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Guided by Smoke: A Comparative Analysis of Early Late Woodland Smoking Pipes from the Arkona Cluster

Shane McCartney, *The University of Western Ontario*

Supervisor: Hodgetts, Lisa M., *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Anthropology

Abstract

This thesis undertakes a comparative analysis of ceramic and stone pipes recovered from eight archaeological sites located near present day Arkona, Ontario. Commonly known as the Arkona Cluster, these sites date to between A.D. 1000 and 1280 during the early Late Woodland Period and are thought to be part of a borderland region between distinct cultural groups known as the Western Basin Younge Phase and the Early Ontario Iroquoians. Using a combination of distribution and attribute data from each site's pipe assemblage, I explore how the similarities and differences observed can be used to draw insights into the potential relations between the sites and how they relate to a larger regional context of identity formation, territorialization and intergroup interaction and exchange.

Keywords

Western Basin Tradition, Early Ontario Iroquoian, Younge Phase, Early Late Woodland, pipes, clay pipes, stone pipes, attribute analysis, distribution analysis, borderland

Acknowledgements

I will forever be grateful to the unflagging support of my supervisor Lisa Hodgetts, whose seemingly limitless patience and kind encouragement were fundamental to the successful completion of this thesis. When it came down to the wire, she helped me cross it. I would also like to express my sincere gratitude to my advisor and committee member Neal Ferris for his suggestion of this topic, and for his continued insistence on stretching my intellectual boundaries through his discussions, writing and classes. A big thank you is owed to Jean-Francois Millaire for lending me his lab when I really needed a quiet, isolated space, and to Chris Ellis for always being willing to turn an offhand question into an enthusiastic half hour discussion of some fascinating aspect of Ontario archaeology. Thank you also to William Fox for your feedback on the stone pipe collection. I would also like to extend my appreciation to my other committee members Ron Williamson and Jim Keron for their valuable feedback and discussion.

I would like to thank the Anthropology Department for their continual support. To my dear friend Chris Lemon, thank you for your support and undoubted talent as a challenging sounding board. A big thank you is owed to friends and colleagues at Golder Associates in London for the encouragement and support I received, as well as Jim Wilson for urging me to apply for the program and his role in generating the initial data sets. Thank you to Anthony Butler for your encouragement, flexibility and understanding as I wound through the process.

I'd like to thank my brother Iain and my father Neil for their support and humorous reminders, and for sticking by me through thick and thin.

To my wife Brydie, I cannot thank you enough for your love, patience and encouragement during this process. Thank you for believing in me and being there for a push when I needed it.

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Chapter 1: Introduction

The expansion of commercially based archaeology in Ontario in recent decades has resulted in an unprecedented wealth of new data and insights into the lifeways of past people. This has allowed researchers to begin to evaluate complex questions of sociocultural organization and change at multiple scales of analysis. A salient example of this phenomenon is the discovery of the Arkona Cluster, a series of geographically and chronologically bounded archaeological sites dating to approximately 1000-1285 A.D., a period known as the Early Late Woodland in southwestern Ontario (see Ferris and Spence 1995, Murphy and Ferris 1990). These sites were occupied at a unique time in Ontario prehistory, as multiple groups across Northeastern North America were undergoing a transition from seasonally mobile hunter gatherers to a horticultural lifestyle based on maize cultivation from permanently occupied settlements. Preliminary analyses of material culture from the Arkona Cluster sites attributed the occupants to the Younge Phase of the Western Basin Tradition (WBT). WBT groups are characteristically mobile, shifting between seasonal settlements, and exhibit a distinctive ceramic tradition (Murphy and Ferris 1990). However, the Arkona Cluster sites also manifested settlement patterning more commonly associated with the contemporary Early Ontario Iroquoians (EOI) located further east (Williamson 1985; 1990). This unique confluence of archaeological characteristics has spurred research investigating questions of inter group interaction and exchange in a borderland context (Ferris and Wilson 2009). In addition to these distinctive regional traits, the archaeological excavations of the Arkona cluster recovered an unusually large and diverse assemblage of ceramic and stone pipes, which are the primary focus of this thesis.

1.1 Background

The Arkona Cluster is located near present day Arkona, Ontario. It is situated at the southwest boundary of the Horseshoe Moraines, a physiographic region consisting of three smooth, broad morainic ridges composed of pale brown, hard, calcareous, fine textured till overlooking the banks of the Ausable River (Chapman and Putnam 1984:127). The soils of the area have been identified as Burford Loam, Fox Sandy Loam, and Huron Clay, part of the Grey-Brown Podzolic Great Soil Group and consisting of gravelly, calcareous outwash, coarse textured outwash, and fine textured calcareous till (Matthews et al. 1957:40). Examination of field notebooks by the first European surveyor of the area suggests the surrounding region had been forested with oak, maple, ash and hickory (McDonald 1835). A total of 10 archaeological sites were subject to Stage 4 archaeological mitigation strategies by Archaeologix Inc. between 1998 and 2008 in advance of a proposed quarry expansion in the area. Stage 4 excavation consisted of the hand excavation of targeted ploughzone topsoil contexts followed by mechanical topsoil removal and the subsequent documentation and excavation of extant subsurface cultural feature deposits. Ceramic and stone pipe fragments were recovered from eight of the excavated sites, which are described below (Figure 1). All available radiocarbon dates are presented in Table 1 and Figure 2. The dating is discussed in Section 1.1.5.

