 report describes the effigy fragment as being in the form of a bird that is oriented upside down on the pipe bowl so the head and neck protrude downwards, and is decorated with punctate designs (Figure 29) (Fox 1967:23). The medium for smoking pipes includes both clay and stone. The one stone pipe fragment is small, plain, and manufactured out of black steatite. The King's Forest Park assemblage consists of five bowl types (Figure 15), of which the barrel type was the most popular overall. Decoration occurs on pipe bowls, with a few instances of bowl lips, as well as stems, and is dominated by simple motifs (Figure 16). Pipe stems taper towards the mouthpiece

and tend to be D-shaped in cross-section. Many of the fragments have smooth exteriors, which could indicate extra care and attention during the manufacturing process to ensure a smooth finish was achieved. As well, traces of red ochre are present on one of the pipe bowl fragments, as well as one stem fragment. Red ochre in the Middle Woodland, as well as earlier periods, was used in ritual/community observations such as burials and caches, therefore it is possible that its use on pipes could hold a similar meaning. Furthermore, there are two juvenile pipe bowl fragments, which could indicate that children were involved in learning the process of pipe manufacture, or that pipes were also being made for purposes other than smoking (e.g., charms/tokens). The material assemblage contains effigy pipe fragments, a possible zoomorphic fish effigy, as well as an anthropomorphic effigy of a small human head (Figure 30). The human head effigy appears crudely made of sandstone, and either broke off, or was an appliqué similar to those from the Antrex site. There is, however, quite the divergence in craftsmanship between the human effigy from the King's Forest Park assemblage and those from the Antrex site. It is possible that there existed a variation in style preference between the two sites, or the disparity could be explained by differences in levels of craftsmanship and manufacture.

The Serena site

Mending of the Serena site pipe fragments revealed a total number of 30 pipes; 29 clay and one limestone pipe. They are all fragmented, except for one complete pipe. Further mending of pipe bowls conducted by ASI (2004) gives an MNI of six pipes. All pipe bowl lips are flat, and barrel appears to be the preferred bowl style (Figure 17), although the remaining bowl fragments are too fragmentary to discern bowl morphology. Decoration only occurs on a select number of fragments, and is highly variable (Figure 18). It appears that plain and decorated

barrel bowls of various designs are common at the Serena site (Figure 31). Stems are mainly tapered towards the mouthpiece with variable cross-sections. There is one decorated stem fragment; it has small ring-like punctates encircling the mouthpiece and two sides of the stem. As well, one stem fragment has red (paint or wash) on its exterior, which, like the King's Forest Park site, could signify ritual use of the pipe, or just aesthetic preference for a red exterior. There is one intact pipe, it is well made, plain, and was found in a feature by itself (ASI 2004:36). As for the deliberate burial of the pipe on its own there are a few scenarios. It is possible that the original pipe owner passed away and that the pipe was buried in a symbolic act. It is also possible that the pipe was buried as an act of imbuing the landscape with the presence of the people. Or the original motive for the deliberate burial of the pipe was either for a straightforward reason (e.g., got a new pipe), or one that is too complex for us to comprehend without an explanation. Regardless, the fact that an intact pipe was found in a feature by itself is something to take note of. In sum, the smoking pipe assemblage for the Serena site exhibits characteristics of both the Early Late Woodland and the Middle Late Woodland periods.

The Chappell Terrace site

Only a few pipes from the Chappell Terrace assemblage were available for visual assessment through the Peel Museum. There are 21 pipe fragments, with an MNI of 9. The bowls are variable (Figure 19), with trumpet being the most popular, while bowl lips are mainly flat and range in thickness. The fact that the most abundant pipe style at the Chappell Terrace site is trumpet comes as no surprise, especially considering that trumpet pipes are believed to dominate Middle Late Woodland assemblages (Kapches 1981:208); the same holds true for coronet and effigy pipe styles. Decoration is only present on pipe bowls, specifically conical and coronet pipe

bowls, and is simple in design (Figure 20). As for pipe stems, they all taper towards the mouthpiece. Two mouth-piece fragments stand out by being ground flat, either an act of recycling the pipe, or for aesthetic purposes. Most likely the former, for one of the mouth pieces appears to have been deliberately broken as evidenced by careful scoring at the lateral margin in an attempt at re-using and recycling the pipe for further use (ASI 2002). The pipe assemblage also has a single juvenile bowl fragment that is small, plain, and may have been trumpet in shape. Furthermore, the assemblage contains two effigies. One is reported (ASI 2002) to be anthropomorphic, although after examination I am unsure of this classification as nothing stands out as being anthropomorphic in nature; the appendix of the original report also hesitates in classifying it a human effigy. The second effigy is a supposed turtle shell carapace decorated with punctates. Please see Figure 32 for visual representations of both effigies.

The River site

Only part of the River pipe assemblage was available for analysis from the Peel Art Gallery Museum and Archives (PAMA). The remainder of specific pipe information comes from the detailed site report. The pipe assemblage is reported to consist of 230 fragments. A detailed examination of the report appendices places the total number of pipe fragments at 155, with a MNI of 34. It is possible that the remaining 75 were from previous excavations, but their whereabouts and status is unknown, or more likely that the original 230 fragments were mended which would explain the smaller number. The bowls are variable (Figure 21), with trumpet being the most popular. The original report considered trumpet and outflaring to be separate bowl types. I consider outflaring and trumpet to be one and the same, for they both have outflaring bowls of varying degrees. For examples of River pipe types please see Figure 33. There are two

pipe fragments that when mended together form a complete pipe that is plain, sharp angled and has a burnished exterior (Figure 34). Pipe decoration is variable, and consists of simple, simple complex, and complex other (Figure 22) (Dillon Consulting Ltd. 1997). Similarly to the other pipe assemblages, the majority of the pipe stems taper and have a round-ovoid cross-section. The exceptions to this are a few that are cigar and flared in shape, and one stem that has a rectangular cross-section which is decorated with punctates. There are two pipe stem midsections that stand-out. They appear to both be ground down to a smooth surface; the initial investigation suggests they were possibly used as a tool or a bead (Dillon Consulting Ltd. 1997). As well, there are three juvenile bowl fragments, all of which are poorly made and with coarse temper.

The Wallace site

The Wallace site pipe assemblage consists of 128 pipe fragments, and has an MNI of 40. The assemblage consists of both stone and clay pipes. The bowls are quite variable, with conical numbering the most, followed closely by coronet (Figure 23). The conical and coronet pipe types make up half of the assemblage. Almost all of the bowl lips are flat and smooth and are variable in thickness. Contrary to the other pipe assemblages, the majority of pipe bowls are decorated, either on the bowl or the lip. This illustrates that decoration becomes more common in the later periods, or at the very least was important for the Wallace site population. Decoration is varied, but simple is the most common (Figure 24). Most of the stems have a round-ovoid cross-section and taper towards the mouth-piece, although there are instances of flared or straight stems. The assemblage also includes two effigy pipes, one anthropomorphic, and the other zoomorphic. The human effigy is a stone bowl fragment with a human face, while the zoomorphic effigy is of a snake coiled around the pipe stem (Figure 35). There is also a complete separate stone bowl

(CA#358), which has a receiving end for a stem to be inserted. The bowl is decorated on all sides with a fern-like design, has vertical lines on the lip, and vertical lines surrounding the opening for the stem (Figure 36). It is possible that this is an early example of a calumet pipe, but it is more likely that this is an instance of a stem-less stone bowl. Stem-less stone bowls have been found on other 15th and 16th century sites, whereas calumets have not, and appear much later in time. Also, two pipe bowls are interesting, one of clay (CA#388) and the other of stone (CA#354). They appear to be complete bowls but do not have an elbow bend that should lead to a stem, and the interior bowl does not have a stem hole. The most likely case is that these are unfinished stem-less bowls that would have had a wooden stem inserted into the base once completed.

The Emmerson Springs site

The Emmerson Springs pipe assemblage contains 86 fragments and has an MNI of 17. Analysis conducted by the University of Toronto field school used an attribute and typological approach as outlined by Smith (1997) and Emerson (1967), and was conducted by Pradzynski (in Hawkins 2004) who sorted and mended the fragments. The analysis consisted of only a small portion, since many fragments were deemed unanalzyable due to their small size. The analyzable bowls are variable in morphology (Figure 26), but the most popular form is coronet followed by collared (Hawkins 2004). The bowl lip is generally flat and has a variable thickness range (Hawkins 2004). Many of the analyzable pipe bowls are burnished, and those that are not seem to be specifically the coronet types, perhaps reflecting some sort of manufacturing preference. The most common decorative motif is simple and simple complex (Figure 26). The pipe stems are almost all tapered towards the mouthpiece and have a round-ovoid cross-section (Hawkins

2004:79). The pipe assemblage contains a single whole ceramic pipe (Figure 37). It is an undecorated conical pipe with a tapering stem. As well, there is one juvenile bowl fragment in the assemblage, it shows signs of decoration, but further decoration identification proved difficult due to its smaller size. There are two effigy pipes, both are anthropomorphic. The more complete one is of a human head, while the second is thought to resemble a top-knot, (Figure 38) or 'a horn of power', thought to be linked to community shamans (Mathews 1976: 18; 1980:300-302). If this is the case than it adds to the previous assumption that certain smoking pipes were in the position of village ritual specialist.

7.2.1 Summary of post-sedentary sites

Overall, smoking pipes are more abundant in these post-sedentary site contexts and display a wider array of bowl and stem morphology, as well as decorative motifs than witnessed in earlier pipe assemblages. Similar to pre-sedentary sites, there are certain elements of continuity, with the sedentary populations also tending to favour tapered stems with round cross-sections, although there are exceptions to this. The Serena site stem fragments had rather variable cross-sections, and the King's Forest Park site occupants favoured straight/flat stems with D-shaped cross-sections. It is not until later periods that styles such as flared appear, although there are flared stems in the Antrex assemblage, once again confirming that there was a substantial array of variation through time. Also, burnishing becomes more common at later sites. As for decoration the majority of pipe assemblages favour simple decorative motifs, with only a few complex designs at each site, and there is a higher prevalence of decorated fragments than the previous period. The prevalence of the addition of colour, be that in the form of red ochre on pipe bowls and stems at the King's Forest Park and Serena sites, is interesting. It could be a

matter of the emergence of a distinct regional style appearing in the Red Hill Valley area. It is more likely that certain pipes held special meaning, spiritually or personally, to the maker, and that this was conveyed by the application of colour to the exterior. Furthermore, the pipe assemblages for post sedentary sites, at least the ones in this thesis, begin to contain effigy and juvenile pipes, whereas the sites pre-sedentism do not.

Pipe assemblages for Early Late Woodland sites (e.g., King's Forest Park) show consistencies with other Early Late Woodland pipe assemblages, in that bowls are dominated by barrel and trumpet forms, and the majority are plain or decorated with simple motifs, with a single horizontal ring being the most popular. The Serena site shows signs of Early Late Woodland and Middle Late Woodland pipe characteristics, for barrel forms are common, but elbow angles are both sloping and sharp angled. This can be used as further evidence that changes to smoking pipes were not necessarily period specific. The Middle Late Woodland sites, such as Chappell Terrace, share uniformity with other Middle Late Woodland assemblages, in the sense that trumpet forms dominate, with the inclusion of some coronet and effigy pipes (Kapches 1981:208), while Terminal Late Woodland sites (e.g. Emmerson Springs) highly favour coronet pipes (Ramsden 1990: 369). It is interesting that there are no trumpet pipes in the Emmerson Springs assemblage, while Wallace, one of the closest sites, has a high proportion of them. It is possible that the sites are contemporaneous but that the pipe makers made different stylistic choices (Smith 1997), or it could be a matter of a small sample due to limited excavation.

If it is true that in the later periods individuals began to make and use their own pipes, making smoking an individual practice as opposed to a ceremonial communal one, then the

amount of fabrics recorded by Braun (2012) for the Antrex site (n=26) can be used to support this. Analysis of fabrics from the other sites would make this picture even clearer. Moreover, despite its fragmentary nature, the Emmerson Springs pipe assemblage represents a wide range of smoking pipes, reflecting diversity in the knowledge, experience and identity of pipe makers. Overall, it appears that once populations settled that smoking pipe prevalence increased. This is a rather large change from previous engagements with just a select number of pipes.

Since the majority of sites were found in a ploughed context, many of the pipe fragments were scattered around the site and not much can be learned from a spatial analysis. What is known is that the Serena site contained the purposeful burial of a whole pipe, which was found in a feature on its own. The original report (ASI 2004:36) suggests that this may have been a deliberate burial of a still functioning pipe with possible ritual connotations. The majority of the pipe fragments (n=31) from the Serena site were found in one midden, while five other fragments were found in features. Similarly, at the Emmerson Springs site a vasiform pipe was also found within a feature, and six pipe fragments were found lying above it in the plough zone. The feature has been suggested (Pradzynski in Hawkins 2002:69) to be an in-filled sweat lodge. Also at the Emmerson Springs site, a stem fragment was uncovered in a feature alongside a possibly red ochre-stained deer tibia. This was not the only instance of red ochre at the site since there is also possible ochre on an additional pipe fragment in a different context. The remainder of pipe fragments were found in midden or external activity areas, most likely discarded on purpose.

7.3 Discussion

The following discussion is a review of the change of social practices to provide the reader with a richer context within which to locate the changes or stasis seen in smoking culture. Pre-sedentism, the Early Woodland period in Ontario was fairly consistent with the previous Archaic period. Populations still practiced a mobile hunter-gatherer settlement-subsistence strategy, albeit with new innovations such as the production of ceramic vessels. The adoption of a new medium for storage and cooking attests to the emergence of new practices, related to containment and cuisine. From the Middle to Late Woodland we view an increased range of innovative practices, such as smoking, and the transformation of existing practices such as settlement and burial strategies, as well as material culture. Settlements gradually shift from seasonal campsites or hamlets, to base settlements to sedentary villages. Burial complexes in post-sedentary sites undergo a complex transformation, and diversify, indicating new ways of conceptualizing death and dying. This is almost certainly a reflection of an overall alteration in ideology, for the storage of the deceased in an integrative manner, such as ossuaries or group burials, can symbolize the desire for a collective memory (Renfrew 1998, 2001), and is seen at the Antrex, River and Serena sites. Ceramic vessel construction, morphology, and decoration are also transformed. The changes to preferred ceramic vessel decoration placement might reflect social dynamics, such as notions of space and boundaries (Ramsden 1990b:177), as one moves from a highly mobile way of life to one that is more limited. As people become sedentary, their worldview narrows down to accommodate a smaller range of movement, and this may be reflected in their material culture (Helms 1988). Pipe smoking goes from Middle Woodland shamanistic community practices to further include personal empowerment through individual

smoking in the Early Late Woodland (no longer restricted to specialists). Furthermore, material culture associated with shamanism becomes more decorative and obvious, as effigy pipes, both human and animal appear, animal effigies representative of power/guardian animals, and human effigies with attributes of shamans and curers (Mathews 1980; Tooker 1964), such as the human effigy with a top-knot found at the Emmerson Springs site (top-knots are supposed to be a shamanistic characteristic).

My analysis of smoking pipes shows a temporal increase in the number of smoking pipes on sites, which reflects a shift in not only consumption of pipes, but also availability. It can also be argued that the increase in variations of bowl morphology and decorative motifs, which mirrors developments in pottery, through time is further evidence for sociocultural shifts in ideologies. For the Credit River sites there seems to be a progression in pipe preference as bowl morphology begins with conical (Antrex and River) moves to trumpet (Chappell Terrace and Wallace), and then ends with coronet (Emmerson Springs). For the Red Hill Valley, if the interpretation of the Recliner pipes is accurate, it begins with cylindrical and as time progresses this is replaced by barrel (King's Forest Park and Serena). This trend is paralleled by the Grand River Porteous (cylindrical) and Glass (barrel) sites. From pre to post-sedentism times, pipe size is variable, but there is bowl size gradually increases over time. Moreover, as time progresses, decoration becomes more regionally varied, yet intra-site there appears to be preferred decorative motifs.

The most noticeable difference concerning pipes from pre and post-sedentary contexts is the number of pipes per site. Pipe frequencies at sites pre and post-sedentism are somewhat difficult to attain, especially since the majority of sites are disturbed (e.g., deep ploughing,

development/City Works, landscape modifications), or only partially excavated. Regardless, based on the available information pipe frequencies still point towards an increase of pipes over time as populations get larger. Based on hunter-gatherer band size estimates, the Recliner site can be said to consist of approximately 30-50 people. At the Recliner site three pipe fragments believed to belong to the same pipe were found. The finding of one smoking pipe for this site fits with the assumption that mobile hunter-gatherer groups had a smoking culture that was centered on group communal practice, with the community smoking pipe being in possession of the few (e.g., special pipe keeper). At the Antrex site there is a pipe MNI of 202, and the population is estimated to be between 200-400 people. The number of pipes contrasted to the estimated populations makes sense for various reasons; site longhouses were not all occupied at the same time, and members of the population came and went from the community, possibly carrying with them their personal pipe. If smoking in Middle Woodland times were similar to the smoking culture at the Antrex site then you would expect a higher frequency of pipes at the Recliner site; approximately 25-50 pipes. Therefore the pipe frequencies observed do indicate significant per capita differences. Overall, the pre-sedentary sites analyzed for this thesis had either a small or non-existent presence of smoking pipes. Post-sedentary sites show a remarkable contrast to this; smoking pipes are found in abundance.