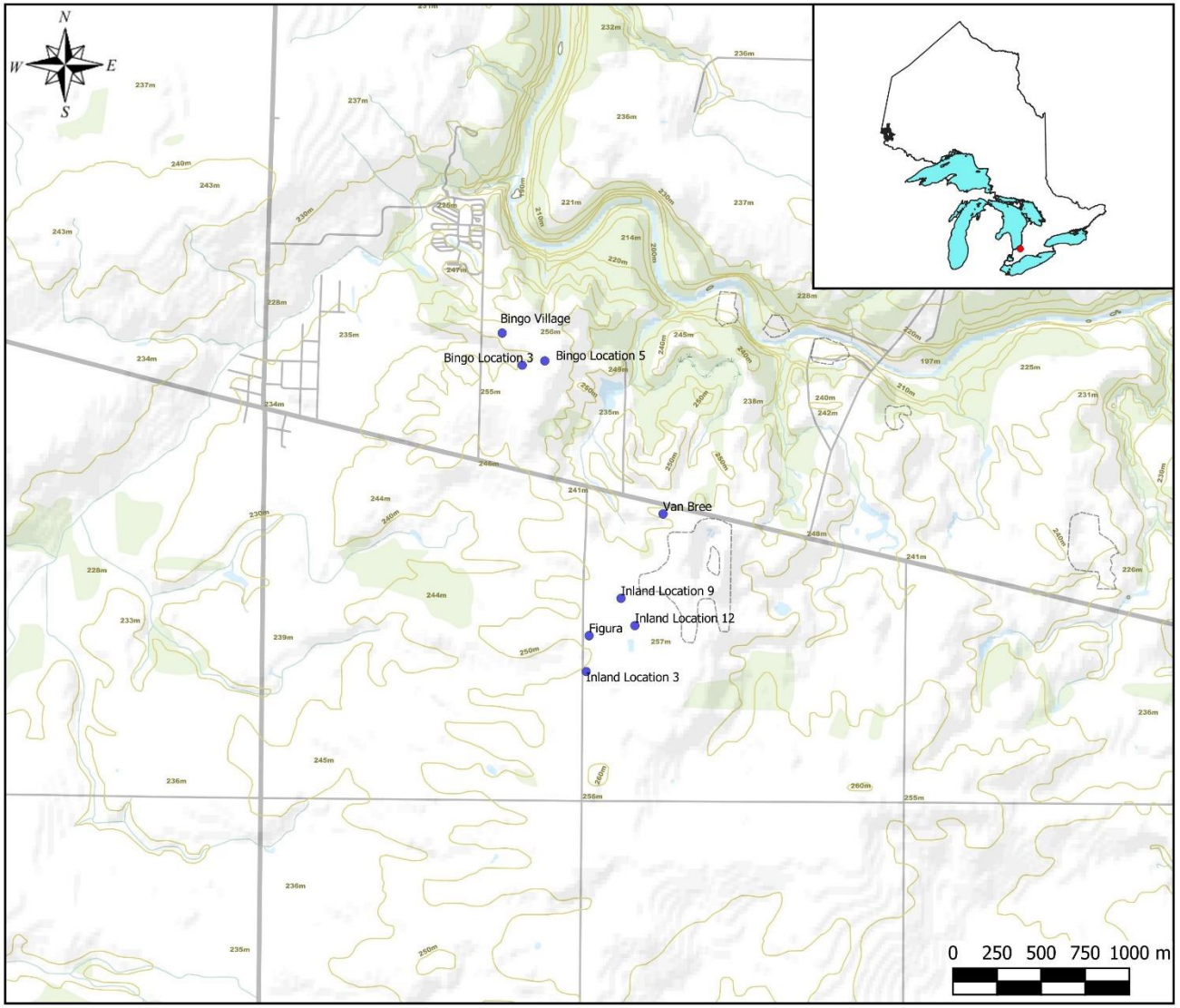

Figure 1: Arkona Cluster Sites included in thesis analysis

Table 1: Arkona Cluster Radiocarbon Dates

Site	Sample Number	Feature No.	Measured Age	Conventional Radiocarbon Age	2 Sigma Calibration	Source
Bingo	A10/B/117	117	900 +/- 30 BP	890 +/- 30 BP	Cal AD 1040 to 1220 (Cal BP 910 to 730)	Neal Ferris Personal Communication
Bingo	A11/B/420	420	560 +/- 30 BP	820 +/- 30 BP	Cal AD 1170 to 1270 (Cal BP 780 to 680)	
Bingo	A13/B/473	473	560 +/- 30 BP	830 +/- 30 BP	Cal AD 1160 to 1260 (Cal BP 790 to 690)	
Bingo	A12/B/486	486	540 +/- 30 BP	800 +/- 30 BP	Cal AD 1200 to 1270 (Cal BP 750 to 680)	
Figura	A9/I1/24	24	580 +/- 30 BP	840 +/- 30 BP	Cal AD 1160 to 1260 (Cal BP 790 to 690)	Gostick 2017:6
Figura	A4/I1/24	24	520 +/- 30 BP	780 +/- 30 BP	Cal AD 1210 to 1280 (Cal BP 740 to 670)	
Figura	A8/I1/102	102	950 +/- 30 BP	970 +/- 30 BP	Cal AD 1010 to 1160 (Cal BP 940 to 800)	
Figura	A5/I1/55	55	530 +/- 30 BP	800 +/- 30 BP	Cal AD 1200 to 1270 (Cal BP 750 to 680)	
Figura	A7/I1/63	63	830 +/- 30 BP	850 +/- 30 BP	Cal AD 1160 to 1260 (Cal BP 800 to 700)	
Figura	F0001	65	540 +/- 30 BP	810 +/- 30 BP	Cal AD 1165 to 1270 (Cal BP 785 to 680)	
Figura	F0002	94	490 +/- 30 BP	760 +/- 30 BP	Cal AD 1220 to 1285 (Cal BP 785 to 680)	
Inland Location 3	A3/I3/F22	22	540 +/- 30 BP	800 +/- 30 BP	Cal AD 1200 to 1270 (Cal BP 750 to 680)	Suko 2017:13
Inland Location 9	A1/I9/F56	56	830 +/- 40 BP	820 +/- 40 BP	Cal AD 1160 to 1270 (Cal BP 790 to 680)	Golder 2012a:162
Inland Location 12	A14/I12/19	19	820 +/- 30 BP	850 +/- 30 BP	Cal AD 1160 to 1260 (Cal BP 800 to 700)	Golder 2012a:162
Van Bree	BGS-2149	45		947 +/- 50 BP	Cal AD 1028-1155	Cunningham 1999:41
Van Bree	BGS-2150	71		950 +/- 50 BP	Cal AD 1017-1156	

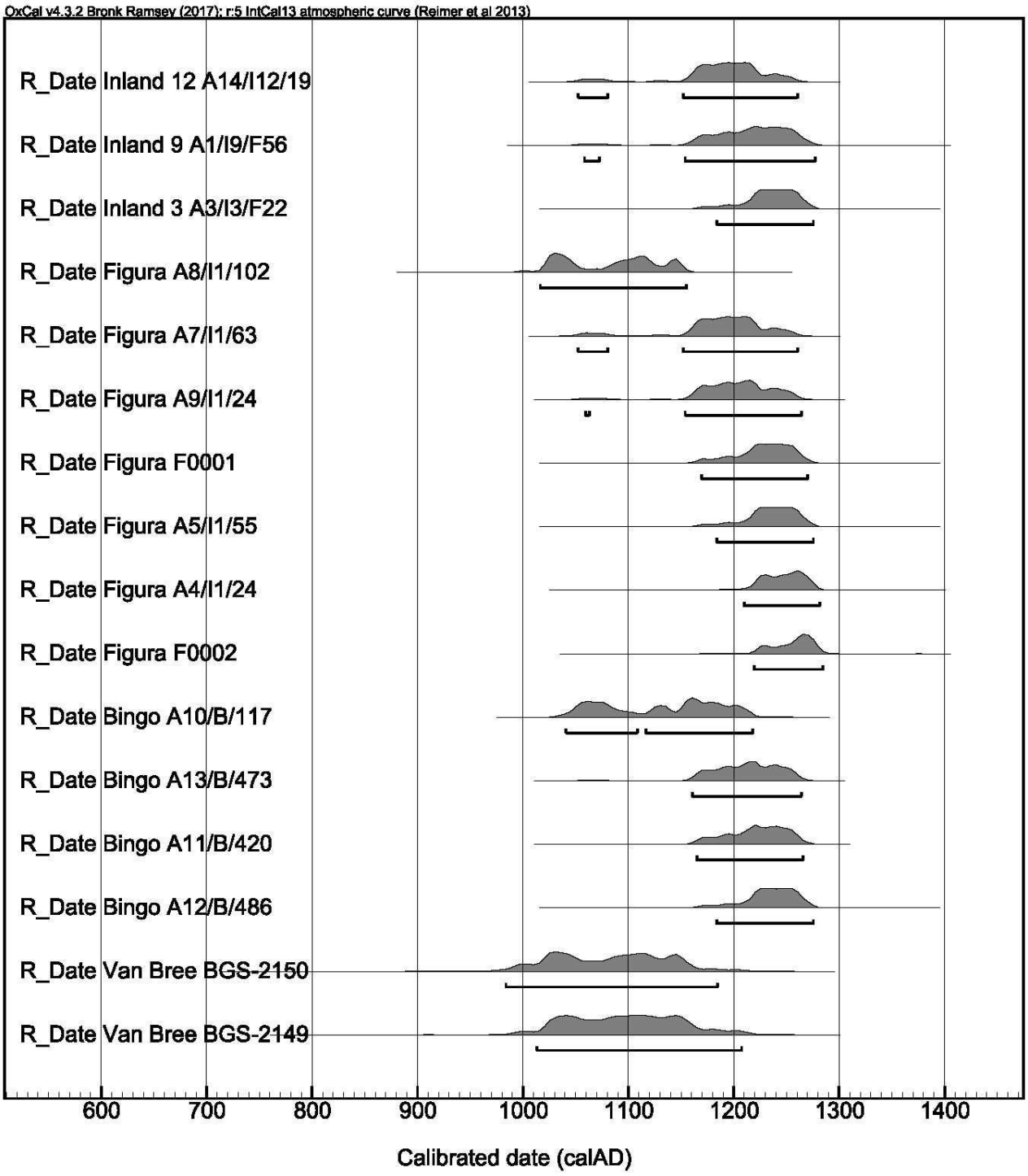

Figure 2: Radiocarbon Plot of Arkona Sites

1.1.1 Van Bree (AgHk-32)

The Van Bree site was first identified in 1998 by Archaeologix Inc. (Archaeologix) and consisted of a 0.5 hectare artifact scatter identified along a northwest-southwest ridge during an initial pedestrian survey (Archaeologix 1998:1). Subsequent excavations identified 74 subsurface cultural features and an incomplete house structure. Additionally, examination of the ceramic sherds identified a Younge Phase Western Basin occupation with a potential Early Ontario Iroquoian influence (Archaeologix 1998:47). Van Bree has been a primary dataset for both a Masters thesis (Cunningham 1999) and PhD dissertation (Watts 2006) that used ceramic analysis to attempt to identify differences in ceramic manufacture between Early Ontario Iroquoian and Western Basin groups. Based on ceramic cross mend analysis, Cunningham identified a Western Cluster and Central Cluster within the site that contained pots from different ceramic manufacturing traditions (Cunningham 1999). Two radiocarbon dates were obtained, with a calibrated age range of Cal AD 1028-1155 AD for the centre of the site and Cal AD 1017-1156 AD for the western portion (Cunningham 1999:41). Cunningham suggested the results of this work represented either a co-occupation of the Van Bree site by Younge Phase Western Basin and Early Ontario Iroquoian groups, or a re-occupation by the Early Ontario Iroquoians following abandonment by the Younge Phase group (Cunningham 2001:10). Watts argued for a potential locally distinctive ceramic tradition that resulted from a syncretic design coalescence, where mixtures of different pottery manufacturing traditions resulted in new forms and designs that were different from groups identified outside of the Arkona region (Watts 2008:79).

1.1.2 Bingo Location 3 (AgHk-40) and 5 (AgHk-41)

Located approximately one kilometre northwest of Van Bree, Bingo Locations 3 and 5 were first identified in 2003 by Archaeologix and were subjected to a Stage 4 archaeological mitigation in April 2005 (Archaeologix 2005). At Bingo Location 3, a total of 6,464 artifacts were recovered and 37 subsurface cultural features, 68 posts and 4 support posts were identified once topsoil had been mechanically removed. Two house structures were inferred from the arrangement of identified storage pits and post mould patterning. The excavations of Bingo Location 5 resulted in the recovery of 16,669 artifacts and the settlement pattern consisted of 13 tightly clustered storage pits in association with three posts and a support post. Radiocarbon dates were not obtained for these sites, but the available ceramics and settlement data suggested Bingo Locations 3 and 5 represented Younge Phase Western Basin seasonal camps dating to between 900 and 1200 AD (Archaeologix 2005:61).

1.1.3 Inland Locations

A series of 15 archaeological sites located approximately 500-900 metres southwest of Van Bree were identified in 2007 as part of a survey by Archaeologix (Archaeologix 2007). Five of these sites were subject to Stage 4 excavation strategies in 2008, of which four form part of the dataset for this thesis and are described below.

1.1.3.1 Figura (AgHk-52)

The excavation of the Figura Site resulted in the identification of a 0.5 hectare, single palisade village with five houses and an associated midden (Golder 2012a:53). A total of 303 features were excavated, including one burial, and 39,832 artifacts were recovered, which was distinguished by an unusual ceramic vessel featuring a glyph pot. The occupants were attributed

to the Younge Phase Western Basin tradition, and at the time of excavation, Figura represented a previously undiscovered and unusual manifestation of Younge Phase settlement patterning. Murphy and Ferris (1991:244) had previously doubted that such villages existed for the Younge Phase. Subsequent investigation at Figura identified an additional house structure and seven potential activity areas. The lack of overlapping features suggested the site was occupied for a relatively short period of time, with little evidence of repeated occupations (Gostick 2017:104).

1.1.3.2 Inland Location 3 (AgHk-54)

Inland Location 3 was located approximately 150 metres south of Figura. Stage 4 excavations uncovered 87 cultural features arranged in three separate clusters and measuring 55 metres E-W by 30 metres N-S (Golder 2012a:79). A total of 16,606 artifacts were recovered, and the ceramic data also suggested a Younge Phase Western Basin affiliation. The settlement pattern primarily consisted of deep storage pits, similar to what has been documented on Western Basin sites to the west (e.g. Kenyon et al. 1988). A single radiocarbon date was obtained, which returned a date of Cal AD 1200-1270 (Suko 2017:13). Additional research on the ceramics provided support for Watts' (2008) observations at Van Bree, which suggested a localised ceramic tradition that incorporated manufacturing and design elements from both the Western Basin and Early Ontario Iroquoian traditions to create a separate group identity in the region (Suko 2017:42).

1.1.3.3 Inland Location 9 (AgHk-58)

The entire extent of Inland Location 9 was not delineated during excavations due to restrictions in property limits, and as much as 50% of the site was left intact. The portion of the site that was uncovered resulted in the documentation of a single palisaded settlement measuring

approximately 150 metres E-W by 60 metres N-S. A total of 64,715 artifacts were recovered, and 129 features were excavated, including one burial. A radiocarbon date returned a date range of Cal AD 1160-1270 (Golder 2012a:162). Analysis of recovered ceramics assigned the occupants to the Younge Phase Western Basin tradition, and the site represents another example of a potential village occupation.

1.1.3.4 Inland Location 12 (AgHk-60)

Similar to Inland Location 9, the entire extent of Inland Location 12 was not excavated due to restrictive property limits, and it appears that approximately two thirds of the site had been destroyed by open pit quarry mines on the neighbouring property. A 35 metre N-S by 15 metre E-W area was identified, containing a palisade wall and 21 subsurface cultural features (Golder 2012a:160). A radiocarbon date returned at a date range of Cal AD 1160-1260. A total of 8,245 artifacts were recovered, and the site was also assigned to the Younge Phase Western Basin tradition.

1.1.4 Bingo Village (AgHk-42)

The excavations of Bingo Village, also known as Bingo Location 10, were conducted in two phases in 2006 and 2008 by Archaeologix (Golder 2012b). The site totalled 0.5 hectares and was identified as a dramatically different manifestation of a Younge Phase occupation, even in relation to the Inland sites located 1.5 kilometres to the southeast. A triple palisaded village was uncovered and featured four closely packed house structures surrounding a central plaza area. A total of 593 subsurface cultural features were documented along with 509,949 artifacts. The features were shown to be overlapping, indicating a longer, repeated occupation of the settlement

when compared to neighbouring sites. Additionally, 13 burials were identified and reinterred by the Kettle and Stony Point First Nation (George 2011).

1.1.5 Background Summary

The sites described herein provide an exciting new avenue of investigation into a unique regional archaeological context in southwestern Ontario. The available radiocarbon data suggest the Van Bree site was occupied around 1100 Cal AD (Table 1, Figure 2). A single date from each of Figura and Bingo suggests that they may also have been occupied at this early stage. However, the bulk of the dates from Figura and Bingo indicate that the main phase of occupation occurred later, in the twelfth century AD. The single dates from Inland 3, 9 and 12 also fall within this latter cluster of dates. On present evidence, it appears that Van Bree was occupied early, with limited use of Figura and Bingo around the same time, with subsequent and potentially overlapping occupations at Bingo, Figura, and Inland sites 1, 3 and 12. It remains possible that additional dates may reveal earlier and or later phases of occupation at all sites. It is also possible that all of the sites except Van Bree were occupied contemporaneously by different groups, though there is also a chance that they were occupied in quick succession by one or more groups. Additional dates from all the sites are required in order to develop a more nuanced chronology. Furthermore, research conducted to date suggests the settlement and ceramic traits identified in cultural traditions to the east and west were being incorporated and 'remixed' into a distinct regional tradition, opening new lines of inquiry into questions of identity formation and borderland interactions (Parker 2006). Any attempt to compare these processes on a regional level involves the daunting task of comparing hundreds of thousands of artifacts and incomplete, variable settlement patterning. Each of the described sites contains a

ceramic or stone pipe assemblage and provides a significant yet manageable dataset that has the potential to provide intriguing insights into local sociocultural processes.

1.2 Pipe Studies and Theoretical Approach

Pipes have been a consistent focus of archaeological investigation in North America due to their visually distinctive morphology and ideationally charged associations with ritual and ceremony. The ethnohistoric record documents pipe smoking as an integral facet of people's lives, which played a multidimensional role in mediating interpersonal and intergroup relations and maintaining engagement with a shared spiritual belief system. A century of archaeological research has documented the deep prehistoric roots of smoking and pipe use and has demonstrated the applicability of insights derived from ethnohistoric documentation to other chronological and geographic contexts (von Gernet and Timmins 1987).

This study of the Arkona Cluster coincides with a renewed focus on theoretically informed research that attempts to move beyond questions of ethnic affiliation and culture history to focus more on the processes that are occurring in small scale regional contexts (Dorland 2017; Mather 2015; Suko 2017; Watts 2008). Much of this work draws on Bourdieu's (1977) practice theory to investigate the role of individual and group identity formation and explore how they have contributed to the patterns identified in the archaeological record. Practice theory explains how people make and transform their world through a shared perception of available cultural and environmental choices. This 'way of doing things' is *habitus,* or the embodied dispositions and tendencies that shape the way individuals perceive and interact with their social surroundings. Material culture represents a dimension of practice, and its production is an embodiment of people's dispositions that can be used to help understand the social context

in which they were made (Eckert 2008; Pauketat 2001). Furthermore, changes in material patterning over time and space can reflect concomitant changes in the social and physical environment of the producers, and lead to insights into aspects of social boundaries (Hegmon 1998; Pauketat 2001:10). A community of practice thus refers to a group of practitioners with a shared set of conceptions of manufacture and related social organizational principles.

Another theoretical discourse that is relevant to the Arkona cluster is Creese's (2013) argument that the initial construction of longer term residential structures at Early Iroquoian villages entangled people in new and more enduring relationships, and the villages themselves reflected materially embedded territorialisation. Essentially, villages became an exercise in place-making that helped to define new forms of community and households. Village construction was a heterogenous process that varied geographically and chronologically. Creese's approach ties neatly to Ferris and Wilson's (2009) discussion of the Arkona Cluster as a borderland region, which they argue is a site of interaction between different groups that contributes to material culture innovation and social change as multiple communities of practice incorporated external influences within existing traditions to produce novel expressions of group identity formation.

1.3 Objectives and Organization

The objective of this thesis is to conduct a comparative analysis of the pipe assemblages of the Arkona Cluster sites in an attempt to gain insight into the nature of the relationships between sites and to document how pipes were incorporated into a larger regional context of cultural change and borderland interaction between disparate cultural traditions. Specifically, I will attempt to determine whether the data collected from the Arkona Cluster pipe assemblages

can yield insight into settlement organization and the nature of inter-site relationships based on similarities and differences in pipe morphology and manufacture. Chapter two provides a contextual summary of archaeological research on the Early Late Woodland period in southwestern Ontario, and Chapter 3 summarizes previous archaeological research into pipes and their use in North America. Chapter 4 outlines the methodology for comparative analysis of the Arkona Cluster Pipes, and Chapter 5 presents the results of the analysis. Chapter 6 will discuss the results, and Chapter 7 concludes the thesis and providing suggested avenues for further research.

Chapter 2: Early Late Woodland Archaeological Context

2.1 Introduction

In order to inform discussions about the potential role of pipes in the Arkona cluster, this chapter outlines the archaeological cultural groups that have been identified and described from the Early Late Woodland Period in southwestern Ontario. Specifically, it summarizes the material culture and settlement subsistence strategies of the Western Basin Younge Phase and Early Ontario Iroquoian Tradition and their direct antecedents in order to inform discussion of regional dynamics during a period of cultural change (Table 2). While descendent groups such as Springwell's Western Basin or Middle Ontario Iroquoians are mentioned in the text to provide a broader chronological framework, there is little evidence these groups were present in the region after the occupants of the Arkona Cluster. Furthermore, these periods feature their own specific periods of social transition and change that are not directly related to the Early Late Woodland context (Murphy and Ferris 1990:229). As a result, the following discussion will be restricted to groups from the Transitional and Early Late Woodland period and will highlight the sites shown in Figure 3.

Table 2: Cultural Chronology of the Early Late Woodland Period.