An explanation for the rarity of pipes at earlier sites is that they were a community possession owned by no one in particular, or by spiritual specialists (e.g., shamans, pipe keepers). It is possible that early pipe use was limited to a few for ritual use, hence their exclusion, or low appearance in archaeological assemblages. This is of importance for, as time progresses, the number of smoking pipes on sites increases, leading one to suspect a more

singular, idiomatic, possession of pipes, implying that pipe smoking became a more daily/ordinary practice, one that could be enjoyed alongside others. Though, I do acknowledge that there is the potential for different practices within all of this, with the use of ceremonial pipes (e.g., effigy pipes) concurrently. So, while there is a general trend for individual pipes, there are still special purpose pipes used for particular purposes. The use of pipes restricted to a few in a public setting that is often found in the Middle Woodland is replaced by a personal act (Irwin 2004:51; Robertson 2005:40; von Gernet 1995:68), one that can be shared alongside others. Evidence of this is seen in village sites where large pipe assemblages (such as the ones in this thesis) point to individualized pipes, which is witnessed in the greater typological variety, range of decorative motifs, and wide number of pipe fabrics. Instead of being limited to a few specialists, smoking pipes become an everyday/quotidian thing, removing the divide between special and mundane. Further evidence for this is seen when one compares the Antrex pipe assemblage to the ceramic vessels. Braun (2012) conducted an analysis to test this theory. It appears that, in this context, there is a difference between pottery and pipe decision-making processes. Fabric analysis, for the Antrex site, indicates pottery was constructed by a core group of potters, while smoking pipes had a larger variety of fabrics present, leading one to believe that more people were involved in the process.

Additionally, the idea that pipes were used as conduits of the spiritual realm is further evidenced through petrographic analysis. Braun (2012) did just this with a temper analysis of the Antrex site. He suggests that there is a link between the smoking pipes, temper choice, and the spiritual world. Tempers from the Antrex site ceramics and pipes were compared. It was found that pots and pipes contained different temper; pots had red temper, while smoking pipes

contained substantially more black temper. Braun (2012:8) suggests temper selection was purposefully selected for a specific overall appearance, that of a reflective dark colour. It is proposed (Braun 2012) that temper colour and mineral have symbolic value, and that pipes are tools to the realm of the spiritual, and access to ancestors. Ethnohistoric literature does suggest that reflective minerals held symbolic value for past populations. The value of minerals has been documented in other contexts. Taçon (2004) emphasized the importance of minerals, such as red ochre and clay, to extant indigenous populations, as well as the symbolic meaning of certain stone quarries (1991) to the Australian Aboriginals. Therefore, individual smoking pipes for personal consumption can be used as evidence for differences in social organization for material culture construction (Braun 2012).

The other major shift that I believe to be of crucial significance to the topics discussed in this thesis is evidenced by the appearance of effigy pipes on sedentary sites. A beginning date for effigy pipes is not so easily established, although one effigy pipe is known to date to the 12th century (Fox 1967:21, 23), and a few can be dated to the 14th century (Wintemberg 1948), but in southwestern Ontario they are uncommon in large quantities until the 15th century (Mathews 1980:297). In general, it is believed that effigy pipes rarely appear in early small village contexts, and are more abundant on later fully settled villages. It is likely that effigy pipes began as a way to promote intra-community organization to lessen the shock, and possible conflict, of initial population increase seen in newly sedentary villages. What is interesting is the amount of human effigies found at Antrex, especially the stylized heads with open mouths. Robertson and Williamson (2002:100-101) suggest that these represent the beginning of blowing effigies, which are found on much later sites (e.g., TLW and contact sites). Smith (1992:18) believes that these

later effigy pipes may be symbolic of social relationships. I believe that effigies point towards the beginning of social relationship 'building', either as early clan adoption, or as the means of including extended family members into the fold. Evidence for this may be seen through the refinement of household and settlement organization, seen in the Late Woodland, for the number of effigy pipes increases and they become more uniform. Blowing effigy pipes that face the smoker must have been an intimate practice, either in an intimate individual or group situation. Perhaps these blowing effigies acted in a similar sense to a smudging ceremony, whereby the person/s is cleansed and healed of negativity. It may have possibly been an intimate practice for an individual or group, or it may also have been the intermediary for joining (e.g., exogamy) people together.

I suggest it was the beginning of sedentism and the resulting community coalescence in the Early Late Woodland that was the catalyst for these dramatic changes. I propose it was a catalyst in the sense that a decision on the part of a community to settle in one location year-round resulted in a change in their conceptualization of the world and their place within it. Sedentism created a new sense of distance as mobility and interaction spheres narrowed to more negotiable spaces. A higher concentration of people can require conflict management as the main living unit shifts from nucleated families to extended families and community level councils. Large settlements may have dealt with conflict management through group bonding, be it through sharing a smoking experience or sweat lodges. Murdock (1967) suggests that most egalitarian societies will have a population size range of less than 50–100 people, and occasionally 100–200. As populations grow there becomes a 'tipping point,' which triggers the need for change. As a community moves over a population threshold social strategies to deal

with changes in daily living conditions become necessary tools for learning how to live together. By population threshold I refer in a sense to carrying capacity but with regards to social organization. As populations grow beyond small scale band societies, of approximately 30-50 individuals, new sense of community need to be established. Based on how many intimate social interactions the human brain can handle, Robin Dunbar (2014:109) determined that small scale societies cannot exceed 150 members. Once a population moves beyond this population threshold the previous commitment to the community needs to be re-evaluated, and new complex organization is necessary to maintain group cohesion (Hill and Dunbar 2003).

Matrilineal organization may have gained popularity as populations became sedentary and began agricultural pursuits. As the popularity of agriculture grew, hunting practices may have declined and men may have looked to a new activity to promote group bonding. It is possible that smoking and sweat lodges may have aided in the transition to a more organized settlement structure that was based on matrilocality and matrilineality. Creese (2013:188) considers that the longhouse was "the media through which new experiences of community identity were negotiated, and concepts of house and lineage articulated". Williamson (2013:55) states that the change from a patrilineal system to a matrilineal one would have been a 'huge conceptual change'. Kapches (1994:90) suggests that sweat lodges could have been a male sanctuary, where men from different lineages, in the same matrilineal household, came together to bond. Supporting this, Divale (1984) argues that sweat lodges were the domain of men, and that this time of transition required a space devoted to male bonding to decrease aggression and promote a new group identity. Williamson (2013:60) offers a further explanation, linking sweat lodges to curing societies, and that they were used for religious and medicinal reasons. I propose

that smoking pipes were another means of adjusting to this transitional period by providing additional means of group bonding, social solidarity, and individual and community experience through their individual use in a group setting, and their special communal practices.

7.4 Summary

When considering a subject such as the one in this thesis, one should not overlook the basics. First and foremost, pipes are made by people, who are driven by behaviours influenced by their society and their environmental and culture milieu. Deviation from the norm affects one's whole worldview, which can be reflected in the form and decoration of the material items produced. Essentially, early settlements may have had to cope with managing the traditions from a hunting and gathering way of life, with new concepts of conflict management and organization as more people, mostly non-immediate family members, were in one place for longer periods of time. Mechanisms for social solidarity and cooperation would be necessary to deal with the stressors and anxiety of a new way of life. It is no coincidence that sedentary populations have an active smoking culture, in conjunction with transformations to household organization, and group burials, all of which aid in easing the transition to a new lifeway and promote group integration (Renfrew 1998, 2001). The act of smoking through pipes can be both an individual experience, as well as one that promotes social solidarity. It is also interesting to note that when sweat lodges, which have been suggested to also promote social solidarity (MacDonald 1988), begin to appear, pipes become more abundant. It is more likely that this is for a reason, rather than a coincidence. This link is supported by smoking pipes being found within sweat lodges themselves. All of the above, combined with ethnographic accounts of southern Ontario populations' smoking practices, make it clear that smoking seemed to contribute to the social

dynamic by promoting macro and micro-group solidarity (Wrong 1939:88). Overall, the sociocultural shift that took place as populations became more sedentary had a direct influence on smoking culture, whereby smoking became a more important social activity than before.

CHAPTER 8: CONCLUSION

8.0 Conclusion

The aim of this thesis is to understand the link between smoking pipes and socio-cultural transformation in the context of pre-, evolving, and pos-sedentary populations in southern Ontario by investigating sites from the Credit River, Red Hill Valley, and Lower Grand River Valley. What was discovered is an interesting shift from specialist use in the Early/Middle Woodland to common use, intermixed with ceremonial use in the Late Woodland. I suggest that the increase in pipe use is linked with the promotion of social solidarity as populations begin to amalgamate together in the Early Late Woodland and Middle Late Woodland. Having more unrelated people together necessitates new integrative processes, such as an active smoking culture. While smoking pipes themselves may have been more individualized, the act of smoking itself is a social experience that can be shared in a group setting, one that promotes social cohesion and bonding. Additionally, effigy pipes appear in larger numbers during, and post, times of coalescence, and may have acted as group/kin-related identifiers in large communities. Also, certain effigy pipes (e.g., blowing) may have been used for specific group ceremonies the purposes of which could be for group integration. Fundamentally, this thesis has attempted to understand the interrelationships between the motivation for specific practices and the structure of the socio-cultural system within which they occur. Examination of these more 'social aspects' is important for sedentism not only changes social life, but also affects human perceptions and ideologies. The information contained in this thesis not only adds to our understanding of change and transformation during the Middle and Late Woodland periods of southern Ontario, but does

so through a unique perspective on how to engage with sociocultural transformation through the lens of material culture.

8.1 Limitations

A frequent limitation encountered during this process was locating the whereabouts of site reports and site collections. As stated previously, some of the information used in this thesis comes from CRM sources. When dealing with a site that has multiple reports on file, occasionally one can run into discrepancies in site occupation dates and assemblage numbers. For example, some of the site reports did not include juvenile pipes in the main text, but did so in the overall count found in the appendices. If one were not thorough, this could be misleading. The assemblages that I did have access to also posed some limitations. In some cases collections were moved or donated and their whereabouts are unknown, possibly being misplaced in a museum's archives. Other collections can be found in the hands of the original excavator or their estate and not made available. In situations such as these, one must not become pessimistic, and continue to track down the assemblage. One of the positive aspects of working with extant collections is that you can provide a new spin on old data.

8.2 Future work

The concepts used in this thesis can be applied to other areas in southern Ontario, such as the Rouge-Duffins, Trent River Valley, and the Sydenham River drainage basins, which would aid in painting a larger regional picture. I am especially interested in how a similar analysis would play out in the Sydenham River area. Crawford and Smith (2002) admit that there is a lack of knowledge of Early Late Woodland populations in this region. As well, other practices pre and post-sedentism, such as body adornment, would provide additional context to how

sociocultural change affected past populations. Lastly, one could investigate who the makers of the smoking pipes were, men or women, otherwise known as gendered manufacturing. This could be done by comparing fabrics of pipes to the pottery at a site, or many sites

8.3 Summary

The Woodland period of Ontario was a time of transition. Settlement systems underwent changes, moving from the seasonal camps of the Early and Middle Woodland to the semi-permanent villages of the Late Woodland period. Innovative material culture, such as ceramics, began to appear on sites, and some material culture, pipes, changed in form and decoration. It has been the goal of this thesis to examine the sociocultural implications of incipient sedentism in the context of southern Ontario during the Middle and Late Woodland periods. More specifically, the sociocultural effects of sedentism appear to be represented in changes in smoking pipes through time. This thesis has provided evidence for socio-cultural transformation in the context of sedentary populations in southern Ontario. An active smoking culture, combined with new household organization, architecture, and burial complex, points to evidence for significant community involvement and participation in the creation and maintenance of new social behaviour. Investigating the social aspects of sedentism can provide insight into the internal dynamics of a population during times of decreased mobility and population growth, as well as shifts in perceptions and ideologies as their worldview transforms to meld with a new way of life.

REFERENCES CITED

Archaeological Services Inc.

2010 Report on the salvage excavation of the Antrex Site (AjGv-38), City of Mississauga, Regional Municipality of Peel, Ontario. Report on file, Ontario Ministry of Culture, Toronto.

2008 Report on the stage 3-4 salvage excavation of the Alexander site (AkGt-53), draft plan of subdivision SC-T20000001 (55T-00601), geographic Township of Scarborough, now in the City of Toronto, Ontario. Report on file, Ontario Ministry of Culture, Toronto.

2007 The stage 4 salvage excavation of the King's Forest Park site (AhGw-1) Cultural Heritage Resource Assessment, Red Hill Creek Expressway (North-South Section) Impact Assessment, City of Hamilton, Ontario. Report on file, Ontario Ministry of Culture, Toronto.

2006a In the shadow of the bridge II: the archaeology of the Peace Bridge site (AfGr-9) 1997-2000 investigations. Report on file, Ontario Ministry of Culture, Toronto.

2006b The stage 4 salvage excavation of the Recliner site (AhGw-80) Cultural Heritage Resource Assessment, Red Hill Creek Expressway (North-South Section) Impact Assessment, City of Hamilton, Ontario. Report on file, Ontario Ministry of Culture, Toronto.

2004 Report on the stage 4 salvage excavation of the Serena site (AhGx-274), Allison Estates subdivision (25T-91014), City of Hamilton, Regional Municipality of Hamilton-Wentworth. Report on file, Ontario Ministry of Culture, Toronto.

2002 The stage 4 salvage excavation of the Chappell Terrace site (AjGw-222) Mississauga Public Garden part of Lot 27, Concession 2, N.D.S. (former Toronto Township), City of Mississauga, Regional municipality of Peel. Report on file, Ontario Ministry of Culture, Toronto.

Archaeological Services Inc., Unterman McPhail Cuming Associates and Historica Research Limited

2003 The Red Hill Creek Expressway (north-south section) impact assessment, cultural heritage resource assessment, final technical report. Report on file, Ontario Ministry of Culture, Toronto.

Arnold, J. E.

1993 Labor and the rise of complex hunter-gatherers. *Journal of Anthropological Archaeology* 12:75-119.

Arnold, P. J.

2000 Sociopolitical complexity and the Gulf Olmecs: a view from the Tuxtla Mountains, Veracruz, Mexico. *In* Olmec art and archaeology in Mesoamerica, edited by J. E. Clark and M. E. Pye, pp. 117-135. National Gallery of Art, Washington, D.C..

Asch, D. L.

1994 Aboriginal specialty-plant cultivation in eastern North America: Illinois prehistory and a post-contact perspective. *In* Agricultural origins and development in the Midcontinent, edited by W. Green, pp. 25-86. University of Iowa Press: Iowa City.

1991 *Tobacco seeds in the archaeobotanical collections of the Center for American Archaeology*. Center for American Archaeology, Kampsville.

Asch, D. L. and N. B. Asch

1985 Prehistoric plant cultivation in west-central Illinois. *In* Prehistoric food production in North America, edited by R.I. Ford, pp.149-203. University of Michigan, Ann Arbor.

Barnett, W. K. and J. W. Hoopes

1995 *The emergence of pottery: technology and innovation in ancient societies*. Smithsonian Institute Press: Washington, DC.

Barker, G.

2006 *The agricultural revolution in Prehistory: why did foragers become farmers?* Oxford University Press.

Bar-Yosef, O.

1998 The Natufian culture in the Levant, threshold to the origins of agriculture. *Evolutionary Anthropology* 6:159-177.

Bar-Yosef, O. and A. Belfer-Cohen

1991 From sedentary hunter-gatherers to territorial farmers in the Levant. *In* Between bands and states, edited by S. A. Gregg, pp. 181-202. Centre for Archaeological Investigations, Carbondale, Occasional Paper No. 9. Southern Illinois University of Carbondale

1989 Origins of sedentism and farming communities in the Levant. *Journal of World Prehistory* 3(4):447-498.

Belfer-Cohen, A. and O. Bar-Yosef

2000 Early sedentism in the Near East: a bumpy ride to village life. *In* Life in the Neolithic farming communities: social organization, identity, and differentiation, edited by I. Kuijt, pp. 19-37.

Bender, B.

1990 The dynamics of nonhierarchical societies. *In* The evolution of political systems, edited by S. Upham, pp. 247-263. Cambridge University Press: Cambridge.

1978 From gatherer-hunter to farmer: a social perspective. *World Archaeology* 10: 204-237.

1975 *Farming in prehistory: from hunter-gatherer to food producer*. John Baker: London.

Berelov, I.

2006 Signs of sedentism and mobility in an agro-pastoral community during the Levantine Middle Bronze Age: interpreting site function and occupation strategy at Zahrat adh-Dhra' 1 in Jordan. *Journal of Anthropological Archaeology* 25:117-143.

Bernbeck, R.

2008 An archaeology of multisited communities. *In* The archaeology of mobility: Old World and New World nomadism, edited by H. Barnard and W. Wendrick, pp. 43–77. Cotsen Institute of Archaeology, University of California: Los Angeles.

Biagi, P. and R. Nisbet

2006 The prehistoric fisher-gatherers of the western coast of the Arabian Sea: a case of seasonal sedentarization? *World Archaeology* 38(2):220-338.

Binford,L. R.

1983 *In pursuit of the past*. Thames & Hudson: London.

1972 *An archaeological perspective*. Seminar Press: New York.

1965 Archaeological systematic and the study of cultural process. *American Antiquity* 31:203-210.

1962 Archaeology as anthropology. *American Antiquity* 28:217-225.

Binford, L. R., and W. J. Chasko

1976 Nunamiut demographic history: a provocative case. *In* Demographic anthropology, edited by E. Zubrow, pp. 63-143. University New Mexico Press: Albuquerque.

Bintliff, J. L.

1999 Settlement and territory. *In* Companion encyclopedia of archaeology, edited by G. Barker, pp. 505-545. Routledge: London.

Birch, J.