Archaeological Culture Group	Phase	Date Range (Years Before Present)	Identifying Characteristics
Western Basin	Riviere au Vase	1500-1200/1100	Continuing seasonally mobile settlement pattern. Wayne Ware ceramics
	Young Phase	1200/1100-800	Incipient maize horticulture, new vessels with 'neck canvas'
Iroquoian	Princess Point	1500-1000	proto-villages on stable floodplains and interior terraces
	Early Ontario Iroquoian	1100-700	regional settlement clusters of main village with task specific sites

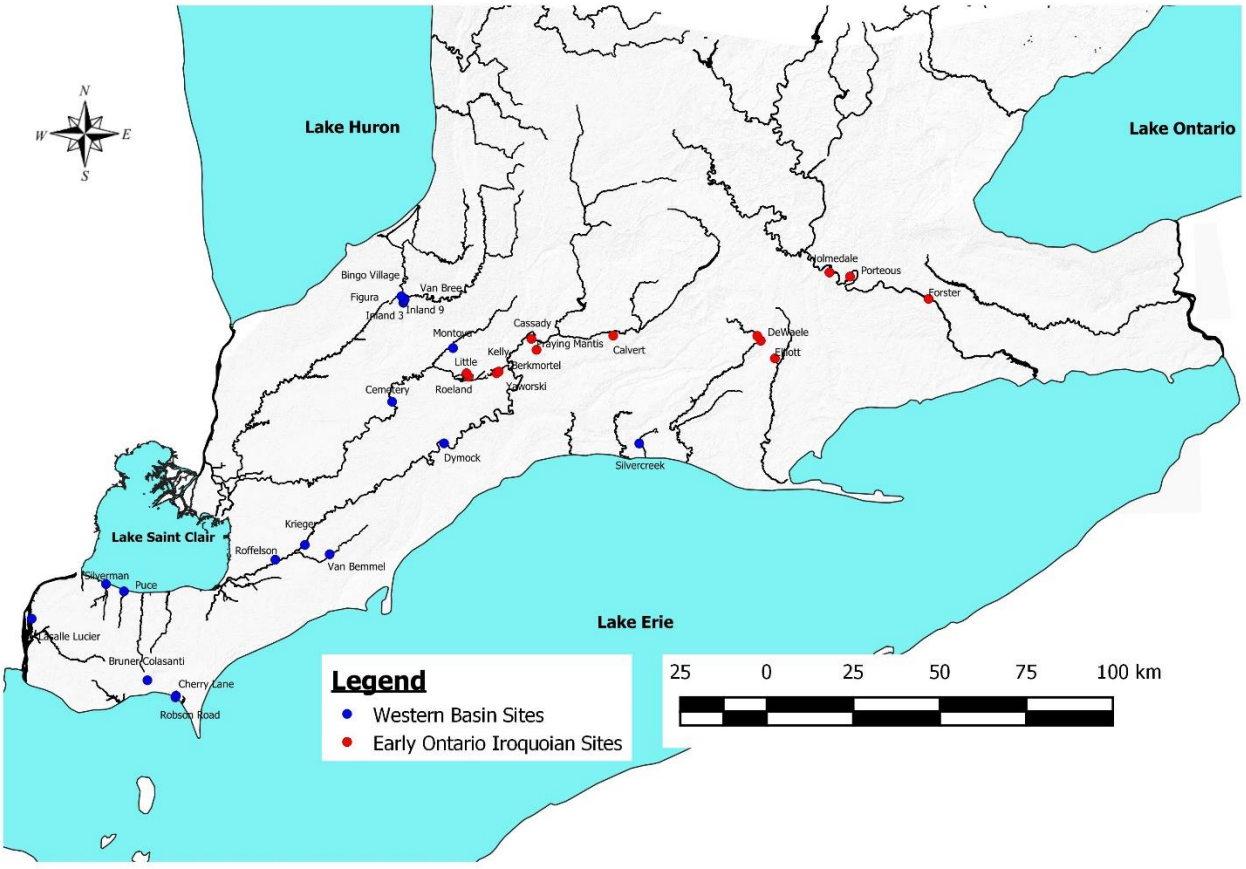

Figure 3: Archaeological sites mentioned in text.

2.2 Western Basin Tradition

The Western Basin Tradition is a suite of archaeological traits understood to represent a series of distinct cultural groups that resided in extreme southwestern Ontario. It was originally recognized throughout the Western Basin of Lake Erie, an area which encompasses the primary watersheds of Western Lake Erie and Lake St. Clair. Further research and excavations have expanded these initial boundaries, and Western Basin archaeological sites are now recognized along the central north shore of Lake Erie and the Lower Lake Huron watershed (Murphy and Ferris 1990:189). The Tradition was first defined in southeast Michigan, drawing on excavations conducted by Emerson Greenman (Fitting 1965, Greenman 1937, 1939, 1958). Initially known as the Younge Tradition, it was subsequently recognized in Ohio and Ontario, and renamed the Western Basin Tradition (Prahl et al. 1976). It is divided into four discrete temporal phases based on ceramic decorative attributes and associated radiocarbon dates: Riviere au Vase (Cal. AD 800-1000), Younge (Cal. AD 1000-1200), Springwells (Cal. AD 1200-1400) and Wolf (Cal. AD 1400-undetermined) (Fitting 1965:130). The system for classifying Late Woodland groups in southwestern Ontario was standardised in Murphy and Ferris (1990), who incorporated a comprehensive review of the material culture traits and settlement-subsistence patterns of the region into a slightly modified version of Fitting's original framework (Murphy and Ferris 1990:194). Their analysis concluded that Western Basin groups in Ontario were an in-situ development that represented a continuation of the earlier Middle Woodland Couture complex, and at a broad level reflected an Algonquian cultural affiliation (Murphy and Ferris 1990:276).

The main material culture indicator of chronological change in the Western Basin Tradition is ceramic morphology and decorative attributes. Ceramics recovered from Riviere au Vase sites (A.D. 600-800 or 900) are known as Wayne Ware, and are characterized as small,

thin-bodied vessels, easily friable, and manufactured using a paddle and anvil technique (Murphy and Ferris 1990: 195). The differences between early Riviere au Vase ceramic assemblages and the preceding Middle Woodland period are very gradual, and a sharp chronological distinction between the two groups is somewhat arbitrary. The main difference is a reduction in the thickness of vessel walls. Vessels are often decorated on both exterior and interior surfaces with relatively homogenous decorative attribute frequencies through time, which feature cord-wrapped implement designs (Watts 1997:93-94). Vessel lip decoration is also common, and includes cord wrapped stick, transverse or oblique dentate suture and cord roughening designs (Murphy and Ferris 1990:195). Ceramic pipes are relatively rare and generally quite fragmented, with mostly smooth stem fragments featuring circular or rectangular cross sections (Keenlyside 1977:73).

The transition to the Younge Phase (AD 800 or 900-1200) is marked by increased elaboration of exterior decorative techniques and greater morphological heterogeneity in ceramics (Watts 1997:94; 2008). Vessel necks become more elongated, with flaring rims and slightly rounded to extremely pronounced shoulders (Murphy and Ferris 1990: 201). Vessel rim decoration is variable, but is generally characterized by stamping techniques, such as linear, dentate, cord-wrapped stick and stafford stamping along with occasional single rows of external punctates (Murphy and Ferris 1990:205). Vessel necks exhibit the signature decorative style, which consists of variations of incised diamond and triangle motifs (Watts 2008:33). Vessel bodies are predominantly cord-marked, and have a mottled appearance, likely due to the use of twine-wrapped paddles in vessel preparation. Ceramic pipes are generally obtuse or right angled, with a cylindrical bowl, plano-convex stem and occasionally tapered lip (Murphy and

Ferris 1990:207). Pipe bowl decoration generally consists of rows of small punctates, incising or cord roughening.

The subsistence patterns of the Riviere au Vase and Younge phases represent a broad continuation of those of the preceding Middle Woodland groups of southwestern Ontario and are characterized by flexible seasonal exploitation of available faunal and floral resources (Pratt 1981, Foreman 2011). While a significant degree of variability has been documented, the general model consists of warm weather macroband agglomerations at lacustrine and riverine locales that focused on aquatic resources, followed by smaller, interior cold weather camps where people focussed on terrestrial bird and mammal exploitation and nut harvesting (Murphy and Ferris 1990:244, Foreman 2011:54). Recent stable isotope studies suggest that Western Basin groups consumed maize in greater quantities than previously thought (Dewar et al. 2010, Spence et al. 2010, Watts et al. 2011). It appears that maize horticulture was adopted and incorporated into the existing highly mobile subsistence patterns of Western Basin groups, rather than acting as a catalyst in the transition to a more pronounced permanent village occupation system, as posited for Early Ontario Iroquoian groups to the east (Noble 1975, Williamson 1990).