2013 Between villages and cities: settlement aggregation in cross-cultural perspective. *In* From prehistoric villages to cities: settlement aggregation and community transformation, edited by J. Birch, pp 1-22. Routledge.

2012 Coalescent communities: settlement aggregation and social integration in Iroquoian Ontario. *American Antiquity* 77(4): 646-670.

2010 *Coalescent communities in Iroquoian Ontario*. PhD dissertation, Dept of anthropology, McMaster University, Hamilton, ON.

Birch, J. and R. F. Williamson

2013 *The Mantle site: an archaeological history of an ancestral Wendat community*. Altamira Press.

Boucher, P.

1664 *Histoire veritable et naturel des moeurs et productions de la Nouvelle France, vulgairement dite le Canada*. F. Lambert: Paris.

Boyd, B.

2006 On ‘sedentism’ in the Later Epipalaeolithic (Natufian) Levant. *World Archaeology* 38(2):164-178.

Braidwood, R. J.

1960 The agricultural revolution. *Science* 203: 130-148.

Braun, G. V.

2012 Petrography as a technique for investigating Iroquoian ceramic production and smoking rituals. *Journal of Archaeological Science* 39:1-10.

Brown, J. A.

1985 Long-term trends to sedentism and the emergence of complexity in the American Midwest. *In* Prehistoric hunter-gatherers: the emergence of cultural complexity, edited by T. D. Price and J. A. Brown, pp. 201-223. Academic Press: New York.

Bursey, J. A.

1995 The transition from the Middle to Late Woodland periods: A re-evaluation. *In* Origins of people of the longhouse, edited by A. Bekerman and G. Warrick, pp. 43-54. Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society, North York.

Byrd, B.

1994 From early humans to farmers and herders – recent progress on key transitions in southwest Asia. *Journal of Archaeological Research* 2(3):221-253.

1989 The Natufian: settlement variability and economic adaptations in the Levant at the end of the Pleistocene. *Journal of World Prehistory* 3:159-198.

Chapdelaine, C.

1993 Sedentarization of the prehistoric Iroquoians: a slow or rapid transformation. *Journal of Anthropological Archaeology* 12(2):173–209.

Chapman, R.
2003 *Archaeologies of complexity*. Routledge: London.

Chapman, L. J. and D. F. Putnam
1984 *The physiography of southern Ontario. Ontario Geological Survey*, Special Volume 2. Ministry of Natural Resources, Toronto.

Childe, G.
1956 *New light on the most ancient East*. Norton & Company.

Clark, J. E., Pye, M. E., and D. C. Gosser
2007. Thermolithics and corn dependency in Mesoamerica. *In* Archaeology, art, and ethnogenesis in Mesoamerica prehistory: papers in honor of Gareth W. Lowe, Papers of the New World Archaeological Foundation, No. 68, edited by L. S. Lowe and M. E. Pye, pp. 23-42. Brigham Young University, Provo.

Cohen, M. N.
1981 Pacific Coast foragers: affluent or overcrowded? *In* Affluent Foragers, edited by S. Koyama and D.H. Thomas, pp. 275-95. Senri Ethnological Series, No. 9. Osaka: National Museum of Ethnology.

1977 *The food crisis in prehistory*. Yale University Press: New Haven.

Cowgill, G. L.
2000 'Rationality' and contexts in agency theory. *In* Agency in archaeology, edited by M. A. Dobres and J. E. Robb, pp. 51-60. Routledge: London.

Crawford, G.

1985 *The Wallace Site (AkGx-li), 1984 and 1985*. License Report 85-54, Ontario Heritage Foundation: Toronto.

Crawford, G. W. and D. G. Smith

2003 Paleoethnobotany in the Northeast. *In* People and plants in ancient Eastern North America, edited by P. Minnis, pp. 172-257. Smithsonian Institution Press.

2002 Early Late Woodland in southern Ontario: an update (1996-2000). *In* Northeast subsistence-settlement change: A.D. 700 –1300, edited by J. P. Hart and C. B. Rieth, pp. 117-133. New York State Museum Bulletin 496. The New York State Education Department, Albany, New York.

1996 Migration in prehistory: Princess Point and the northern Iroquoian Case. *American Antiquity* 61:782–790.

Crawford, G. W., Smith, D. G., and V. E. Boyer

1997 Dating the entry of corn (*Zea mays*) into the lower Great Lakes region. *American Antiquity* 62:112–119.

Crawford, G. W., Smith, D. G., Desloges, J. R. and A. M. Davis

1998 Floodplains and agricultural origins: a case study in south-central Ontario. *Journal of Field Archaeology* 28(2):123–137.

Creese, J.

2013 Rethinking early village development in southern Ontario. *Canadian Journal of Archaeology* 37:185-218.

2011 *Deyughnyonkwarakda-"at the wood's Eege": the development of the Iroquoian village in southern Ontario, A.D. 900-1500*. Unpublished Ph.D. dissertation, Department of Anthropology, University of Toronto.

Dillon Consulting limited

1997 Canadian Highways international constructors archaeological assessment of Highway 407 ROW, River site (AjGw-68) Stage 3: testing and Stage 4: mitigation, final report, Volume 1. Report on file Ontario Ministry of Citizenship, Culture and Recreations: Toronto.

Divale, W.

1984 *Chaos, making a new science*. Penguin Books: New York.

Dodd, C. F.

1986 *Longhouse studies*. Paper presented at the 19th annual meeting of the Canadian Archaeological Association, Toronto, Ontario.

1984 *Ontario Iroquois tradition longhouses.* National Museum of Man, Archaeological Survey of Canada, Mercury Series, Paper 124:181-437.

Dodd, C. F., D. R. Poulton, P. A. Lennox, D. G. Smith, and G. 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, Vol. 5.

Donaldson, W. S.

1965 The King's Forest Park site. *Ontario Archaeology* 8: 3-10.

Dragoo, D.

1963 Mounds for the dead. *Annals of the Carnegie Museum*. Pittsburgh.

Dunbar, R. I. M.

2014 The social brain: psychological underpinnings and implications for the structure of organizations. *Current Directions in Psychological Science* 23(2):109-114.

Eerkens, J. W.

2008 Nomadic potters: relationships between ceramic technologies and mobility strategies. *In* The Archaeology of Mobility: Old World and New World Nomadism, edited by H. Barnard and W. Wendrich, pp. 307-326. Cotsen Institute of Archaeology, Los Angeles.

Ellis, C., Kenyon, I. T., and M. W. Spence

1990 The Archaic. *In* The Archaeology of Southern Ontario to A.D.1650, edited by C. J. Ellis and N. Ferris, pp. 65-124. Occasional Publication of the London Chapter, Ontario Archaeological Society, Vol. 5.

Emmerson, J. N.

1966 *The Payne site: an Iroquoian manifestation in Prince Edward County, Ontario.* National Museum of Canada, Bulletin No. 206, Contributions to Anthropology, 1963-64, Part I, Paper No. 5.

1954 *The archaeology of the Ontario Iroquois*. Unpublished PhD dissertation, Department of Anthropology, University of Chicago, Chicago.

Emerson, J. N. and W. C. Noble

1966 The Surma site, Fort Erie, Ontario. *Ontario Archaeology* 9: 69-88.

Eder, J. F.

1984 The impact of subsistence change on mobility and settlement pattern in tropical forest foraging economy: some implications for archaeology. *American Anthropologist* 86:837-853.

Fecteau, R.

1985 *The introduction and diffusion of cultivated plants in southern Ontario*. Unpublished MA thesis, Department of Geography, York University, Downsview, Ontario.

Fenton, W. N.

1978 Northern Iroquoian culture patterns. *In* Handbook of the North American Indians, vol 15, Northeast, edited by B. G. Trigger, pp. 296-321. Smithsonian Institute: Washington, DC.

Ferris, N.

1999a What's in a name? The implications of archaeological terminology used in nonarchaeological contexts. *In* Taming the taxonomy: toward a new understanding of Great Lakes archaeology, edited by R. Williamson, and C. Watts, pp. 111-121. Eastendbooks: Toronto.

1999b Telling tales: interpretive trends in southern Ontario Late Woodland archaeology. *Ontario Archaeology* 68:1–62.

Ferris, N., and M. W. Spence

1995 The Woodland traditions in southern Ontario. *Journal of American Archaeology* 9:83–138.

Finlayson, W. D.

1977 *The Saugeen culture: a Middle Woodland manifestation in southwestern Ontario*. Archaeological Survey of Canada Paper No.61. National Museum of Man Mercury Series, National Museum of Canada: Ottawa.

Flannery, K. V.

1973 The origins of agriculture. *Annual Review of Anthropology* 2:271-310.

1972 The origin of the village as a settlement type in Mesoamerica and the Near East. *In* Man, settlement and urbanism, edited by P. J. Ucko, R. Tringham, and G. W. Dimbleby, pp.23-53. Duckworth: London.

Fox, W. A.

1990 The Middle Woodland to Late Woodland transition. *In* The Archaeology of Southern Ontario to A.D. 1650, edited by C. J. Ellis and N. Ferris, pp. 171-188. Occasional Publication of the London Chapter, Ontario Archaeological Society, Vol. 5.

1984 Meadowood biface caches from southwestern Ontario. *Kewa* 84(2):7-12.

1981 Meadowood caches in southern Ontario. *Kewa* 81(2):3-5.

1967 A hillside midden, King's Forest Park site. *Ontario Archaeology* 10:18-28.

Frison, G. C., and Z. Van Norman

1993 Carved steatite and sandstone tubes: pipes for smoking or shaman's paraphernalia. *Plains Anthropologist* 38(143):163-176.

Garcea, E. A.

2006 Semi-permanent foragers in semi-arid environments of North Africa. *World Archaeology* 38(2):197-219.

Gibson, J. L.

2006 Navels of the earth: sedentism in early mound-building cultures in the Lower Mississippi Valley. *World Archaeology* 38(2):311-329.

Haberman, T. W.

1984 Evidence for tobaccos in Eastern North America. *American Antiquity* 49:269-287.

Haines, H. R., Smith, D. G., Galbraith, D. and T. Theysmeyer

2011 The point of popularity: a summary of 10,000 years of human activity at the Princess Point promontory, Cootes Paradise marsh, Hamilton, Ontario. *Canadian Journal of Archaeology* 35(2):232–257.

Hall, R. L.

1983 The evolution of the calumet pipe. *In* Prairie archaeology: papers in honour of David A. Baerris, edited by G. E. Gibbon, pp. 37-52. University of Minnesota Publications in Anthropology 3.

Harrison, R. G., and M. A. Katzenberg

2003 Paleodiet studies using stable carbon isotopes from bone apatite and collagen: examples from southern Ontario and San Nicolas Island, California. *Journal of Archaeological Science* 22:227–244.

Hart, J. 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.

1999 Dating Roundtop's domesticates: implications for northeast Late Prehistory. *In* Current Northeast Paleoethnobotany, edited by J. P. Hart, pp. 47-68. New York State Museum Bulletin 494, The University of the State of New York, Albany.

Hart, J. P., Brumbach, H. J., and R. Lusteck

2007 Extending the phytolith evidence for early maize (*Zea mays ssp. mays*) and squash (*Cucurbita sp*.) in central New York. *American Antiquity* 72: 563-583.

Hart, J. P., Thompson, R. G., and H. J. Brumbach

2003 Phytolith evidence for early maize (*Zea Mays*) in the Finger Lakes region of New York. *American Antiquity* 68(4): 619-640.

Hawkins, A. L.

2004 Report on the 2004 investigation at the Emmerson Springs village (AkGx-5), Town of Halton Hills, Ontario, under license P081-002 and P081-004. Report on file, Ontario Ministry of Tourism, Culture and Sport, Toronto.

Hayden, B.

1998 Practical and prestige technologies: The evolution of material systems. *Journal of Archaeological Method and Theory* 5:1–55.

1995 An overview of domestication. *In* Last hunters-first farmers, edited by T. D. Price and A. B. Gebaure, pp. 273-300. School of American Research: Santa Fe, New Mexico.

1994 Competition, labour, and complex hunter-gatherers. *In* Key issues in hunter-gatherer research, edited by E. S. Butch and L. J. Ellanna, pp. 223-239. Bloomsbury Academic.

1992 Models of domestication. *In* Transitions to agriculture in prehistory, edited by A. B. Gebauer and T. D. Price, pp. 11-19. Prehistory Press: Madison, Wisconsin.

1990 Nimrods, piscators, pluckers, and planters: the emergence of food production. *Journal of Anthropological Archaeology* 9(3):1-69.

Helms, M.

1988 *Ulysses' Sail: An Ethnographic Odyssey of Power, Knowledge, and Geographical Distance*. Princeton: Princeton University Press, Princeton.

Hewitt, J. N. B.

1928 *Iroquoian cosmology, second part, with introduction and notes*. Bureau of American Ethnology Annual Report. Smithsonian Institute: Washington, DC.

Hill, J. N.

1970 *Broken K pueblo: prehistoric social organization in the American southwest.* University of Arizona Press: Tucson.

Hill, R. A., and R. I. M. Dunbar

2003 Social network size in humans. *Human Nature* 14:53-72.

Hitchcock, R. K.

1982 Patterns of sedentism among the Basarwa of eastern Botswana. *In* Politics and history in band society, edited by E. Leacock and R. B. Lee, pp. 223-67. Cambridge University Press: New York.

Hodder, I.

2004 Neo-thingness. *In* Explaining social change: studies in honour of Colin Renfrew, edited by J. Cherry, C. Scarre, and S. Shennan, pp. 45-52. McDonald Institute for Archaeological Research. University of Cambridge: UK.

1991 *Reading the past: current approaches to interpretation in archaeology*. Second edition. Cambridge University Press.

1990 *The domestication of Europe: structure and contingency in Neolithic societies*. Basil Blackwell: Oxford.

Insoll, T.

2007 *Archaeology: the conceptual challenge.* Duckworth: London.

Irwin, J. D.

2004. Stone pipes of the southern coastal region of North Carolina: smoke, ritual, and contact. *In* Smoking and culture: the archaeology of tobacco pipes in Eastern North America, edited by S. M. Rafferty and R. Mann, pp. 43-72. The University of Tennessee Press, Knoxville.

Jackson, L. J.

1983 Early maize in south-central Ontario. *Arch Notes* 3:9-12.

1980 Dawson Creek: and Early Woodland site in south-central Ontario. *Ontario Archaeology* 33:13-32.

Jamieson, S. M.

1991 A Pickering conquest? *Kewa* 91**(**5):2–18.

Johnson, M.

2000 Self-made men and the staging of agency. *In* Agency in archaeology, edited by M. A. Dobres and J. E. Robb, pp. 213-231. Routledge: London.

Johnston, R.

1968 *The archaeology of the Serpent Mounds site*. Occasional Paper 10. Art and Archaeology Division, Royal Ontario Museum, Toronto

Kapches, M.

1994 Chaos theory and social movement: a theoretical view of the formation of the northern Iroquoian longhouse cultural pattern. *In* Origins of the people of the longhouse, edited by A. Bekerman and G. Warrick, pp. 86-96. Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society. Held at Toronto, Ontario in Oct, 1994.

1990 Spatial dynamics of Ontario Iroquoian longhouses. *American Antiquity* 55(1):49-67.

1992 Rude but perfect (Beauchamp 1989): a study of miniature smoking pipes in Iroquoia. *In* Proceedings of the 1988 smoking pipe conference, edited by C. F. Hayes III, C. C. Bodner, and M. L. Sempowski, pp. 71-82. Rochester Museum and Science Center Research Records No 22.

1982 *Pickering: perspective and prospective*. Paper presented at the 8th annual Archaeological Symposium at McMaster University, Hamilton

1981 *The Middleport pattern in Ontario Iroquoian prehistory*. Unpublished Ph.D. dissertation, Dept of Anthropology, University of Toronto, Toronto, Ontario.

Katzenberg, M. A.

2009 Prehistoric maize in southern Ontario: contributions from stable isotope studies. *In* Histories of maize: multidisciplinary approaches to the prehistory, linguistics, biogeography, domestication, and evolution of maize, edited by J. Staller, R. Tykot, and B. Benz, pp. 263-273. Left Coast Press Inc: Walnut Creek, CA.

1984 *Chemical analysis of prehistoric human bone from five temporally distinct populations in Southern Ontario*. National Museum of Man, Mercury Series, Archaeological Survey of Canada Paper no. 129.

Katzenberg, M. A., Schwarcz, H. P., Knyf, M., and F. J. Melbye

1995 Stable isotope evidence for maize horticulture and palaeodiet in southern Ontario. *American Antiquity* 60: 335–350.

Keeley, L. H.

1988 Hunter-gatherer economic complexity and "population pressure": a cross-cultural perspective. *Journal of Anthropological Archaeology* 7(4):373-411.

Kelly, R. L.

1995 *The foraging spectrum: diversity in hunter-gatherer lifeways*. Smithsonian Institute Press: Washington, DC.

1992 Mobility/sedentism: concepts, archaeological measure and effects. *Annual Review of Anthropology* 21:43-66.

1985 *Hunter-gatherer mobility and sedentism: a great basin study*. Ph.D. dissertation. University of Michigan: Michigan.

Kenyon, I. T.

1980 Meadowood Points, Meadowood Cache Blades. *Kewa* 80(5).

1979 Saugeen Points. *Kewa* 79(9).

Kenyon, W.A.

1986 *Mounds of scared earth: burial mounds of Ontario*. Royal Ontario Museum Publications in Archaeology.

King, J. C. H.

1977 *Smoking pipes of the North American Indian*. The Trustees of the British Museum, British Museum Publications Ltd: London.

Kowalewski, S. A.