The organization of features on Western Basin sites exhibits considerable variability, but sites are often dominated by deep pits that function as storage caches. In the Essex County river drainages, large scale archaeological investigations yielding settlement data have been conducted at a number of sites, including Cherry Lane, Robson Road, Bruner-Colasanti, La Salle-Lucier, Silverman, and Puce. The Silverman and Puce sites are Riviere au Vase settlements situated near marshland and contained large quantities of fish remains (MHCI 1996, FAC 2017). Both exhibited poorly defined structural patterns with a large number of storage caches and refuse

pits. The remaining four sites contain Younge Phase components, and form part of a larger cluster of identified Late Woodland archaeological sites situated along creek drainages northwest of Point Pelee that drain into Lake Erie (Murphy and Ferris 1990:240). The Cherry Lane archaeological investigations (Reid 1981) identified a structure, measuring 13 metres by 7 metres, which contained three hearths, two ash pits, and a larger feature that may have contained a pot. Additionally, close to 80 storage pits were identified on knolls to the north and south of the structure (Murphy and Ferris 1990:236,238). Interpretations of the site suggest a fall to winter occupation that focused on terrestrial mammals and cold season exploitation of spawning fish (Ferris and Mayer 1990, Foreman 2011: 44-45). By contrast, the Bruner-Colasanti site featured approximately eight refuse pit clusters surrounding an open central plaza. While no patterning could be discerned from the recovered post mould data, these feature clusters were interpreted as part of former housing complexes, separate from the comparatively shallower pits located outside the clusters (Lennox 1982:9). Analysis of the available floral and faunal data suggests it was an October to March settlement focused on local animal hunting (Lennox 1982:73, Foreman 2011:46). Investigations at the La Salle-Lucier site, located along the Detroit River, identified both Younge Phase and Springwells phase components, and rows of post moulds that could indicate palisade or longhouse structures, along with faunal data that suggested a warm weather occupation (Lennox and Dodd 1991). Robson Road did not yield any dwelling structures, consisted of a series of overlapping refuse pits, and was considered a short-term site that was used to procure seasonally available resources throughout the year (Kenyon et al. 1988; Foreman 2011:43).

Further east, several Western Basin sites have been excavated within the Thames and Sydenham River watersheds, both of which drain into Lake St. Clair. Investigations along the

Sydenham River have identified Younge Phase ceramics through surface collections, with most of the excavations yielding evidence of later Springwells and Middle Ontario Iroquoian diagnostic artifacts (Riddell 1998). However, the Cemetery Site excavations indicated a multicomponent Late Woodland occupation that contained Younge Phase ceramics and a potential palisade wall (Riddell 1993). A more complete excavation was conducted of the Riviere au Vase and Younge Phase Montoya site, which yielded a midden and numerous post moulds, hearths, and pits, but did not show evidence of complete structures (Archaeologix 2004).

Archaeological investigations along the Thames River have yielded a diverse array of Western Basin Younge Phase sites, most notably Krieger, Roffelson, Van Bemmel, and Dymock. Krieger is located east of the community of Chatham in historic Kent County, near the south bank of the Thames River. It was first investigated in 1949, with approximately 400 m^2 excavated, documenting 54 discrete or overlapping pit features (Kidd 1954). An additional 90 m^2 was excavated in 1970, identifying 6 additional pits (Watts 2008:55). Located approximately 9.5 kilometres southwest of Krieger is Roffelson, a special purpose mortuary site that was fully excavated in 2004 (Archaeologix 2006). A total of 36 widely dispersed cultural features were identified, as well as a fully enclosed 25 metre diameter palisade structure with a multiple burial pit in the southeast corner. Spence et al. (2014) interpreted it as a center for mortuary processing by a single shaman, most likely associated with a single family group. The palisade wall is believed to have enclosed a formal space for mortuary activities. The Van Bemmel site is also located in the vicinity of both Krieger and Roffelson and is different again in that the deep overlapping storage pits are notably absent. Instead, excavations in a 40m by 15m area uncovered a single row palisade partially encircling an intensive occupation area that contained 8 hearths, 3 smudge pits, and 2 sheet middens, with no evidence of a definitive structure (Ferris

1989:8). The large and diverse lithic assemblage, in correspondence with the primarily cervid faunal remains, resulted in the determination that Van Bemmel represented a late fall and winter hunting camp (Ferris 1989:18; Foreman 2011:39). The Dymock I and II sites are located further east, and until recently were considered the easternmost location of a Younge Phase Western Basin component in the region (Watts 2008:60). The sites consist of two contemporary settlements situated on two ridges approximately 20 metres apart (Fox 1982). A total of 23 features were identified from Dymock I, and 59 features from Dymock II, with both containing post mould configurations that Fox interpreted as palisade walls (Fox 1982:3, 7). Murphy and Ferris (1990:242) proposed a different interpretation, comparing the site data with Cherry Lane to conclude that the post data represented portions of house structures. They interpret the site as a warm weather base camp. Faunal remains suggest intensive occupations in the spring for fishing and additional occupations in the late summer and early fall for terrestrial hunting and crop harvesting (Foreman 2011:42).

To date, the easternmost Western Basin site is Silvercreek Location 15 (AeHf-61), which is located south of the Town of Aylmer on the central north shore of Lake Erie (TMHC 2014). A total of 49 features were identified and organized into 5 separate feature clusters (TMHC 2014:32). While no post moulds indicate dwelling structures, two of the clusters were interpreted as houses due to their size and configuration, with the remaining three clusters interpreted as activity areas. Silvercreek Location 15 is located in relatively close proximity to Early Ontario Iroquoian archaeological sites, and subsequent research suggests it was an area of contact and community interaction between Western Basin and EOI groups (Mather 2015).

The diversity of settlement-subsistence patterns and ceramic decorative attributes between Western Basin sites suggests a highly fluid and dynamic cultural pattern, with a social

organization that was based around flexible, seasonal subsistence that dictated a varied community size and location based on a diverse set of ecological, environmental and cultural factors. This presents a challenge from a cultural historical perspective, which utilizes a common suite of archaeological traits to define cultural groups and document their change in the archaeological record. As a result, there is debate on how to situate Western Basin groups within the larger regional framework for the Late Woodland period in southwestern Ontario, particularly in terms of its relationships to historically documented ethnic groups. Murphy and Ferris (1990:276) have argued that the Western Basin Tradition represents an Algonkian affiliation that differs from the Early Ontario Iroquoian groups documented to the east. This interpretation is based on differences between WBT and Early Ontario Iroquoian settlement patterns. EOI sites exhibit a defined village and palisade structure and associated hamlets and task-oriented resource gathering camps (Williamson 1990:313-317). Historically documented Ojibwa groups in southwestern Ontario practiced a similar seasonal subsistence pattern to that of the Western Basin Tradition (Ferris 2009:50-52). In contrast, Stothers and his colleagues have argued that the Western Basin represents a western expression of the Early Ontario Iroquoians, based on similarities between WBT sites and ceramic styles, settlement-subsistence data and mortuary patterns recovered from excavations in Michigan and Ohio (Stothers 1975, Stothers et al. 1994). To date, there have been two studies comparing ceramic attributes between Early Ontario Iroquoian and Western Basin components that indirectly assess the question of ethnicity (Cunningham 2001; Watts 2008). While both researchers documented differences in vessel morphology and preferred suite of decorative attributes between the two archaeological groups, they suggest that debates over ethnicity are problematic and ignore more interesting questions about the social and cultural dynamics that could be interpreted from ceramic data. As a result,

more recent archaeological research has moved beyond the question of ethnicity and started to investigate how the material data can be used in theoretically informed research to explore questions about social context and communities of practice (Mather 2015, Suko 2016).

The Arkona cluster represents a primary dataset for these new questions. While Watts' (2008) research moved beyond questions of ethnic affiliation, it did document a material difference in the production of ceramics between Western Basin and the Early Ontario Iroquoians, which potentially represented differing approaches to social and community organization. The Arkona cluster exhibits archaeological traits consistent with those seen in both groups and has been posited as a borderland area where the two groups coexisted during a period of transitional change in the social, cultural and material landscape of the people living there (Ferris and Wilson 2009). The next section provides a summary of the archaeological traits associated with the Early Ontario Iroquoians to inform discussions about these regional dynamics.

2.3 Princess Point Complex and Early Ontario Iroquoian

The regional archaeological framework for organizing Ontario Iroquoian Tradition material culture was developed by Richard MacNeish and James Wright with their publications of *Iroquois Pottery Types* (MacNeish 1952) and the *Ontario Iroquois Tradition* (Wright 1966), which encompassed the entire Late Woodland period of A.D. 900-1600. Using ceramic seriation and direct historic approaches, the Late Woodland was divided into three phases: Early Ontario Iroquoian (AD 900-1300), Middle Ontario Iroquoian (AD 1300-1400) and Late Precontact (A.D. 1400-1534). These phases were further subdivided into the Glen Meyer and Pickering cultures of Early Ontario Iroquoians, the Uren (A.D. 1300-1350) and Middleport (A.D. 1350-1400)

substages of the Middle Ontario Iroquoians, and the historically documented Huron, Petun and Neutral groups of the Late period (Wright 1966:22-91). While subsequent work has greatly expanded the available data set, this framework continues to be used to the present day as a common terminological reference point and has been expanded to include the transitional Princess Point Complex, which dates to A.D. 500-1000 (Warrick 2000:419).

Similar to the developmental progression of the Western Basin Riviere au Vase and Younge Phases, the Princess Point Complex is considered to represent the direct progenitors to the later Early Ontario Iroquoians. First defined by David Stothers (1977), the Princess Point Complex consists of groups that were posited to inhabit a series of warm weather agglomerative sites on floodplain flats, with smaller encampments in the interior during the cold months. Initially, Stothers defined three geographic foci: the Grand River Valley, Point Pelee, and the Ausable region, and considered Princess Point groups to be a migratory intrusion into southern Ontario. Subsequent research suggested an in situ development from earlier Middle Woodland groups, and restricted Princess Point site distribution to the Grand River Valley (Fox 1990). Diagnostic material culture includes paddle and anvil constructed vessels with collarless, everted rims, rounded shoulders and semi-conical bases (Ferris and Spence 1995:103). They exhibit a cord roughened surface treatment and bands of cord wrapped stick decorative motifs arranged in horizontal bands, as well as deep external punctates with internal bosses (Smith and Crawford 1997:26). Pipes are relatively rare in early Princess Point sites, increasing in frequency in the later stages (Smith and Crawford 1994:67). They are generally plainly decorated or exhibit incised horizontal and zig zag line motifs or bands of small punctates (Stothers 1977:59). Pipe bowls tend to be cylindrical or barrel shaped, with stems exhibiting oval, circular, rectangular or

plano-convex cross sections. Additionally, pipes are generally either obtuse or right angled at the elbow junction.