2008 Regional settlement pattern studies. *Journal of Archaeological Research* 16:225-285.

2006 Coalescent societies. *In* Light On The Path: The anthropology and history of the Southeastern Indians, edited by T. J. Pluckhahn and R. Ethridge, pp. 94-122. Tuscaloosa: University of Alabama Press.

2003 *Intensification under duress*. Paper presented at the 68th Annual meeting of the Society for American Archaeology, Milwaukee.

Kraft, H. C.

1976 The Rosenkrans site, an Adena-related mortuary complex in the Upper Delaware Valley, New Jersey. *Archaeology of Eastern North America* 4:9-49.

Latta, M.

1976 Behavioral bases for Huron Iroquoian ceramic types and type vs attribute analysis in Iroquoian ceramics. *Arch Notes* 5(7):44-45.

Leblanc, S.

1971 An addition to Naroll's suggested floor area and settlement population relationship. *American Antiquity* 36:210–211.

Lewis, T. M., and M. K. Lewis

1961 *Eva, an Archaic site*. University of Tennessee Press, Knoxville.

Linton, R.

1924 *Use of tobacco among North American Indians*. Anthropology Leaflet No. 15.

MacDonald, R. I.

1992 Ontario Iroquoian semi-subterranean sweat lodges. *In* Ancient images, ancient thought: the archaeology of ideology, edited by A.S. Goldsmith, S. Garvie, D. Selin and J. Smith, pp. 323-330. Proceedings of the 23rd Annual Chacmool Conference. University of Calgary, Calgary.

1988 Ontario Iroquoian sweat lodges. *Ontario Archaeology* 48:17-26.

MacDonald, R. I. and R. Williamson

2001 Sweat lodges and solidarity: the archaeology of the Hubbert Site. *Ontario Archaeology* 71:29-78.

MacNeish, R. S.

1952 *Iroquois pottery types*. National Museum of Canada Bulletin, 124. National Museums of Canada, Ottawa.

Marshall, Y.

2006 Introduction: adopting a sedentary lifeway. *World Archaeology* 38(2):153-163.

Mathews, Z. P.

1980 Of man and beast: the chronology of effigy pipes among Ontario Iroquoians. *Ethnohistory* 27(4).

1976 Huron pipes and Iroquoian shamanism. *Man in the Northeast* 12:15-31.

Matsui, A. and M. Kanehara

2006 The question of prehistoric plant husbandry during the Jomon Period in Japan. *World Archaeology* 38(2):259-273.

Mayer, Poulton and Associates

1991 *Report on the 1985-1986 mitigative excavations of the River and Pengilley sites, City of Brampton, Ontario*. Report on File, Ministry of Citizenship, Culture and Recreation, Toronto.

Mayer, R. G., Arnold, T., and D. G. Smith

1991 Archaeological assessment and mitigation, Antrex development limited subdivision draft plan 21T-89040M (Phase 2), City of Mississauga, Regional Municipality of Peel. Report on file, Ministry of Culture, Toronto.

Monckton, R.

1992 *Huron paleoethnobotany*. Ontario Archaeological Reports No. 1. Ontario Heritage Foundation, Toronto.

Morton, J. and H. P. Schwarcz

2004 Paleodietary implications from isotopic analysis of food residues on prehistoric Ontario ceramics. *Journal of Archaeological Science* 31:503-517.

Murdock, G. P.

1967 *Ethnographic atlas*. Pittsburgh, PA: University of Pittsburgh Press.

Naroll, R.

1962 Floor area and settlement population. *American Antiquity* 27:95–118.

Noble, W. C.

1979 Ontario Iroquois effigy pipes. *Canadian Journal of Archaeology* 3:69-90.

1975a Corn, and the Development of Village Life in Southern Ontario. *Ontario Archaeology* 25: 37-46.

1975b *Canadian prehistory: the lower Great Lakes-St. Lawrence region*. Canadian Archaeological Association, Bulletin 7: 96-121.

Noble, W. C. and I. T. Kenyon

1972 Porteous: a probable early Glen Meyer village in Brant County, Ontario. *Ontario Archaeology* 19:11-19.

O'Brien, M. J.

1987 Sedentism, population growth, and resource selection in the Woodland Midwest: a review of coevolutionary developments. *Current Anthropology* 28:177-197.

Otto, M. P.

1992 A prehistoric menagerie: Ohio Hopewell effigy pipes. *In* Proceedings of the 1988 Smoking Pipe Conference, edited by C. F. Hays III, pp. 1-14. Rochester Museum and Science Center Research Records No. 2.

Ounjian, G.

1997 *Glen Meyer and Neutral palaeoethnobotany*. Ph.D. dissertation, Department of Anthropology, University of Toronto.

Paper, J.

1988 *Offering smoke: the sacred pipe and the Native American religion*. University of Idaho Press: Moscow.

Pauketat, T. R.

2000 The tragedy of the commoners. *In* Agency in archaeology, edited by M. A. Dobres and J. E. Robb, pp. 113-129. Routledge: London.

Pearce, R. J.

1984 *Mapping Middleport: a case study in societal archaeology*. Unpublished PhD dissertation, Department of Anthropology, McGill University, Montreal, P.Q.

Pearsall, D. M.

1992 The origins of plant cultivation in South America. *In* Origins of agriculture: an international perspective, edited by C. W. Cowan and P. J. Watson, pp. 173-205. Smithsonian Institution Press: Washington D.C.

Pearson, R.

2006 Jomon hot spot: increasing sedentism in south-western Japan in the Incipient Jomon (14,000–9250 cal. BC) and Earliest Jomon (9250–5300 cal. BC) periods. *World Archaeology* 38(2):239-258.

Pfeiffer, S., Williamson, R. F., Sealy, J. C., Smith, D. G., and M. H. Snow
2014 Stable dietary isotopes and mtDNA from Woodland period southern Ontario people: results from a tooth sampling protocol. *Journal of Archaeological Science* 42:334-345.

Pihl, R. H., Monckton, S. G., Robertson, D. A. and R. F. Williamson
2008 Settlement and subsistence change at the turn of the first millennium: the view from the Holmedale Site, Brantford, Ontario. *In* Current Northeast paleoethnobotany II, edited by J. P. Hart, pp. 151-172. New York State Museum Bulletin 512. The University of the State of New York, The State Education Department: Albany, New York.

Plog, F.
1974 *The study of Prehistoric change*. Academic Press: New York.

Plog, S.
1990 Agriculture, sedentism, and environment in the evolution of political systems. *In* The evolution of political systems, edited by S. Upham, pp.177-199. Cambridge University Press: Cambridge.

Price, T. D. and J. A. Brown
1985 Aspects of hunter-gatherer complexity. *In* Prehistoric hunter-gatherers: the emergence of cultural complexity, edited by T. D. Price and J. A. Brown, pp. 3-20. Academic Press: New York.

Rafferty, J. E.
1985 The archaeological record on sedentariness: Recognition, development and implications. *In* Advances in archaeological method and theory, Vol. 8, edited by M. B. Schiffer, pp. 113-156.

Rafferty, S. M.

2006 Evidence of early tobacco in Northeastern North America? *Journal of Archaeological Science* 33:453-458.

2004 "They pass their lives in smoke, and at death fall into the fire": smoking pipes and mortuary ritual during the Early Woodland period. *In* Smoking and culture: recent developments in the archaeology of tobacco pipes in Eastern North America, edited by S. M. Rafferty and R. Mann, pp. 1-41. University of Tennessee Press.

Rafferty, S. M., and R. Mann

2004. Smoking and culture. *In* Smoking and culture: recent developments in the archaeology of tobacco pipes in Eastern North America, edited by S. M. Rafferty and R. Mann, pp. xi-xx. University of Tennessee Press.

Rafferty, S. M., Lednev, I., Virkler, k., and Z. Chovanec

2012 Current research on smoking pipe residues. *Journal of Archaeological Science* 39:1951-1959.

Ramsden, P. G.

1990a Death in winter: changing symbolic patterns in southern Ontario prehistory. *Anthropologica* 32:167-181.

1990b The Hurons: archaeology and culture history. *In* The archaeology of Southern Ontario to A.D. 1650, edited by C. J. Ellis and N. Ferris, pp. 361-384. Occasional Publication of the London Chapter, Ontario Archaeological Society, Vol. 5.

1977 *A refinement of some aspects of Huron ceramic analysis*. Mercury Series Paper 63. Archaeological Survey of Canada, National Museum of Man, Ottawa.

Redding, R. W.

1988 A general explanation of subsistence change: from hunting and gathering to food production. *Journal of Anthropological Archaeology* 7: 59-97.

Renfrew, C.

2001 Symbol before concept: material engagement and the early development of society. *In* Anthropological theory today, edited by I. Hodder, pp. 122-140. Polity Press: Cambridge.

1998 Mind and matter: cognitive archaeology and external symbolic change. *In* Cognition and material culture: the archaeology of symbolic storage, edited by C. Renfrew and C. Sarre, pp. 1-6. McDonald Institute for Archaeological Research. Cambridge.

Rice, G.

1975 *A systematic explanation of a change in Mogollon settlement patterns.* Ph.D. dissertation. University of Washington: Ann Arbor, Michigan.

Rice, P. M.

1999 On the origins of pottery. *Journal of Archaeological Method and Theory* 6(1):1-54.

Ritchie, W. A.

1994 *The archaeology of New York State*. Purple Mountain Press: Fleischmanns, New York.

Ritchie, W. A., and D. W. Dragoo

1960 *The eastern dispersal of Adena*. New York State Museum and Science Service Bulletin Number 379. Albany.

Ritchie, W. A. and R. E. Funk

1973 *Aboriginal settlement patterns in the Northeast*. New York State Museum Memoir 20. The University of the State of New York, Albany.

Ritchie, W. A. and R. S. MacNeish

1949 The Pre-Iroquoian Pottery of New York State. *American Antiquity* 15:97-124.

Robert, D. L.

1997 *King's Forest Park (AhGw-1 and Pergentile (AhGw-2): early Ontario Iroquoian settlement at the head of Lake Ontario*. Unpublished M.A. thesis, Department of Anthropology, Trent University, Peterborough, Ontario.

Robertson, D. A.

2005 Glimpsed through the smoke: a survey of two dimensional figurative imagery on Woodland period smoking pipes from southern Ontario. *Ontario Archaeology* 79/80:38-61.

2004 The Hutchinson site: a place to prepare for the final journey. *Ontario Archaeology* 77/78:95–120.

Robertson, D. A. and R. F. Williamson

2003 The archaeology of the Dunsmore site: 15th century community transformations in southern Ontario. *Canadian Journal of Archaeology* 27:1-61.

2002 Precontact farmers of Mississauga: the Antrex site. *In* Mississauga the first 10,000 years, edited by Dieterman, pp90-105. Eastendbooks: Toronto.

Robertson, D. A., S. G. Monckton, and R. F. Williamson

1995 The Wiacek site revisited: the results of the 1990 excavations. *Ontario Archaeology* 60:40-91.

Rogers, M. J.

1936 *Yuman Pottery Making*. San Diego Museum Papers, Number 2. San Diego, California.

Rutsch, E. W.

1973 *Smoking technology of the Aborigines of the Iroquois area of New York State*. Associated University Presses Inc.: Cranbury, New Jersey.

Sagard, G.

1939 *Long journey to the Huron country*. The Champlain Society. Toronto.

Sassaman, K. E.

2000 Agents of change in hunter-gatherer technology. *In* Agency in archaeology, edited by M. A. Dobres and J. E. Robb, pp. 148-168. Routledge: London.

Schiffer, M. B.

2000 Social theory in archaeology: building bridges. *In* Social theory in archaeology, edited by M. B. Schiffer, pp. 1-13. The University of Utah Press: Salt Lake City.

1976 *Behavioural archaeology*. Academic Press: New York.

Schwarcz, H. P., Melbye, J., Katzenberg, M. A., and M. Knyf

1985 Stable isotopes in human skeletons of southern Ontario: reconstructing palaeodiet. *Journal of Archaeological Science* 12:187-206.

Setchell, W. A.

1921 Aboriginal tobaccos. *American Anthropologist* 23:397-414.

Sewell, W. H. Jr.

1992 A theory of structure: duality, agency, and transformation. *American Journal of Sociology* 98(1):1-29.

Shanks, M. and C. Tilley

1987 *Social theory and archaeology*. University of New Mexico Press: Albuquerque.

Smith, D. G.

2002 Ten thousand years: aboriginal heritage in Mississauga. *In* Mississauga the first 10,000 years, edited by Dieterman, pp. 55-71. Eastendbooks: Toronto.

1997 Radiocarbon dating the Middle to Late Woodland transition and earliest maize in southern Ontario. *Northeast Anthropology* 54:37–73.

1992 Stylistic variation in Middleport smoking pipes. *In* Proceedings of the 1989 smoking pipe conference, edited by C. F. Hayes III, C. C. Bodner, and M. L. Sempowski, pp. 15-30. Rochester Museum and Science Center, Research Records 22.

1991 *Keffer Site (AkGv-14) pottery and ceramic smoking pipes*. Museum of Indian archaeology (London), University of Western Ontario: London, Ontario.

1990 Iroquoian societies in southern Ontario: introduction and historical overview. *In* The archaeology of Southern Ontario to A.D. 1650, edited by C. J. Ellis, and N. Ferris, pp.279-290. Occasional Publication of the London Chapter, Ontario Archaeological Society, Vol. 5.

Smith, D. G., and G. W. Crawford

2002 Recent developments in the archaeology of the Princess Point complex in southern Ontario. *In* Northeast subsistence-settlement change: A.D. 700 –1300, edited by J. P. Hart and C. B. Rieth, pp. 97-116. New York State Museum Bulletin 496. The New York State Education Department, Albany, New York.

1997 Recent developments in the archaeology of the Princess Point complex in southern Ontario. *Canadian Journal of Archaeology* 21:9-32.

Smith, H. H.

1933 *Ethnobotany of the forest Potawatomi Indians*. Bulletin of the Public Museum of the City of Milwaukee 7:1-230.

Snow, D. R.

1996 More on migration in prehistory: accommodating new evidence in the northern Iroquoian case. *American Antiquity* 61:791-796.

1995 Migration in prehistory: the northern Iroquoian case. *American Antiquity* 60:59-79.

Spence, M. W.

1994 Mortuary programs of the early Ontario Iroquoians. *Ontario Archaeology* 58:6-20.

1986 Band structure and interaction in early southern Ontario. *Canadian Journal of Anthropology* 5(2):83-95.

Spence, M. W. and W. Fox

1986 The Early Woodland occupations of southern Ontario. *In* Early Woodland archaeology, edited by K. Farnsworth and T. E. Emerson, pp. 4-46. Seminars in Archaeology 2. Center for American Archaeology Press: Kampsville, Illinois.

Spence, M. W., and R. H. Pihl

1984 The Early and Middle Woodland occupations of Ontario: past, present and future. *Arch Notes* 84:32–48.

Spence, M. W., R. H. Pihl, and J. E. Molto

1984 Hunter-gatherer social group identification: a case study from Middle Woodland southern Ontario. *In* Exploring the limits, edited by S. P. de Atley and F. J. Findlow, pp.117-142. BAR International Series No.223.

Spence, M. W., R. H. Pihl, and C. 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, Vol. 5.

Stewart, R. M.

1990 Clemson's Island studies in Pennsylvania: a perspective. *Pennsylvania Archaeologist* 60(1):79-107.

Stothers, D. M.

1977 *The Princess Point complex*. National Museum of Man, Archaeological Survey of Canada Paper No. 58. Ottawa.

1974 The Glass site AgHb-5 Oxbow Tract, Brantford Township, Brant County, Ontario. *Ontario Archaeology* 21:37-45.

Stothers, D. M., and R. A. Yarnell

1977 An agricultural revolution in the Lower Great Lakes. *In* Geobotany, edited by R. D. Romans, pp. 209-232. Plenum Press: New York.

Thompson, R. G., Hart, J. P., Brumbach, H. J., and R. Lusteck

2004 Phytolith evidence for Twentieth-Century B.P. maize in northern Iroquoia. *Northeast Anthropology* 68:25–40.

Thwaites, R. G. (editor)

1896-1901 *The Jesuit relations an allied documents, travels and explorations of the Jesuit missionaries in New France, 1610-1791*. 73 volumes. Burrows Brothers: Cleveland, Ohio.

Timmins, P.

1992 *The Alder Creek site (AiHd-75): interior Paleo-Indian and Princess Point settlement patterns in the Region of Waterloo, Ontario*. Report on file, Ontario Ministry of Tourism, Culture, and Recreation, Toronto.

1985 *The analysis and interpretation of radiocarbon dates in Iroquoian archaeology*. Research Report 19. Museum of Indian Archaeology, London.

Tooker, E.

1964 *An ethnography of the Huron Indians 1615-1964*. Smithsonian Institution, Bureau of American Ethnology, Bulletin No. 190.

Trigger, B. G.

1985 *Natives and newcomers: Canada's 'Heroic Age' reconsidered*. McGill-Queen's University Press, Montreal P.Q

1981 Prehistoric social and political organization: an Iroquoian case study. In *Foundations of Northeast Archaeology*, edited by D. R. Snow, pp.1-50. Academic Press, New York.

1976 *The children of the Aataensic: a history of the Huron people to 1660*, 2 volumes. McGill-Queen's University Press: Montreal, P.Q.

Turnbaugh, W. A.

1980 Native North American smoking pipes. *Archaeology* 33(1):15-22.

Ubelaker, D. H.

1974 *Reconstruction of demographic profiles from ossuary skeletal samples: a case study from the Tidewater Potomac*. Smithsonian Contributions to Anthropology 18. Smithsonian Institution Press: Washington, DC.

Varien, M. D.