An expanded data set suggested that sites were occupied for longer periods than initially postulated, with proto-villages identified on both stable floodplains and higher, interior terraces. Key Princess Point sites yielding settlement data include Porteous, Holmedale, and Forster. In contrast to contemporaneous Riviere au Vase settlements, clearly defined structures including incipient longhouses and palisade walls have been identified. Houses at Holmedale (ASI 1999) and Porteous (Stothers 1977) averaged 5 to 6 metres in length, while the Forster Site contained a portion of a longhouse and a circular structure thought to be a storage facility (Bursey 2003). Subsistence and geomorphological studies have determined that Princess Point groups were the first in Ontario to incorporate maize into their diet, with the earliest recovered maize dating to A.D. 500 (Crawford et al. 1998:130). However, the evidence suggests that maize was initially incorporated into existing horticultural practices of managing locally available plant resources. The transition to an intensified agricultural system based around maize occurred gradually, and in tandem with a reorganization of settlement patterns to more permanent villages. Sites like Porteous and Holmedale would have been occupied continuously for 40 to 50 years (Warrick 2000:430). These sites were likely used as base settlements, and associated with smaller, task-oriented sites that were focussed on resource specific procurement such as nut harvesting or fishing.

The timing of the transition to the Early Ontario Iroquoian phase from Princess Point is a source of debate among scholars, as the early archaeological traits identified in the EOI phase are also present in Princess Point sites such as Porteous and Holmedale. The current generally accepted date for the start of the EOI is 900 A.D., when small villages averaging 0.5 hectares in

extent begin to appear with regularity in the archaeological record. Early EOI ceramics are sub-conoidal, with later forms transitioning to a globular shape with rounded bottoms (Ferris and Spence 1995:106). Pots are made through modelling, with paddled exteriors to create thinner walls. Decorative attributes vary regionally, but generally consist of cord wrapped stick designs in the early EOI, with vessel necks exhibiting zones of oblique, vertical and horizontal lines, nested right angled impressions, and plaits of oblique lines (Watts 2008:35). Towards the latter part of the EOI in the twelfth century A.D., decoration shifts to rim and lip designs of multiple rows of incised horizontal lines and linear stamped oblique lines, with interior and exterior punctation common. Ceramic pipes are commonly found in low frequencies, and are generally obtuse or right angled, with plain stems that join to barrel or cylindrical bowls (Williamson 1990:299). Decoration generally consists of rows of small punctates or incised lines and effigy pipes have been recovered in a small minority of sites (Fox 1976:188).

The settlement patterns of the EOI mark a transitional period between the seasonally mobile bands of the Middle Woodland to the large, permanent villages of the Middle and Late Ontario Iroquoian Periods. The EOI has been characterized as a series of regional settlement clusters situated on sand plains, often consisting of small, sometimes palisaded villages with surrounding camps or hamlets associated with the exploitation of specific resource areas. The most studied example is the Caradoc Sand Plain, where Williamson (1985) documented 5 villages and 20 associated hamlets. Williamson partially excavated the Roeland Site, which consisted of a 1.5 hectare double palisaded village with a minimum of 8 overlapping houses. He further identified the Kelly, Berkmortel and Yaworski sites, which were all located within 9 kilometres of Roeland, and consisted of 0.5 hectare hamlets used to exploit seasonally available

resources in the late fall and early spring. Additionally, he interpreted the Little Site, located within 1.5 kilometres of Roeland, as a surround at the end of a deer drive.

Further east, the Praying Mantis site was excavated in 1993 by the London Museum of Archaeology and consisted of a 0.23 hectare village with three longhouses surrounded by a palisade wall (Pearce 2008). Pearce (2008:99) identified three additional sites of similar age in nearby surveys, interpreting them as special purpose sites associated with Praying Mantis (Pearce 2008:99). The Cassady Site, located 3.5 kilometres to the north, was excavated in 2001 (Archaeologix 2002). Excavations identified 119 pits, 7 hearths and 519 postmolds, from which six small, poorly defined houses were inferred. Ceramic analysis identified a close relationship in certain design motifs between Cassady and Praying Mantis. While a detailed faunal or floral analysis of Cassady was not conducted, it was interpreted as a potential hamlet based on its size and configuration, similar to the task specific sites identified on the Caradoc Sand Plain.

The Calvert site, located east of London, is one of the most comprehensively analysed EOI sites. It was excavated in 1981 and 1982 and consisted of a 0.28 hectare village divided into three phases of occupation, with up to four rows of a palisade wall and fourteen house structures (Timmins 1997:35). The majority of recovered floral material was identified as maize, and additional identified remains suggested a year round occupation. Despite the recovery of a significant quantity of maize, the Calvert inhabitants appear to have practiced a broad-based subsistence strategy through the Early and Middle Phases, while the site reverted to a hunting camp in the Late Phase. A series of nearby contemporaneous sites were identified in a tight cluster, but due to site destruction from development, a more detailed comparison could not be undertaken (Timmins 1997:215).

A cluster of EOI sites have also been subject to investigation on the Norfolk Sand Plain, located approximately 41 kilometres east of Calvert. The Van Besien, Elliott, and Dewaele sites consist of palisaded villages. Similar to Calvert, Van Besien and Elliott have evidence of super-imposed villages indicating separate occupation phases. The floral and faunal remains suggest a diversified, year round subsistence strategy including maize agriculture (Noble 1975, Fox 1986). Dewaele appears to have been focussed on seasonal game and fish exploitation and is thought to have been part of a subsistence cycle that included the occupation of seasonal campsites in the region (Fox 1976:176).

Ceramic studies have demonstrated a distinct trend towards internal regional homogeneity in EOI ceramic decoration and style. These ceramic micro-traditions are distinct from those of neighbouring EOI groups and Western Basin Younge Phase groups. This pattern has been seen as a reflection of the increased localisation of settlement and subsistence practices and the incipient development of regional communities based on a shared set of cultural adaptations (Williamson 1985). These regional groups are seen as the precursor to the more formalized socio-political units identified among later Middle and Late Ontario Iroquoian cultural manifestations.

2.4 Discussion

Prior to the discovery of the Arkona Cluster, relatively little evidence of Western Basin and Early Ontario Iroquoian interaction had been identified in Southwestern Ontario. The Boisclair site, located in the Byron cluster near Praying Mantis, yielded ceramics predominantly decorated with complex designs associated with EOI traditions. However, a small amount of pottery displayed the complex neck designs common to Younge Phase sites (Timmins

1997:221). Unfortunately, the limited, salvage nature of the investigation did not allow for more substantive analysis. Similarly, private collectors who had looted a portion of the Cemetery site donated Younge Phase ceramics they recovered to the excavator, but the limited size of the excavations did not reveal additional data that could provide meaningful insight (Riddell 1993).

As mentioned above, Silvercreek Location 15 (AeHf-61) represents the easternmost identified Western Basin Younge Phase site. Additional research into the site documented ceramics with Princess Point decorative motifs and techniques applied to vessels displaying the elongated necks and concave rims commonly associated with Western Basin Younge Phase groups to the west (Mather 2015:87). Mather interpreted this as a reflection of multiple communities of practice coming together at AeHf-61, possibly as a reflection of fluid, exogamous marital patterns practiced by both EOI and Western Basin groups (ibid:88).

A cursory examination of settlement data shows that Bingo Village and its associated camp sites bear a strong resemblance to the cluster of EOI villages and task-oriented resource extraction sites documented in the Caradoc and Norfolk Sand Plains to the east. Similarly, Inland Location 3 contains the deep storage pits identified on a multiple Western Basin Sites. Figura contains small houses comparable in configuration to the structures identified at Cherry Lane, but also contains a complete, single row palisade that is unique to documented Western Basin Younge Phase sites, but which is often encountered in EOI clusters. The partial excavation of Inland Location 9 revealed an incomplete palisade wall, although no structures were definitively identified.

Given that these sites exhibit various combinations of traits recognized in both archaeologically recognized Early Late Woodland groups, it is apparent that the Arkona cluster

represents an intense period of regional interaction in what was most likely a continuum of group exchange and contact across Southwestern Ontario (Ferris and Wilson 2009). Research into these interactions should elicit intriguing insights into the nature of cross-cultural exchange between the EOI and Western Basin, as well as the subsequent effect on social behaviour and engagement with community practice. While ceramics have been the predominant vehicle by which archaeologists have attempted to investigate such questions, the presence of a sizable collection of ceramic and stone pipes at the Arkona cluster represents a useful material indicator of intra and inter community practices. As a result, a discussion of pipes and their associated function in archaeological contexts is a necessary precursor to understanding their role in the cultural dynamics that were present at the Arkona Cluster. Given the abundance of material culture and settlement pattern data recovered from excavations, this thesis represents an examination of one of multiple available lines of evidence that, when taken together, will eventually provide a much fuller picture of the changing social and cultural dynamic occurring in the region.