1999 *Sedentism and mobility in a social landscape: Mesa Verde and beyond*. The University of Arizona Press: Tucson.

von Gernet, A. D.

2000 North American indigenous *Nicotiana* use and tobacco shamanism: the early documentary record, 1520-1660. *In* Tobacco use by Native North Americans: sacred smoke and silent killer, edited by J. C. Winter, pp.59-80. University of Oklahoma Press, Norman.

1995 Nicotian Dreams: the prehistory and early history of tobacco in eastern North America. *In* Consuming Habits: Drugs in History and Anthropology, edited by J. Goodman, P. E. Lovejoy, and A. Sherratt. Routledge: London.

1992 Hallucinogens and the origins of the Iroquoian pipe/tobacco/smoking complex. *In* Proceedings of the 1989 Smoking Pipe Conference, edited by C. F. I. Hayes, C. C. Bodner, and M. L. Sempowski, pp.171-185. Rochester Museum & Science Center: Rochester, New York.

1988 *The transculturation of the Amerindian/pipe/tobacco/smoking complex and its impact on the intellectual boundaries between "savagery" and "civilization," 1535-1935*. PhD. Dissertation, Department of Anthropology, McGill University, Montreal, Quebec.

1985 *Analysis of intrasite artifact spatial distributions: the Draper site smoking pipes*. Museum of Indian Archaeology, Research Report no. 16. University of Western Ontario: London, Ontario.

1982 Interpreting intrasite artifact spatial distributions of artifacts: the Draper site pipe fragments. *Man In the Northeast* 32:49-60.

Wagner, G. E.

2000 Tobacco in prehistoric eastern North America. *In* Tobacco use by Native Americans: sacred smoke and silent killer, edited by J. C. Winter, pp.185-204. University of Oklahoma Press: Norman.

1998 Tobacco. *In* Archaeology of Prehistoric North America: an encyclopedia, edited by G. Gibbon, pp. 840-841. Garland Publishing: New York.

Warrick, G. A.

2012 Buried stories: archaeology and aboriginal peoples of the Grand River, Ontario. *Journal of Canadian Studies* 46(2):153-177.

2008 *A population history of the Huron- Petun, A.D. 500–1650.* Cambridge University Press: Cambridge.

2000 The precontact Iroquoian occupation of southern Ontario. *Journal of World Prehistory* 14:415-466.

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.B. Banning, pp. 11-26. Monographs in World Archaeology No. 27. Prehistory Press: Madison.

1990 *A population history of the Huron-Petun, A.D. 900-1650*. Ph.D. dissertation, Department of Anthropology, McGill University, Hamilton, Ontario, Canada.

1984 *Reconstructing Ontario Iroquois village organization*. National Museum of Man, Archaeological Survey of Canada, Mercury Series Paper No. 124:1-180.

Watanabe, H.

1986 Community habitation and food gathering in prehistoric Japan: an ethnographic interpretation of the archaeological evidence. *In* Windows on the Japanese past: studies in

archaeology and prehistory, edited by R. Pearson, G. Barnes and K. Hutterer, pp. 229-254. University of Michigan Center for Japanese Studies: Ann Arbor, MI.

Waugh, F. W.

1903 *Attiwandaron or Neutral village sites in Brant County*. Annual Archaeological Report of Ontario for 1902, pp. 70-79. Toronto.

Wendt, C. J.

2003 *Early formative domestic organization and community patterning in the San Lorenzo Tenochtitlán region, Veracruz, Mexico*. Ph.D. Dissertation, Department of Anthropology, Pennsylvania State University, University Park.

Williamson, R. F.

2013 The Woodland period, 900 BCE to 1700 CE. *In* Before Ontario: the archaeology of a province, edited by M. K. Munson and S. M. Jamieson, pp. 48-61. McGill University Press.

1998 *The Myers Road Site: Archaeology of the Early to Middle Iroquoian Transition.* Ontario Archaeological Society.

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, Vol. 5.

1987 *The conquest hypothesis: our invasion of history*. Paper presented at the Trowelling Toronto Symposium, Toronto Chapter, Ontario Archaeological Society.

1985 *Glen Meyer: people in transition*. Unpublished PhD dissertation, Department of Anthropology, McGill University, Montreal, P.Q.

1980 The Liahn II site and Early Woodland mortuary ceremonialism. *Ontario Archaeology* 33:3-11.

Williamson, R. F. and R. I. MacDonald

1998 *Legacy of stone: ancient life on the Niagara frontier*. Eastend books: Toronto, Ontario.

Williamson, R. F. and R. H. Pihl

2002 Foragers and fishers on the Credit: the Scott O'Brien site. *In* Mississauga: the first 10,000 years, edited by: Frank A. Dieterman, pp. 73-90. Eastendbooks: Toronto.

Williamson, R. F., and D. A. Robertson

1994 Peer polities beyond the periphery: Early and Middle Iroquoian regional interaction. *Ontario Archaeology* 58:27-48.

Williamson, R. F., and Steiss

2003 A history of Iroquoian burial. *In* Bones of the ancestors: the archaeology and osteobiography of the Moatfield ossuary, edited by R. F. Williamson and S Pfeiffer, pp. 89-132. Mercury Series Archaeology Paper 163. Canadian Museum of Civilization: Gatineau, Quebec.

Wills, W. H.

1988 Early agriculture and sedentism in the American Southwest: evidence and interpretations. *Journal of World Prehistory* 2:445-488.

Wilson, J. A.

1991 A bad analogy? Northern Algonquian models and the Middle Woodland occupations of southwestern Ontario. *Kewa* 91(4):9-22.

1990 *The Boresma site: a Middle Woodland basecamp in the Thames River Valley*. Unpublished MA thesis, Department of Anthropology, McMaster University, Hamilton.

Wilson, P. J.

1988 *The domestication of the human species*. Yale University Press: New Haven.

Wintemberg, W. A.

1948 *The Middleport prehistoric village site*. Bulletin No. 109, Anthropological Series 27. National Museum of Canada, Ottawa.

1939 *Lawson Prehistoric village site, Middlesex County, Ontario*. Bulletin No. 94, Anthropological Series 25. National Museum of Canada, Ottawa

1936 *Roebuck Prehistoric village site, Grenville County, Ontario*. Bulletin No. 83, Anthropological Series 19. National Museum of Canada, Ottawa.

Winter, J. C.

2000 Introduction to the North American tobacco species. *In* Tobacco use by Native North Americans, edited by J. C. Winter, pp.3-8. University of Oklahoma Press: Norman, Oklahoma.

Wobst, H.

1977 Stylistic behaviour and information exchange. *In* For the director: research essays in honour of James B. Griffin, edited by C. Cleland, pp.317-342. Anthropological Papers 61. Museum of Anthropology, University of Michigan, Ann Arbor.

Woodley, P.

1996 *The HH site (AhGw-81) QEW Highway and Red Hill Creek Expressway, Regional Municipality of Hamilton-Wentworth*. Report on file, Ontario Ministry of Tourism, Culture, and Recreation, Toronto.

Woolfrey, S., P. Chitwood, and N. E. Wagner

1976 Who made the pipes? A study of decorative motifs on Middleport pipe and pottery collections. *Ontario Archaeology* 27:3-11.

Wright, G.

1972 *Ontario prehistory: an eleven-thousand year archaeological outline*. Van Nostrand Reinhold Ltd: Toronto, Ontario.

1971 Origins of food production in Southwest Asia: a survey of ideas. *Current Anthropology* 121: 447-470.

Wright, J. V.

1992 The conquest theory of the Ontario Iroquois tradition: a reassessment. *Ontario Archaeology* 54:3-15.

1990 Archaeology of southern Ontario to A.D. 1650: a critique. *In* The Archaeology of Southern Ontario to A.D.1650, edited by C. J. Ellis and N. Ferris, pp. 493-503. Occasional Publication of the London Chapter, Ontario Archaeological Society, Vol. 5.

1968 Type and attribute analysis: their application to Iroquois culture history. *Ontario Archaeology* 11:65-69.

1966 *The Ontario Iroquois Tradition*. National Museum of Canada, Bulletin 210:1-195.

Wrong, G. M. (ed.)

1939 *The long journey to the country of the Hurons*. The Champlain Society, Toronto.

Yarnell, R. A.

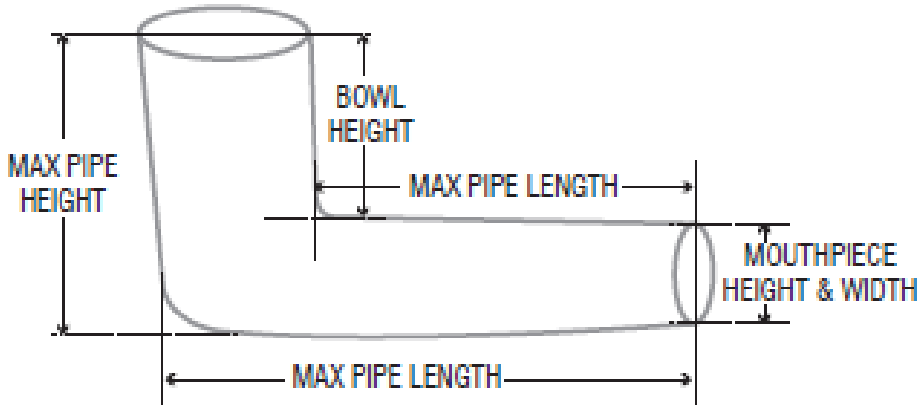
1964 *Aboriginal relationships between culture and plant life in the upper Great Lakes region. Museum of Anthropology*. Anthropological Paper No. 23, University of Michigan, Ann Arbor.

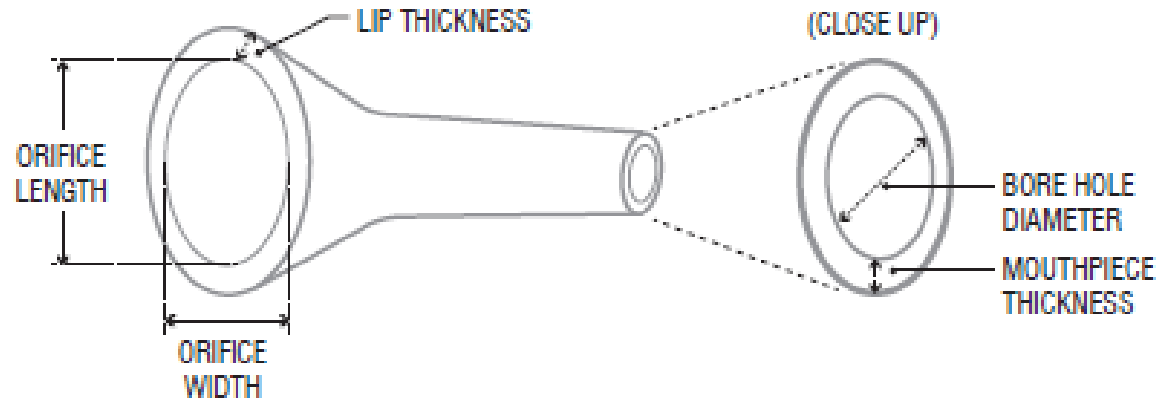
APPENDICES

APPENDIX A

The following Figures are references for smoking pipe measurements, morphology and decoration. These images are generalizations, and there will be variation for each type.

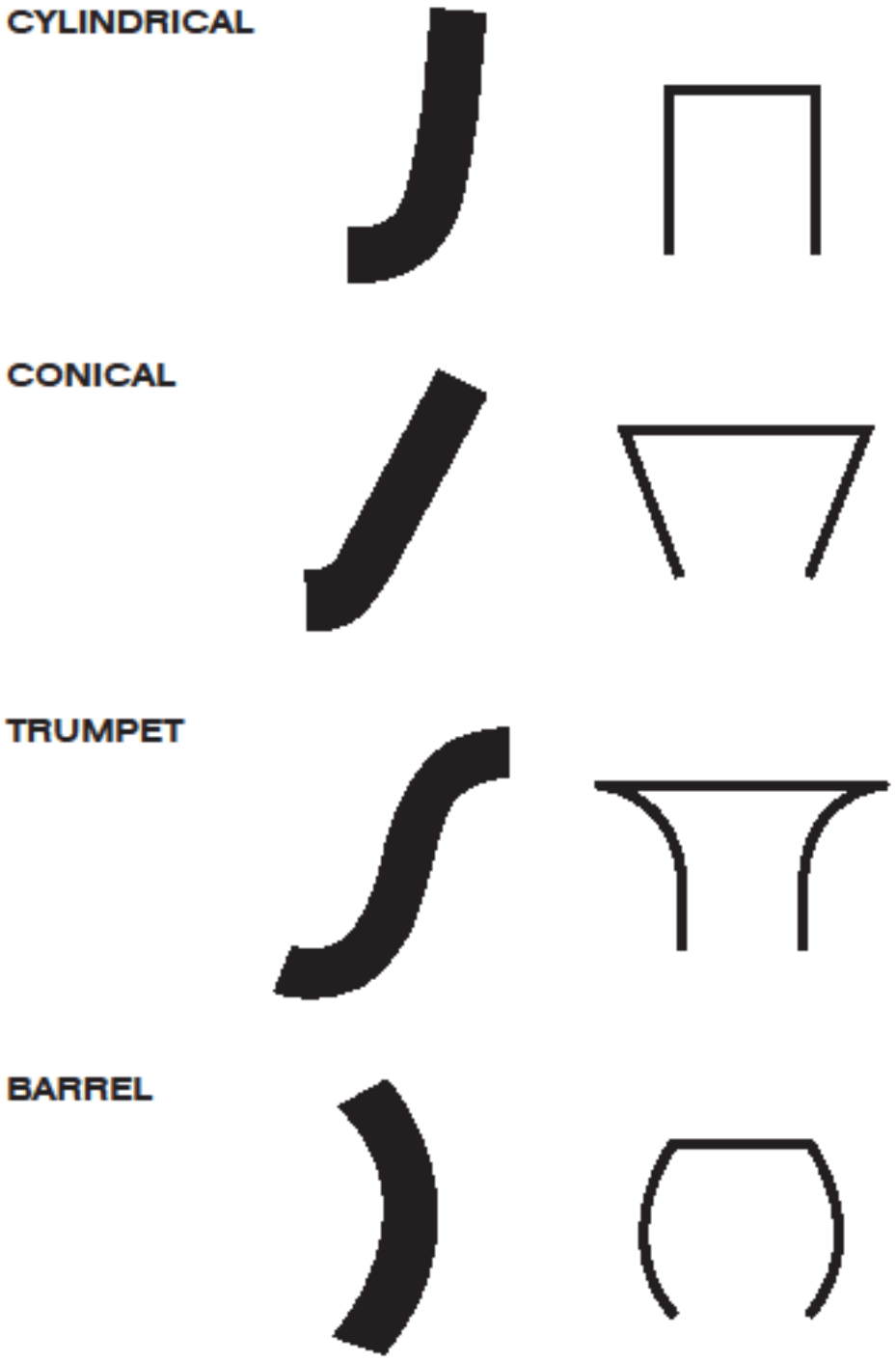
Figure 6: Examples of measurements recorded for the analysis of smoking pipes





Based off of ASI (2010: 81)