Chapter 3: Pipes and the Archaeological Context

3.1 Introduction

This chapter explores the history of archaeological research on pipes and the explanatory frameworks that have been constructed to aid in their interpretation. The intention is to provide an outline of the lenses that can be used to interpret the pipes recovered from the Arkona Cluster and how they fit into the local and regional contexts that were described in Chapter 2.

3.2 History of Pipe Use in North America

It is unknown when smoking first began in North America, as ethnohistoric evidence suggests that Indigenous communities initially utilized bone, wood, reed, and even lobster claw pipes, materials which would not likely survive in the archaeological record (Von Gernet 2000:73). The earliest archaeological evidence for the use of pipes in North America dates to the Late Archaic Period (ca. 4000-1000 B.C.), and the archaeological record documents a series of changing styles that often occur in conjunction with other perceived changes in social and cultural organization (Figure 4).

Figure 4: Generalized North American Pipe Chronology

The earliest identified pipes were recovered from the Eva site in Tennessee, which was dated to ca. 2000 BC (Lewis and Lewis 1961:66). These pipes were identified as block ended tubular pipes, a style that extended into the Early Woodland Period (Cal 1000 B.C. – AD 200). During the Early Woodland, a greater diversity of styles resulted in the classification of open ended and conical tube pipes, which are commonly associated with the Adena culture in the Ohio

River Valley (Rafferty 2004:15). These pipes were made from ground stone and are commonly (approximately 80%) recovered from burial mound contexts, often at the edge of loosely defined social territories (Irwin 2004:52, Rafferty 2004:27). Beyond the Ohio River Valley, small numbers of block end pipes have been identified in Ontario (Spence and Fox 1986:32).

The Middle Woodland Period (Cal AD 200-600) continues the association of pipes with mortuary ritual and burial contexts and sees a distinctive shift in style to platform pipes. These pipes exhibit a flattened, curved stem, with a centrally or distally located right angled bowl (Rafferty 2016:16). Effigy pipes are rare, and feature zoomorphic forms, with birds the most frequent animal represented. They are commonly associated with the Hopewell Culture, which succeeded Adena groups in the Ohio River Valley. The Hopewell are generally defined by their complex earthworks and elaborate ceremonial material culture. Additionally, they are known for their extensive trading networks across North America, and the presence of platform pipes outside the Ohio River Valley has been seen as an indication of long distance trade and exchange (Spence et al. 1990:142). In Ontario, they are found in burial contexts in the south-central region and are considerably rarer in the southwestern region where the Arkona cluster is located (Ferris and Spence 1995:102).

During the Late Woodland Period, pipes undergo a florescence in both quantity and diversity, and often appear in conjunction with the transition to coalescent villages that feature palisade walls, matrilineally based longhouse settlements, and maize based agricultural practices. Obtuse or right-angled elbow pipes with circular or plano-convex stems are the dominant form during this period, and transition from relatively simply barrel and conical bowls with punctate and incised line decoration to more elaborate apple, trumpet, or coronet bowls with rectangular or square stems. Effigy pipes, manufactured on both stone and clay, display a number of

different designs, including zoomorphic and anthropomorphic images, and typically feature animals of power or shamanistic importance, including snakes, birds, turtles, bears or wolves (Noble 1979; Mathews 1976). Additionally, the increased frequency, more varied depositional contexts, and individualistic manufacturing practices of pipes suggests pipe use transitioned from a predominantly ceremonial activity associated with mortuary ritual and spiritual beliefs to a more democratised, individualistic pursuit utilized within a wider variety of contexts (Braun 2015; Creese 2016a).

During the Contact Era, pipe smoking was widely documented by Europeans among Indigenous groups throughout North America. The earliest written account of pipe smoking was by Jacques Cartier, who witnessed the activity among the St. Lawrence Iroquoians in 1535-1536. In total there are over 100 first-hand accounts of pipe smoking among over 50 Indigenous groups (von Gernet 2000:59). The ethnohistoric record documents the manufacture and use of pipes by men in society, and their importance to Indigenous North American practices and beliefs is highlighted by the fact that locally produced pipes retained their primacy in smoking culture even with the introduction of European, mass produced white kaolin clay pipes in the seventeenth and eighteenth centuries (Trubowitz 2004). Pipes were so important to Huron men that they would sometimes go without eating for days while continuing to smoke and were documented as using their own blood as a binding agent to repair broken pipes (von Gernet 1995:71). Smoking rituals became fundamental as the primary forum for material exchange and trade between Europeans and Indigenous North American groups, often functioning as a bridge between a European mercantilist, economic transaction-based trade model and Indigenous reciprocal, kin-based exchange networks rooted in broadly shared spiritual and ritual beliefs (Mann 2004:177). Seventeenth century accounts describe the calumet ceremony, which

consisted of the shared smoking of detachable, wood stemmed smoking pipes, often decorated with birds, which were used as a means of establishing fictive kinship relations between individuals of different clans and allowed for intertribal trade and diplomacy (Blakeslee 1981:759; Hall 1977:515). Its relatively late documentation in the historic record initially suggested that the calumet ceremony developed in response to the arrival of Europeans and their effect on political and economic tribal relations in North America (Turnbaugh 1979; Brown 1989). However, archaeological evidence suggests that it first appeared in the thirteenth century in the Great Plains, and potentially analogous ceremonies have been identified as early as the 12th century A.D. in Ontario (Blakeslee 1981:763; von Gernet and Timmins 1987).

3.3 What were they smoking?

The most common substance associated with pipe smoking is tobacco. The earliest archaeobotanical evidence for the introduction of tobacco is currently dated to between AD 100 and 200 (uncalibrated RCYBP) in the Central Mississippi Valley (Rafferty 2016:13). Additionally, recent advances in Raman microscopy and gas chromatography/mass spectroscopy provide evidence of nicotine residues from smoking pipe bowls recovered from Early Woodland contexts in western Pennsylvania, indicating an introduction of tobacco to the Eastern Woodlands region between 1000 and 500 B.C. (Rafferty et. al 2012:1954). The botanical origins of tobacco have been traced to South America, where the earliest evidence dates to between 2500-1800 B.C. in northern Peru (Pearsall 1992:178; von Gernet 1995:66). In the Southwest, tobacco seeds recovered from New Mexico have been dated to 1040 B.C. and are believed to have been introduced to North America through the same exchange mechanisms as maize and other cultigens (Paper 1989:5; Rafferty et al. 2012:1954). In Ontario, the earliest archaeobotanical evidence of tobacco was identified from the Stratford Flats site (AgHb-50)

located on the Grand River flood plain near Brantford, dated to approximately the eighth century AD based on ceramic seriation (Fox 1984:6-7). However, glottochronological research has argued that the Iroquoian word for tobacco entered the language prior to the words corn, bean and squash, potentially suggesting an earlier introduction to Ontario than indicated by current archaeobotanical evidence (Steckley 1985). While as many as nine separate tobacco strains were utilized by North American Indigenous groups, in the Eastern Woodlands the primary species of smoked tobacco was *Nicotiana rustica* (Setchell 1921; Haberman 1984:274; von Gernet 2000:66). This strain is different from the *Nicotiana tabacum* species smoked in present day societies, as it contains significantly higher nicotine content (9% vs. 2-3%) and produces dissociative hallucinatory mental states when smoked in sufficient quantities (von Gernet 1995:68). Tobacco was also chewed and ingested, and gifts of tobacco cakes were often thrown on fires in group ceremonies (von Gernet 1995:69).

Ethnohistoric accounts also document a wide variety of smoked plant substances, including bearberry, sumac, juniper and dogwood. The resulting mixture of these and other substances for smoking purposes is known as *kinnikinnick*, an Algonkian term for "that which is mixed" (Hall 1977:513). Analysis of the ethnohistoric record has documented anywhere from 27 to 60 smoked plant species in the Great Lakes area alone (Yarnell 1964:180-182; Knight 1975:132-139; von Gernet 1992:175). Like tobacco, it is believed that these substances were smoked for their ability to produce mind altering effects when inhaled (Von Gernet 1992:174). However, it appears that tobacco became the most important smoked substance upon its introduction and adoption due to it being highly addictive, requiring relatively little effort to cultivate, and being very effective in achieving dissociative states (von Gernet 1992:177). While much of the research literature focuses on tobacco use and cultivation among Iroquoian groups,

it is important to note that tobacco smoking was not restricted to settled agriculturalists and has been documented to hold a position of similar importance among neighbouring Anishinaabeg peoples as well (Von Gernet 2000:69, Mathews 1982:320).

3.4 Archaeological Studies of Pipes

Due to their singular morphology and symbolically charged use, pipes have long been considered a rich source of information for reconstructing past lifeways. Much of this utility stems from both the geographic and temporal ubiquity of pipes in both the archaeological and ethnohistoric record. Additionally, the stability of their morphological form and their highly elastic decorative traditions allow tenable connections to be drawn between archaeological material and systems of meaning and belief that are more difficult to achieve with other archaeological data. Many archaeologists have subsequently argued that pipes are one of the few artifact classes where data from non-overlapping regional or chronological contexts can potentially be utilized to interpret unrelated sites or groups within North America (Hall 1977:504-505; von Gernet and Timmins 1987:41).