Figure 7: Pipe bowl morphology



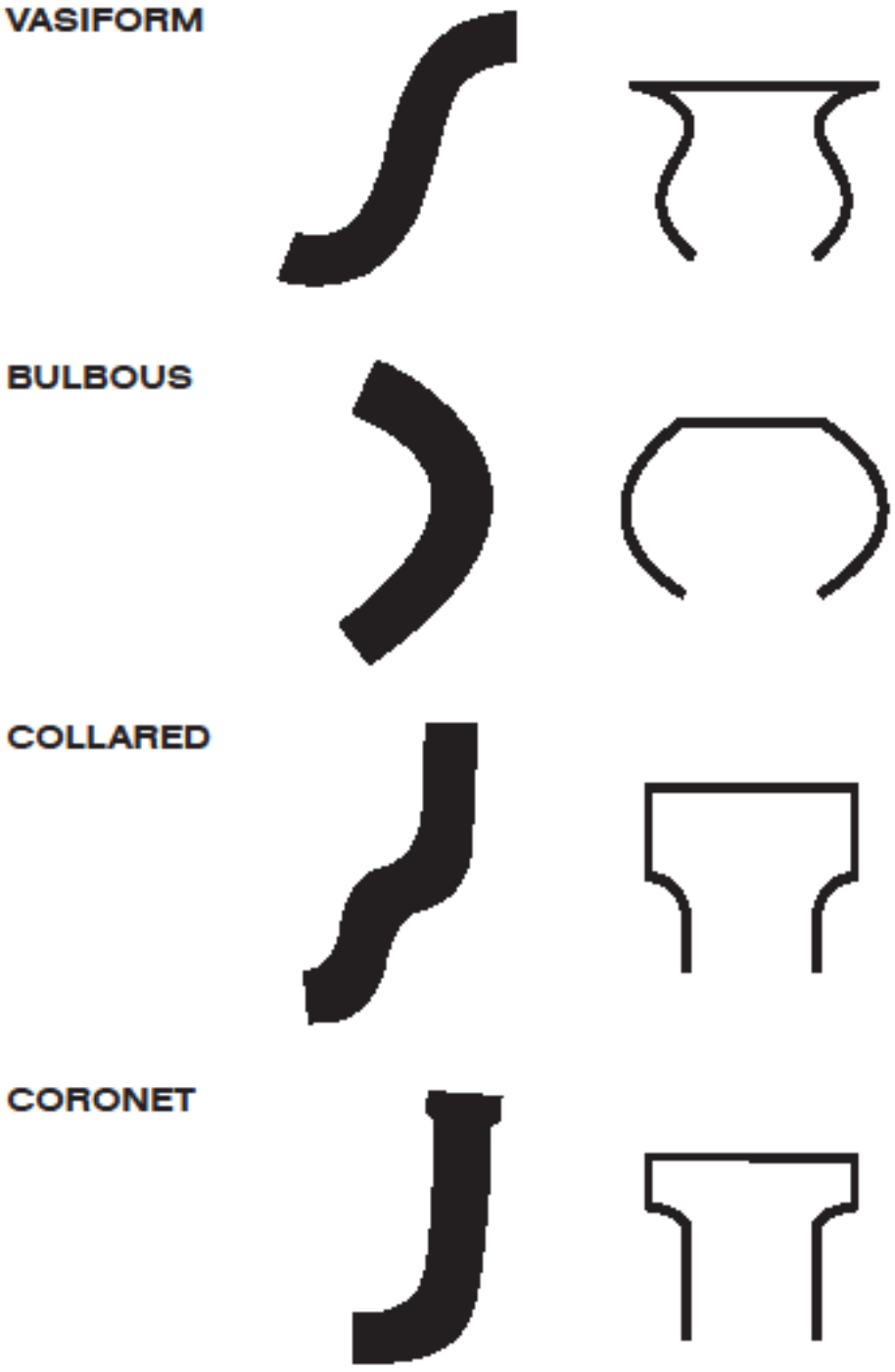

VASIFORM
BULBOUS
COLLARED
CORONET

Figure 8: Pipe stem morphology

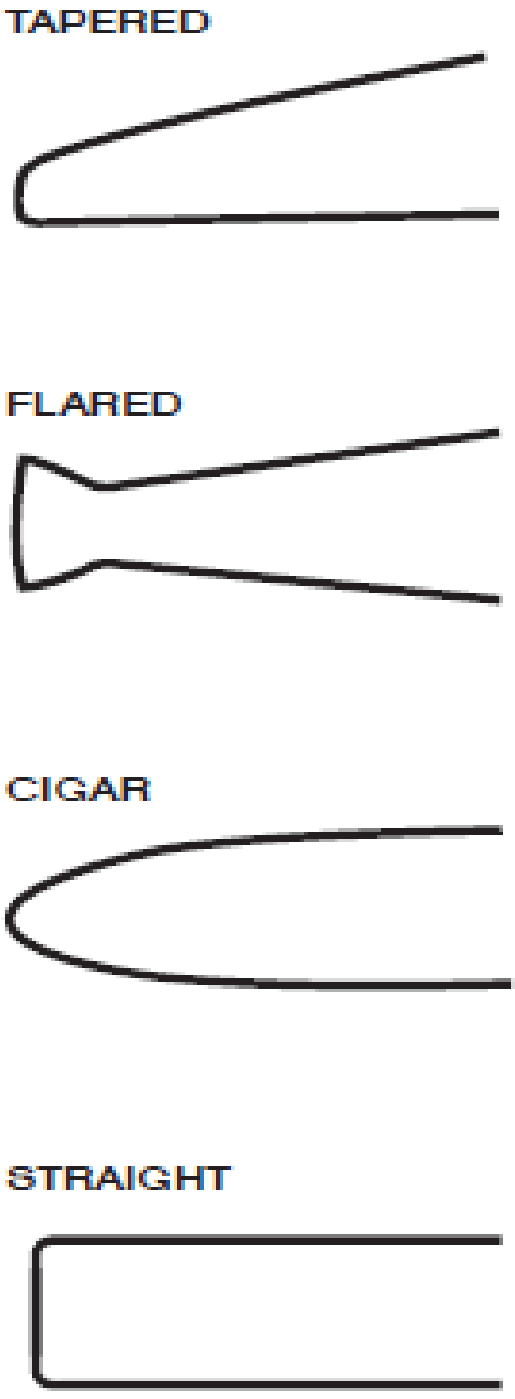


Figure 9: Pipe stem cross-sections

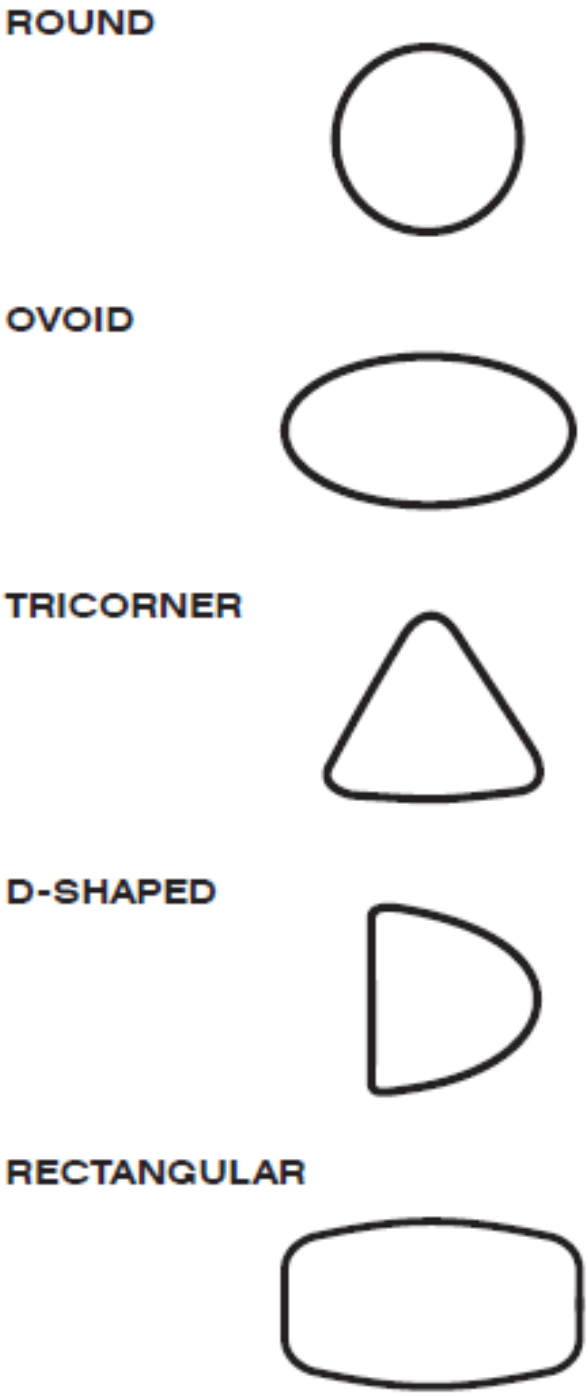
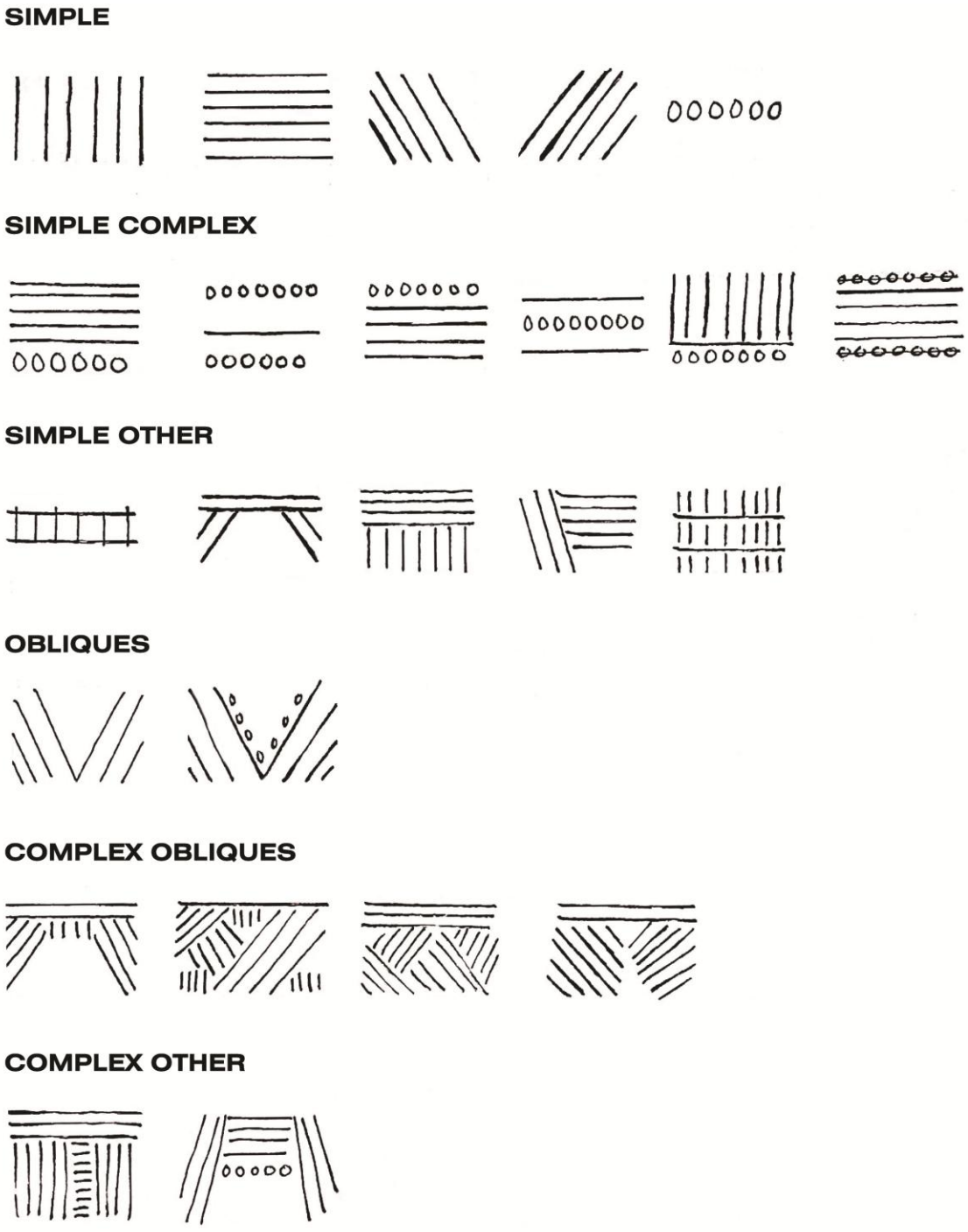


Figure 10: Decorative categories and examples



APPENDIX B

Included here is a detailed report of the smoking pipe analysis conducted on the sites used in this thesis. Please note that the Scott O'Brien and HH site are not included in this appendix since the sites did not yield any smoking pipes in their archaeological assemblages.

Recliner

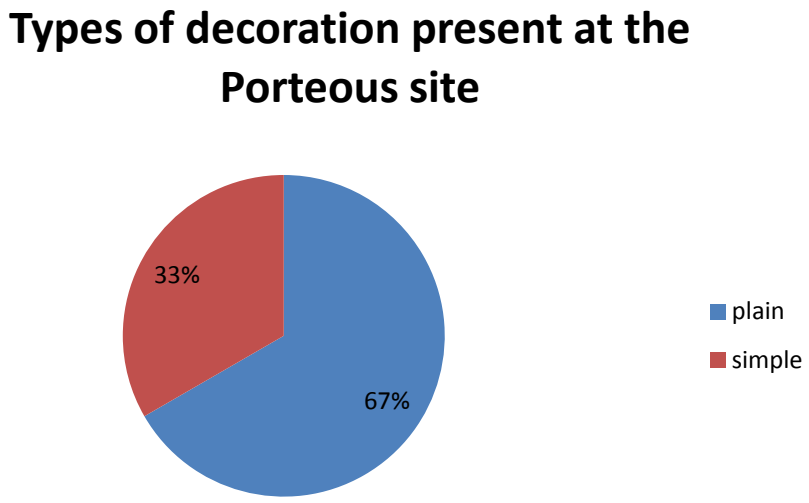
The Recliner site pipe assemblage is small and average compared to the other assemblages used in this analysis. It consists of three bowl fragments, most likely from the same pipe (ASI 2006b). The bowl fragments appear to be well-made, are plain and unburnished, and have cylindrical bowl morphology. Two of the bowl fragments have a collar; it is possible that the third fragment did as well, especially if they all belong to the same pipe, but that it fragmented off. For the fragments that retain a lip, it is smooth, round in shape, and 2.3 mm thick (ASI 2006b:29). It seems that thin rounded lips are favoured at Middle Woodland sites, and Recliner is no exception to this.

Porteous

The Porteous pipe assemblage contains 29 ceramic pipe fragments, nine bowls and 20 stems. Similar to the Recliner site the pipe bowls are cylindrical in morphology. There are stem fragments present in the assemblage, and it is interesting to note that they are D-shaped (Stothers 1977). The majority of sites seem to lean towards stems that taper towards the mouthpiece with round/circular cross-sections. Perhaps D-shaped stems are a style favoured in the Lower Grand

River Valley. Both bowls and stems are short, giving the overall impression that complete pipes would be small. Of the nine bowls, five are decorated with simple motifs, while all of the stems are plain.

Figure 11: Decoration at the Porteous site

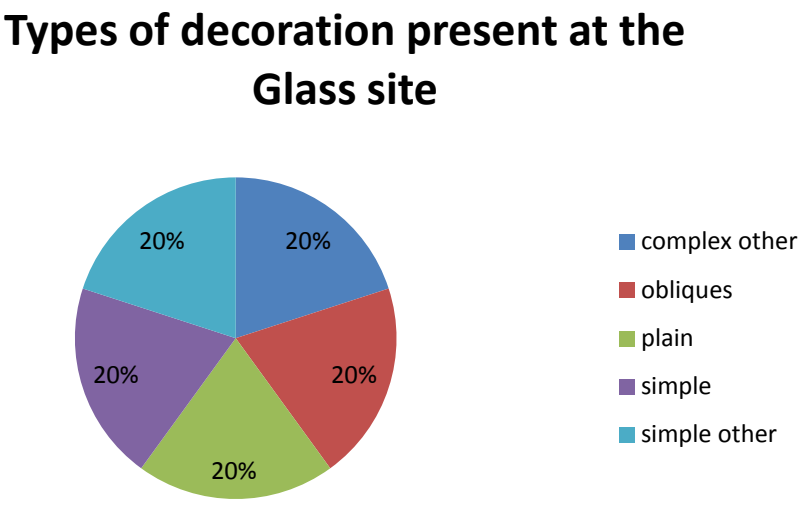


Glass

The Glass site consists of five pipe fragments, three of which are bowls, one stem, and one nearly complete pipe. The nearly complete pipe is plain, except for two rudimentary lines on the bowl, and the stem is tapered and rectangular. Once again a Lower Grand River Valley site has pipe stems that tend towards rectangular construction (e.g., Porteous), although there is one stem fragment that has a round cross-section (Stothers 1974). The three bowls are barrel shaped, and have complex other decorative motifs, two resembling a zig-zag pattern, while the other has two parallel horizontal bands, one of a criss-cross design and the other a `ladder' design (Stothers

1974). The interior of the latter bowl is decorated with cord-wrapped stick obliques. Needless to say the decoration at the Glass site is quite varied in its decorative motifs.

Figure 12: Decoration at the Glass site

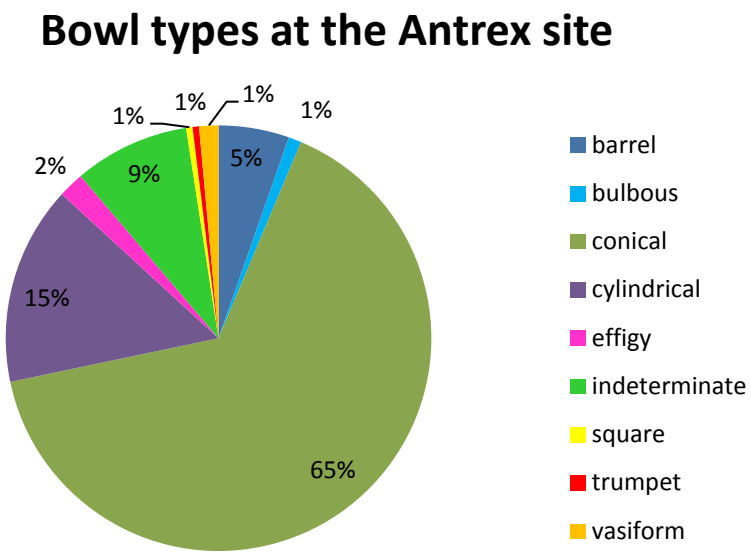


Similar to the Porteous site, both bowls and stems are short, so the overall pipe would have been small.

Antrex

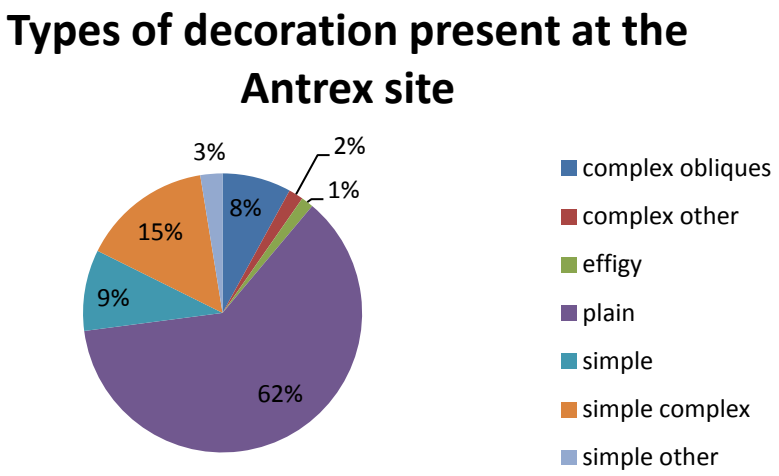
The Antrex pipe assemblage is rather large, in fact one of the largest found for a ELW site in southern Ontario. The assemblage contains 351 pipe fragments: nine complete or almost complete pipes, five effigies (one of which is a complete pipe), seven juvenile, 187 bowl fragments, 123 stem fragments, and 16 miscellaneous fragments. Generally, pipe bowls have a round orifice, though there are three bowls that have an ovoid shaped one. Bowl morphology is varied at the Antrex site, but conical is by far the most popular.

Figure 13: Pipe bowl morphology at the Antrex site



The bowl lips are predominately flat followed by a few that are slightly rounded, and some the slope inwards. Remember that rounded lips are favoured in the MW, while flat ones are in the LW; the Antrex site has a nice mix of both. A few bowls showed signs of black interiors, either carbon adhesions or interior sooting, which provides evidence of their actual use. Stem cross-sections are also varied, and are dominated by round and ovoid, with some D-shaped, and one tricorner in the assemblage. Decoration is limited to pipe bowls and a few instances of lip decoration. The decoration is mainly simple (n=105), while the remaining fragments (n=33) have variable decoration.

Figure 14: Decoration at the Antrex site



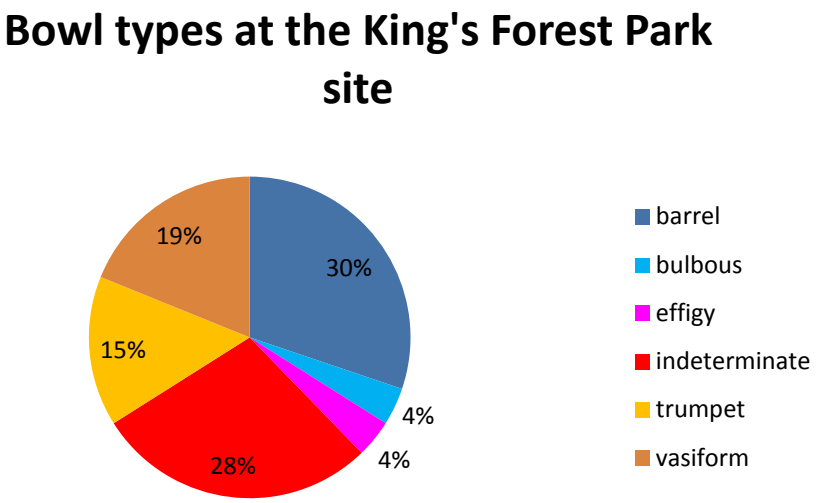
Simple, to no decoration, appears to have been common pre-sedentism, as well as early post-sedentism. What is occurring post-sedentism is the addition of innovative decorative motifs to an already established decoration style. One such example is the inclusion of cord-impressed decoration. There are three instances (CA#'s 34, 64, and 74) of cord-impressed decoration, all of which are on the pipe bowls, and all in a differing style. Moreover, there are four human effigies; one full pipe and three clay appliqué human faces. The effigies are well made and, based on construction, would have faced the smoker. The complete human effigy pipe closely resembles a woman, possibly a pregnant one, since the hands rest on the torso, as well it seems the figure is carrying a basket on their back (ASI 2010:90). It is also possible that it represents something else entirely. Maybe the hands are resting on the torso for the figure is preparing for a deep exhale; blowing smoke in the direction of the smoker. The three human face effigy fragments appear to have broken off and are highly stylized, with punctated eyes and wide mouths; wide mouth reminiscent of later blowing effigies. The fabrics of the Antrex pipe assemblage has been analyzed and detailed by Braun (2012). This analysis revealed temper of plutonic rocks with a

large quantity of mafic minerals. Braun (2012) found that 26 fabrics are present in the Antrex assemblage, with a large variety of temper, including sedimentary rocks such as sandstone, organics, and igneous rocks such as diorite. A larger variety of fabrics points towards a larger group of manufacturers, each with their own preferred tempers, which indicating that pipes were made more by individuals and less by specific craftsmen.

King's Forest Park

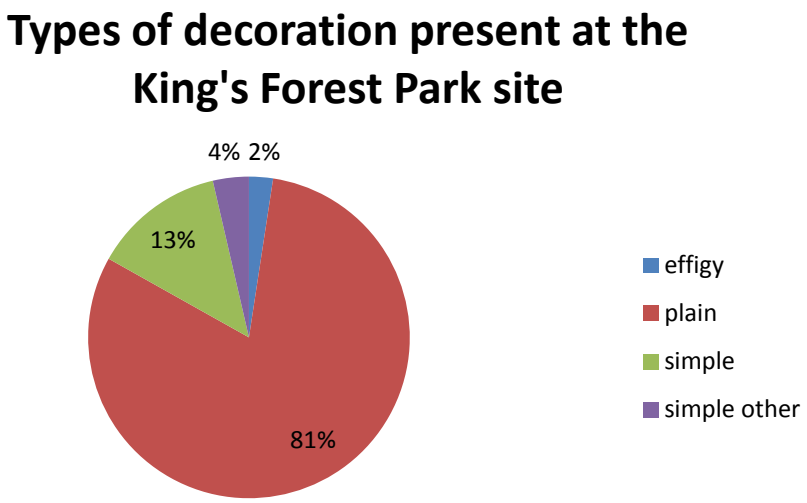
The smoking pipe assemblage for the King's Forest Park site is made up of 87 pipe fragments, seven from an excavation in the 1960's, and 80 from a CRM excavation (ASI 2007). The excavation by Fox (1967) of a woodlot midden uncovered seven clay pipe fragments, six stems and one effigy bowl fragment. It is interesting that with such a small samples the stems still were highly varied in cross-section; one ovoid, one rectangular, three D-shaped, and one triangular. If anything this indicates that the King's Forest Park assemblage, even a small portion of it, is highly varied in style preference. The effigy fragment is described in the original report as being the form of a bird that is upside down, and decorated with simple punctate designs (Fox 1967:23). The pipe assemblage consists of bowl (n=49), stem (n=28), elbow (n=5), effigy (n=2), and juvenile fragments (n=3). The bowl types recorded in the original report are varied and as follows: barrel (44.12%), vasiform (29.41%), trumpet (20.59%), and bulbous (5.88%) (ASI 2007). The vasiform bowls stand out for half of them have collars present, which range in height from 3.3-7.92mm (ASI 2007).

Figure 15: Bowl morphology at the King's Forest Park site



As well, the majority (60%) of the fragments have a smooth exterior finish, followed by some (33.75%) with burnishing, and five with rough exteriors, possibly from weathering (ASI 2007). A smooth finish alludes to, if anything, preference for smooth rather than a rough exterior, and possibly skill of craftsmanship. The lip thickness for the pipe bowls has a wide range between 1.63-6.8mm. Once again a larger variety of construction suggests the presence of many manufacturers. Less than half (n=15) of the bowls are decorated, with simple being the popular simple, specifically horizontal rings. In addition, four lips have simple decorations, one of which is cord roughened (ASI 2007:47).

Figure 16: Decoration at the King's Forest Park site



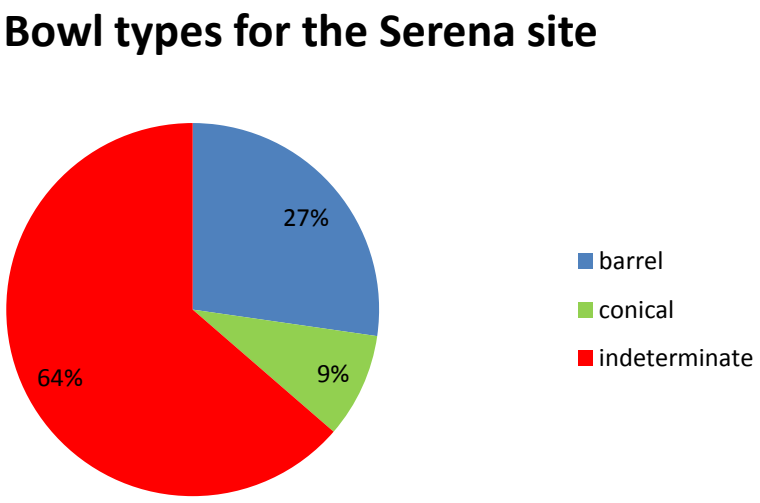
Four of the seven trumpet fragments are plain, and the remaining three are decorated with simple motifs. As well, one of the barrel bowls and one of the stem fragments have traces of red ochre on their exteriors, either for aesthetic or ritual/other purposes. The rest of the pipe assemblage consists of stem, elbow, and mouthpiece fragments. Two of the 28 stem fragments have notched lateral edges, and one elbow fragment has what appears to be a molded ridge. There are nine mouthpieces, six are squared/flat and three taper towards the mouthpiece. There are two juvenile pipe bowl fragments; one is a barrel fragment, with a smooth exterior, and no decoration. The other looks to be trumpet in form, is slightly burnished on the exterior, and has an indeterminate lip decoration (ASI 2003). There is one stone pipe fragment in the assemblage, it is made of black steatite, is small and polished on the outside and smooth on the inside, and has a round lip. It is not uncommon for there to be plain stone pipes found in assemblages dating to this period. It is possible that the plain stone pipes represent an earlier pipe complex, perhaps one that was centered on ritual ceremonialism and group/community gatherings. The assemblage also

contains a possible fragment of a zoomorphic fish effigy, along with an anthropomorphic effigy of a small human head (Figure 14). The human head effigy appears crudely made, and either broke off, or was an appliqué made of sandstone. Below and above the punctated eyes of the effigy are a series of lines, which the original analyzers suggest to be the definition of a forehead. The sides and back of the head also have incised lines that may be representative of ears (ASI 2007:65). As well, there are the beginnings of perforations on the head and the neck the purpose of which are unknown (ASI 2007:65).

Serena

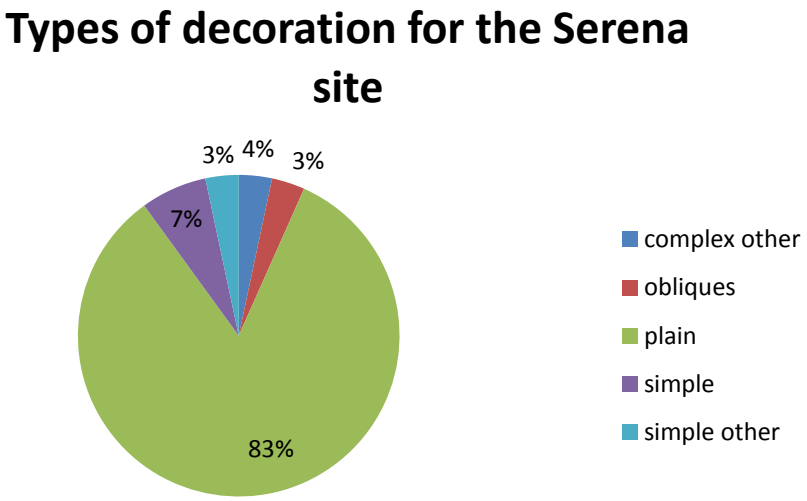
The Serena pipe assemblage does not have as much of a varied bowl morphology as the other sites. This could be since majorities of pipe bowls were of indeterminate bowl morphology due to weathering and their fragmentary nature. Or it could simply reflect a distinct preference for a few styles instead of many.

Figure 17: Bowl morphology at the Serena site



There is one intact pipe that was found in a feature by itself. It has a short stem relative to the size of bowl, the bowl meets the stem at an obtuse angle, and the stem has a D-shaped cross-section (ASI 2004:36). The Stem fragments (n=17) in the Serena assemblage are predominantly tapered towards the mouthpiece, the exception being one flared stem fragment, and one that is ground down to be round. The cross-sections of the stems are variable with ovoid and D-shaped tied for the most popular, followed by round. In a similar vein as the King's Forest Park site, there is one stem fragment with red applied to its exterior, either a red paint or wash; not red ochre in this case. As for the remainder of the pipe assemblage, decoration only occurs on four bowls and one stem, and is highly diverse, with instances of simple, simple other, obliques, and complex other.

Figure 18: Decoration at the Serena site



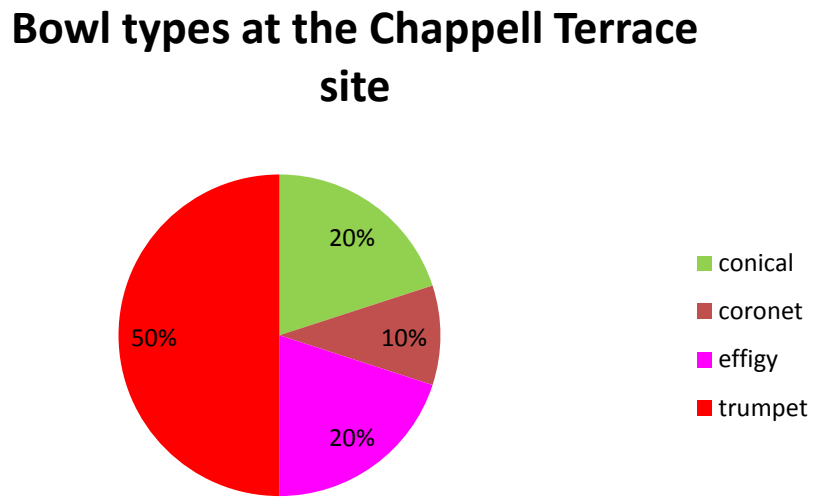
The decorated stem fragment has small ring-like punctates encircling the mouthpiece and two sides of the stem. Lastly, there is one limestone mid-stem pipe fragment. It is plain, has an ovoid

cross-section, and a smooth exterior. Overall, the smoking pipe assemblage for the Serena site exhibits characteristics of both the ELW and the MLW periods, and can be thought of as intermediary between the two periods.

Chappell Terrace

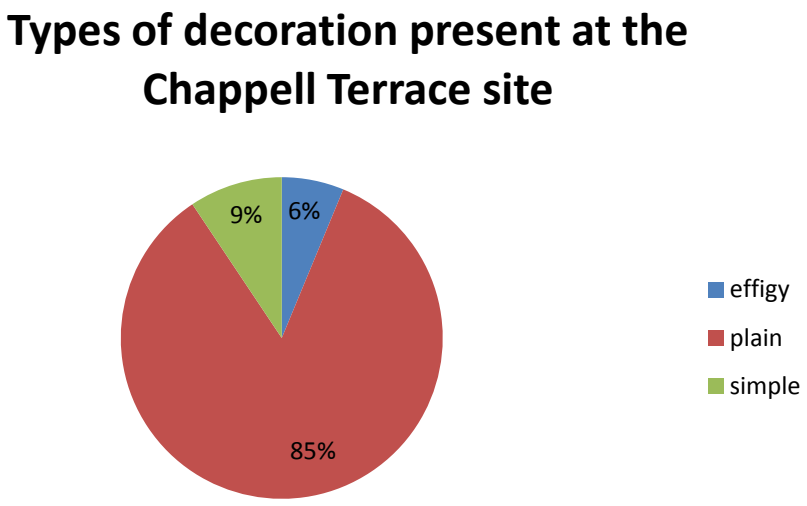
The Chappell Terrace assemblage contains 21 pipe fragments, of which seven are bowls, eleven stems, one juvenile, and two effigies. There are many bowl morphologies present in the assemblage, including five trumpet, two conical, one coronet, and two possible effigies. The fact that the most abundant pipe style is trumpet is no surprise considering that trumpet pipes are thought to dominate MLW assemblages (Kapches 1981:208); the same holds true for coronet and effigy pipe styles.

Figure 19: Bowl morphology at the Chappell Terrace site



The bowl lips are predominantly flat, and range in thickness from 3.1-14.7mm. For the three trumpet pipes, all are plain, two have rounded lips, and one has a much wider flat lip. Interestingly, pipe decoration only occurs on conical and coronet pipe bowls, the remainders are plain, and the common decorative motif is simple horizontal rings, punctates, or rectangular impressions.

Figure 20: Decoration at the Chappell Terrace site



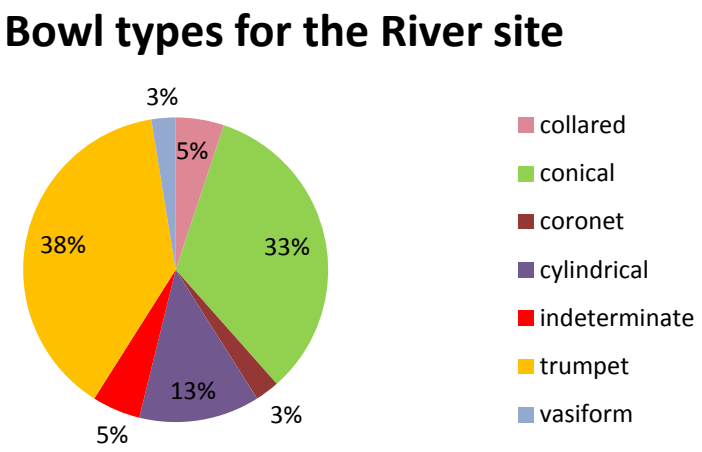
The pipe stems are all plain, with only five of them showing evidence of burnishing. Of the pipe stems there are two that have tapered stems, but are ground flat. One of the mouth pieces is plain while the other seems to have been deliberately broken as evidence by the careful scoring at the lateral margin, possibly an attempt at recycling the pipe (ASI 2002). The single juvenile pipe fragment is of a small plain bowl that may have been trumpet in shape. The report (ASI 2002) hesitantly notes the presence of anthropomorphic effigy. Hesitantly, in the sense that the evidence of a modeled eyebrow, bridge of a nose, and an eye formed by a punctate is not well-

executed and/or apparent. The second effigy is supposed to be a turtle shell carapace decorated with punctates. Please see Figure 16 for visual representations of both effigies.

River

The pipe assemblage contains 155 pipe fragments, with a MNI of 34. Of the 155 pipe fragments, 36 are from bowls, three are juvenile, 23 are stems, and the remaining 95 are unanalzyable/miscellaneous. The morphology of the pipe bowls is as follows: trumpet is the most abundant (n=14), followed by conical (n=12), cylindrical (n=4), collared (n=2), coronet (n=1), vasiform (n=1), and indeterminate (n=2).

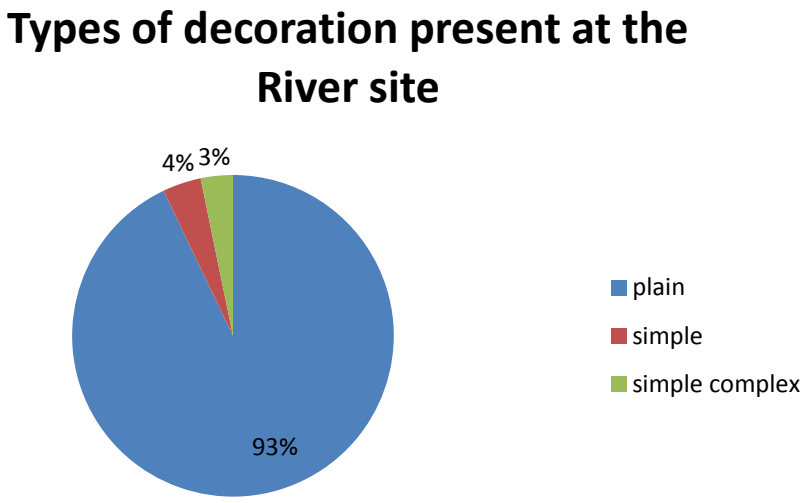
Figure 21: Bowl morphology at the River site



There are a total of 23 stems, 18 of which are tapered, two are cigar, one is flared, and the remaining two are indeterminate. All of the stems have a round-ovoid cross-section, with the exception of one stem that is possibly rectangular and is decorated with punctates. Pipe decoration is variable, and consists of simple and simple complex. The most common decorative

style is a series of horizontal lines (e.g., 2-8) followed by a row of punctates. There is also a trumpet bowl that is decorated with curving lines that run horizontally around the bowl, as well as one that has chevrons.

Figure 22: Decoration at the River site

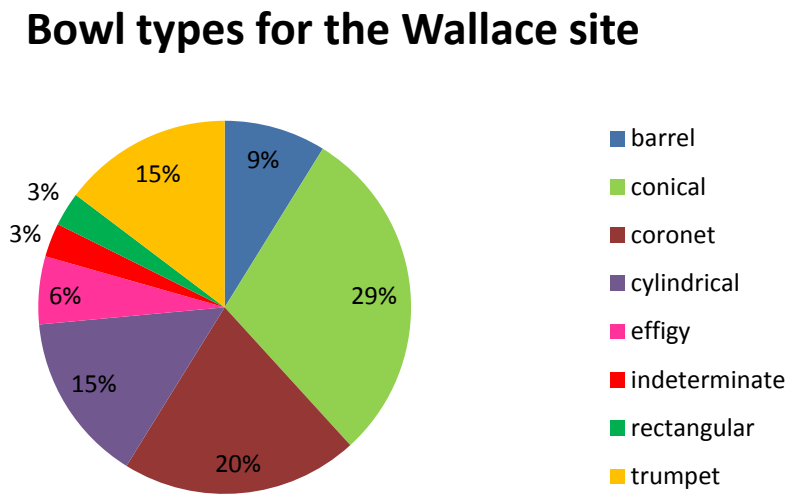


As well, one trumpet bowl appears to be decorated with an appliqué strip (Dillon Consulting LTD 1997). There are two pipe stem midsections that stand-out. They appear to both be ground down to a smooth surface; the initial investigation suggests they were possibly used as a tool or a bead (Dillon Consulting LTD 1997). Furthermore, there are three juvenile bowl fragments, all of which are poorly made and with coarse temper.

Wallace

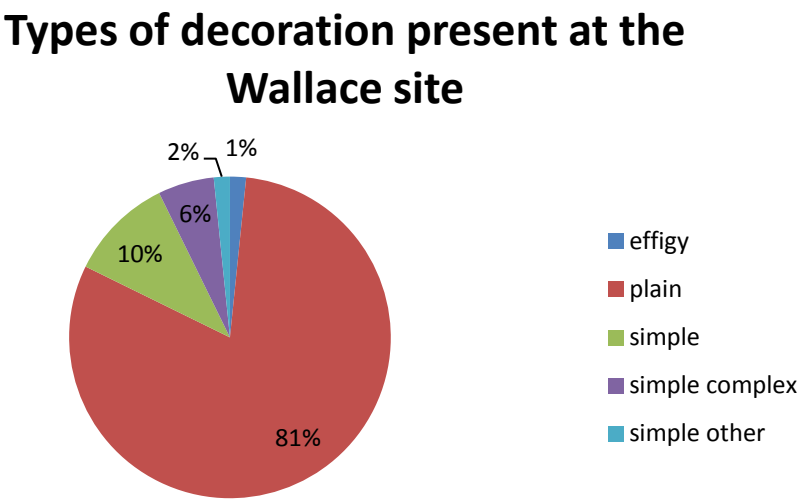
The Wallace site pipe assemblage consists of 179 pipe fragments, 143 from a ploughed context, 6 from the OAS excavations, 27 from an unploughed context, and three stone pipes from the plough surface. Of the 128 analyzable pipe fragments 34 are bowls and 69 are stems. The bowls consist of the following: conical (n=10), coronet (n=7), cylindrical (n=5), trumpet (n=5), barrel (n=3), effigy (n=2), square (n=1), and indeterminate (n=1).

Figure 23: Bowl morphology at the Wallace site



The conical and coronet pipe types make up half of the assemblage. Almost all of the bowl lips are flat and smooth and range in thickness from 4.8-11.7 mm. Of the 34 bowls 23 are decorated, 19 have decoration on the bowl and four have it on the lip. The most prevalent decorative motif is simple consisting of a single, or series of, horizontal ring/s, or punctates of varying sizes. The second most common motif is simple complex, followed by simple other. There are no obliques or complex obliques in the pipe assemblage.

Figure 24: Decoration at the Wallace site

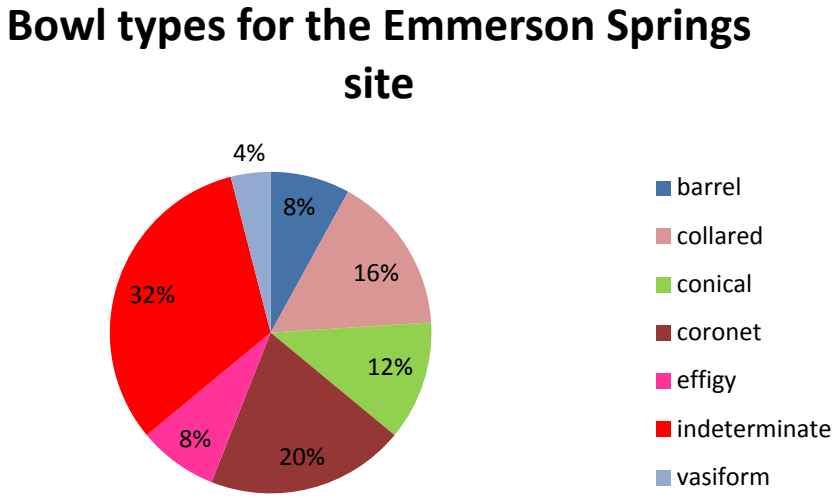


Most of the stems have a round cross-section and taper towards the mouth-piece, although there are instances of flared or straight stems. The majority of pipe fragments are untempered with the remainder being of fine sand and minimal mica. The assemblage also includes two effigy pipes, one anthropomorphic, and the other zoomorphic. The human effigy is a stone bowl fragment with a human face, while the zoomorphic effigy is of a snake coiled around the pipe stem (Figure 19). There is also a complete separate stone bowl (CA#358), which has a receiving end for a stem to be inserted. The bowl is decorated on all sides with a fern-like design, has vertical lines on the lip, and vertical lines surrounding the opening for the stem (Figure 20). It is possible that this is an early example of a calumet pipe. As well, the assemblage contains a stone effigy that is rather small, with no indication of what it could be. It is suggested (Hawkins 2004:94) that instead of a pipe it was a pendant. Many of the pipe fragments are reported as being untempered, with fine sand being used as temper for the majority of the assemblage.

Emmerson Springs

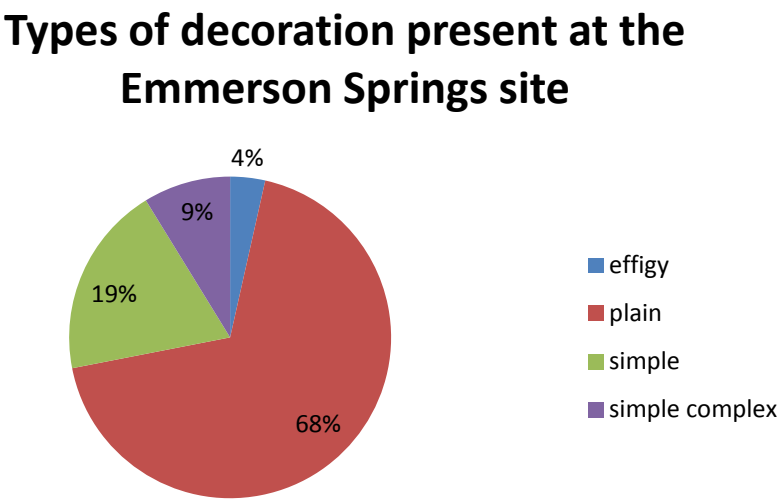
The Emmerson Springs pipe assemblage consists of 86 fragments: complete pipes (n=1), bowl fragments (n=39), stem fragments (n=44), elbows (n=1) and fragmentary juvenile pipes (n=1). Of the 17 analyzable bowls, the most popular form is the coronet (n=6) followed by collared (n=4); the remainder include barrel (n=2), conical (n=2), effigy (n=2), and vasiform (n=1) (Hawkins 2004).

Figure 25: Bowl morphology at the Emmerson Springs site



The lip is on average flat with a smooth surface and a thickness ranging between 2.0-8.0 mm with the average being 4.7 mm (Hawkins 2004:75). Many of the analyzable pipe bowls are burnished, and those that are not seem to be specifically the coronet types. For decoration simple and simple complex are the most common, followed by plain.

Figure 26: Decoration at the Emmerson Springs site



Thirteen pipe stems were analyzable and consisted of tapering (n=7) and flared (n=2), all of which have a round cross-section, although, it is suggested that two could be squared but it is indeterminate (Hawkins 2004:79). The pipe assemblage contains a single whole ceramic pipe, a plain conical pipe with a round orifice, a flat lip, and a stem that tapers towards the mouthpiece and has a round cross-section (Hawkins 2004:75). The one elbow recovered is plain and highly burnished. The juvenile bowl fragment shows signs of decoration, though its small size made further investigation difficult. There is a stone fragment that may belong to a pipe or more likely to a banner stone; it is slate with a bore hole (Hawkins 2004:78). The pipe assemblage also contains two effigy pipes. The more complete one is of a human effigy, while the second is believed to be a top knot, which has been linked to community shamans (Mathews 1976: 18; 1980:300-02). As well, the assemblage contains a stone effigy that is rather small, with no indication of what it could be. It is suggested (Hawkins 2004:94) that instead of a pipe it was a

pendant. Many of the pipe fragments are reported as being untempered, with fine sand being used as temper for the majority of the assemblage.

Table 3: State of smoking pipe fragments

Type	Recliner	Porteous	Glass	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Complete				2		1				1
Almost complete			1	7		1		1		
Bowl, fragment	3	9	3	166	48	8	7	34	32	37
Bowl and elbow				21	1	1		1	2	
Elbow				4	5	1			3	1
Stem fragment		20	1	105	19	8	7	23	55	44
Stem and elbow				10		1	1		11	
Stem with MP				8	9	8	3			
Effigy				5	2		2		2	2
Juvenile pipe				1						
Juvenile bowl				4	2		1	3		1
Juvenile bowl and elbow				1						
Juvenile stem									3	
Juvenile stem and elbow				1						
Juvenile stem with MP					1					
Miscellaneous				16		1		93	20	
Total	3	29	5	351	87	30	21	155	128	86

Table 4: Smoking pipe bowl morphology

Type	Recliner	Porteous	Glass	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Barrel			3	11	16	3			3	2
Bulbous				2	2					
Collared								2		4
Conical				134		1	2	13	10	2
Coronet							1	1	7	6
Cylindrical	3	9		31				5	5	
Effigy				4	2		2		2	2
Juvenile										
Square				1					1	
Trumpet				1	8		5	15	5	
Vasiform				3	10			1		1
Indeterminate				18	15	7		2	1	8
Total	3	9	3	205	53	11	10	39	34	25

Table 5: Prevalence of decorative motifs

Motif	Recliner	Porteous	Glass	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Simple		5	1	33	11	2	3	6	13	11
Simple complex				53				5	7	5
Simple other			1	9	3	1			2	
Obliques			1			1				
Complex obliques				28						
Complex other			1	6		1				
Plain	3	24	1	217	67	25	16	144	100	39
Indeterminable					1					
Total	3	29	5	346	82	30	19	155	122	55

Table 6: Decoration placement

Area	Porteous	Glass	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Collar			1			1			
Bowl	5	4	127	13	4	4	4	21	17
Bowl and Lip			3	1					
Lip			1	3				4	1
Elbow			1	1					
Stem			1	2			1	1	
Stem and MP					1				
Total	5	4	134	20	5	5	5	26	18

Table 7: Smoking pipe stem shape

Shape	Porteous	Glass	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Cigar					1		2	1	
Effigy									
Flared			7		1		1	7	2
Squared				6					
Straight								5	
Tapered	6	1	82	4	4	2	19	18	7
Tricorner			1						
Total	6	1	90	10	6	2	22	31	9

Table 8: Smoking pipe lip shape

Shape	Recliner	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
Rounded	2	34	1		2	18	2	
Flat		74		6	5	9	20	7
Slopes		20				1	1	
Total	2	128	1	6	7	28	23	7

Table 9: Smoking pipe lip ranges

Range	Recliner	Antrex	King's Forest Park	Serena	Chappell Terrace	River	Wallace	Emmerson Springs
0.1-2.0			1					1
2.1-4.0	2	12	12	1	1			7
4.1-6.0		53	18	1	3	4	6	3
6.1-8.0		59	3	1	1		9	4
8.1-10.0		22		1			4	
10.1-12.0		9		1			3	
12.1-14.0		4			1			
14.1-16.0					1			
Total	2	159	34	5	7	4	22	15

APPENDIX C

The following are examples of specific smoking pipes from sites used in this analysis.

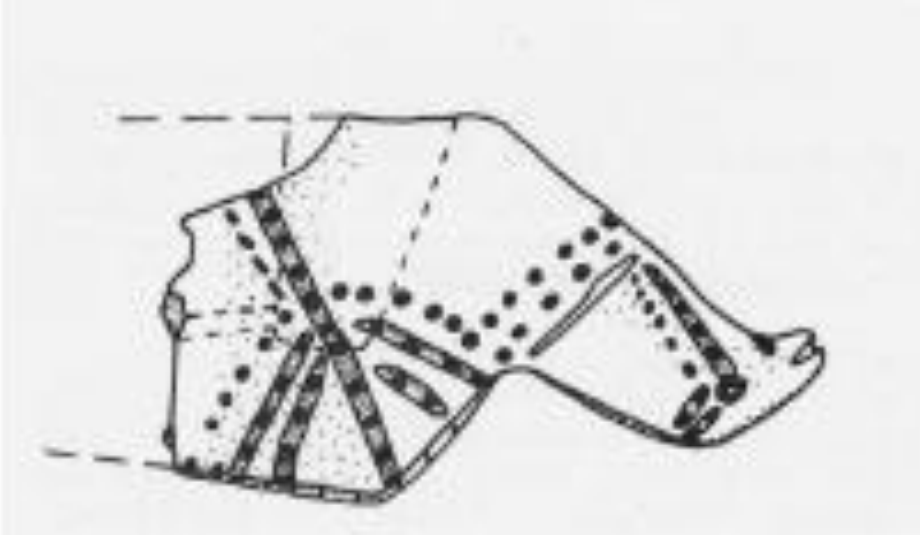
Figure 27: Antrex: complete human effigy pipe

(ASI 2010:91)

Figure 28: Antrex: human effigy pipe fragments

(ASI 2010:91)

Figure 29: King's Forest Park: detail of fragmentary bird effigy bowl



(Fox 1967:21)

Figure 30: King's Forest Park: sandstone human effigy

(ASI 2007:65)

Figure 31: Serena: (a) plain and (b) decorated barrel bowls

(ASI 2004:67)

Figure 32: Chappell Terrace: possible human (a) and turtle (b) effigy fragments

(ASI 2002:20)

Figure 33: River: variety of smoking pipe examples

(Dillon Consulting LTD 1997:49)

Figure 34: River: mended complete pipe

Figure 35: Wallace: snake effigy stem fragment

Figure 36: Wallace: complete stone pipe

Figure 37: Emmerson Springs: complete plain smoking pipe

(Hawkins 2004:74)

Figure 38: Emmerson Springs: possible 'topknot' effigy bowl fragment

(Hawkins 2004:78)