Three basic interpretive models have been delineated in the literature when discussing pipe function and meaning (Creese 2016a:27): the "world view" model, the sociopolitical model, and more recently the individual emotion model (Creese 2016b). The world view model examines the role of pipes within the historically documented context of North American religious practice and cosmology. Many researchers have noted a high degree of consistency in the structure of belief systems and symbolism, which when coupled with the ubiquity of pipes across North America have led to multiple conclusions of a shared continent-wide foundational ideological worldview (Brown 1997:473; Hall 1977:515; Irwin 2004:61; Paper 1989:88; von

Gernet 1992:172, 1995:67; von Gernet and Timmins 1987:42). Pipes in this model are used as part of ubiquitous shamanistic rituals that deal primarily with communication with the spirit world. Indeed, von Gernet (1992: 178; 1995:68; 2000:73) has suggested that pipes were a functional equivalent and direct material descendent of shaman sucking tubes, which were used in the transfer of spiritual power during shamanic rituals. A key part of communication with the spirit world involves entering a dissociative mental state, often achieved through the use of hallucinogenic plant compounds. The effectiveness of *Nicotiana rustica* in achieving this state of mind helps to explain its central importance in North American belief systems (Paper 1989:8; von Gernet 1992:177). It is clear that the belief in the importance of pipes in spiritual communication was present from their earliest iterations, as their presence in mortuary contexts in the Early and Middle Woodland can attest. Rafferty (2016:21) argues that the introduction of a large pipe smoking complex in the Late Woodland indicates that shamanistic practices were democratized, and that communication with the spiritual world was no longer delegated solely to specialists. An individualized pipe smoking complex coupled with the effects of tobacco and shamanistic beliefs would necessarily blur any line between secular and spiritual conceptions of the world, and historic records confirm a worldview that imbued spiritual energy and sacredness into everyday North American life (Rafferty 2004:19; Robertson 2005:39). Effigy pipes are thought to often retain a more communal ritual role and were often well made by fewer people within a community (von Gernet 1982b:56). Pipes whose effigy faced the smoker are physical representations of a guardian spirit that communicated with the smoker, while those with effigies facing away from the smoker are directed at a communal group (Wonderley 2005:215). Multiple studies have identified pipes as being intentionally broken in a number of different contexts in

order to release a contained spirit (Braun 2012: 8; 2015:214; Mathews 1982:320; Rafferty 2016:17).

Because smoking was a multi-dimensional practice utilized within a wide variety of social and cultural contexts, pipes are also linked to other uses beyond the symbolic. The connection of pipes to a shared world view informs their importance in analysing interactions between different North American groups. This sociopolitical interaction model has proven a popular avenue for research, as it can be readily married to cutting edge archaeological science (Braun 2012; Kuhn 2004). It generally revolves around the recognition that the presence of non-local pipes indicates long distance interaction and exchange. More importantly, their symbolic importance coupled with ethnohistoric sources can yield insights into the nature of these exchanges in ways that other material classes may not. As previously mentioned, these sources indicate that pipe smoking and tobacco growing was predominantly practiced by men, and the communal use and exchange of pipes were a key part of diplomatic negotiations between male councils (Kuhn 1985:58-67). During the Early Woodland Period smoking pipes are recognized for playing a social function beyond mortuary rituals, as they were placed in burial mounds at the edge of loosely defined territories that can be delineated archaeologically (Irwin 2004:52; Rafferty 2016:17). During the Late Woodland, pipes become associated with individual and group efforts to define aspects of their identity (Bollwerk 2016:52). Pipes were used as gifts to help establish, maintain, and reinforce relationships between self-defined social units (Drooker 2004; Kuhn 1987:312; 2004; Kuhn and Sempowski 2001). Additionally, pipes appeared at the same time as coalescent communities in the Early and Middle Late Woodland, where they are thought to help mediate a transition from small settlements to larger, more socially complex communities (Braun 2015; Zepf 2014). Pipes became a universally recognized material class

that communicated an array of embedded social and cultural meaning while still retaining enough elasticity of form for the user to carve out idiosyncratic expressions of personal or group identification. In some cases, certain types of pipes became symbolic indicators of tribal interaction and movement over a large region. These include miniature pipes, which Kapches (1992:71) identified as functional, miniature versions of full-size pipes that may have been used as charms or gifts between men in Middle and Late Iroquoian societies.

The third broadly defined framework for interpreting pipes focuses on the use of pipes and their meaning within an individualized context. Recent studies have suggested that pipe manufacture during the Late Woodland Period was undertaken by people with a highly variable technical skillset. In distinct contrast to ceramic vessels, which seem to have been restricted to a few specialists using a limited set of symbolic decorative systems, pipe manufacture was idiosyncratic, utilizing a wide variety of base clays and tempers in addition to individualistic decorative choices (Braun 2015:212; Creese 2016a:34). Combined with their connection to the spirit world, pipes became an important component in memory formation and individual identity construction (Creese 2016a:31). This interpretation is reinforced by evidence of the repair of broken pipes, which at the end of their use life were converted into clay beads worn as charms. (von Gernet 1982a:145). Smoking developed an important role in regulating interactions between individuals and became a form of social currency in helping to develop individual and group relationships, which by extension contributed to establishing a stronger sense of group cohesion. As a result, the active use of smoking pipes came to play a critical role in developing the broad, consensus-based coalitions that formed the successful foundation of settled village life (Creese 2016b:14).

3.5 Pipe Studies in Ontario

Given their ubiquity in highly visible Late Woodland archaeological contexts, pipes have been a subject of study since the advent of archaeological practice in Ontario. Early archaeological reports published over 285 pages devoted to pipes with 523 illustrations between 1885 and 1925 (von Gernet 1982a:2-3). These early efforts were primarily descriptive and focussed on visually distinctive museum specimens with little associated contextual data. These descriptions were of sufficient quantity and geographic scope to enable early researchers to begin to attempt to classify pipes into recognizable types, with the Roebuck site being a notable early example of such a classification (Wintemberg 1937:79). These early classificatory schemes focused more on general pipe morphology than decorative attributes but were essential in helping to standardize descriptive categories to facilitate inter and intra site comparisons. Emerson (1954) further developed these efforts as part of his dissertation (Emerson 1954). After classifying over 1200 Iroquoian pipes into a typology that incorporated morphology and decorative style, Emerson attempted to seriate pipe styles into distinct time periods. However, his results did not indicate a strong association, with some pipe forms remaining in use for long periods of time (Emerson 1954:64). Emerson further refined his classificatory typology in later work at the Payne Site (Emerson 1967), which continues to serve as the basis for pipe typologies in the present day.

However, the application of a typological framework for inferring cultural and chronological change has been problematic, as the definitions of various pipe types have been inconsistently applied. Emerson (1967) defined pipe types using a series of sketches, with little in the way of in-depth descriptions. As a result, attempts to seriate pipes often conflicted with ceramic seriations (e.g. Bush 1976). These problems were further exacerbated by the advent of

attribute analysis, which attempted to group pipes based on measurable attributes of morphology, decorative motif and style, as a more statistically rigorous and replicable approach (Wright 1968). Cynthia Weber produced an analysis of 3,763 specimens from 312 Iroquoian sites spread over 13 defined regions and compared the efficacy of pipe types to attribute based analysis for inferring sociocultural differences or change (Weber 1970;1971). The results of her research strongly concluded that pipe typologies were ineffective in determining sociocultural affiliation or chronological change, while attribute analysis produced statistically meaningful inferences (Weber 1971:64). The unfortunate corollary of this conclusion is that previous studies of pipe assemblages require their own attribute analyses to facilitate meaningful comparisons.

While some researchers continued to refine and standardize the typological method (Noble 1979;1992), the relatively new use of attribute analysis was combined with a burgeoning interest in attempting to infer sociocultural behaviour from artifact distributions at the site level (von Gernet 1982a:12). Due to their generally fragmented nature and low numbers, pipes were often not an appropriate artifact class on which to conduct this type of research. However, in Ontario this change in approach fortuitously coincided with the excavation of the largely undisturbed Draper Site, a late fifteenth century Huron-Wendat ancestral village located near present day Pickering, Ontario (Finlayson 1985). Tightly controlled excavations recovered over 4,000 pipe fragments from 44 houses and 25 middens, which allowed for multiple quantitative and qualitative attributes to be measured for each pipe fragment and combined with precise spatial and stratigraphic context (von Gernet 1982b:50). The results of this research strongly suggested no causal link between the depositional practices of pipes and any recognizable social organization based on longhouse affiliation or specific activity areas within the site (von Gernet 1982b:59). Smith (1991) took a similar approach at the Keffer Site, an ancestral Huron-Wendat

village dating to between A.D. 1500 and 1550 in which nearly 400 ceramic smoking pipe fragments were recovered (Smith 1991). The conclusions from that research demonstrated a random distribution of pipe fragments across depositional contexts, with no apparent connections to potential intrasite social organization (Smith 1991:25).

More recent pipe studies have used the latest in archaeological science in a renewed attempt to provide insight into Pre-Contact social dynamics. Creese used thin section petrography and trace element analysis of clay pastes using laser ablation coupled plasma mass spectrometry as part of a collaborative effort to understand the life histories of clay smoking pipes and their relation to ancestral Wendat social practice at the Keffer Site (Creese 2016a:27). Braun conducted a thin section and petrographic analysis of 87 pottery vessels, 38 smoking pipes, and 3 locally sourced clay samples from the Antrex site, an ancestral Iroquoian agricultural settlement dated to the mid 13th Century AD (Braun 2012:1). Both studies identified an individualistic approach to pipe manufacture, despite the two century age separation. This persistence indicates an engagement with the material culture in both manufacture and use that persisted over several generations and is likewise described in later ethnohistoric accounts. Braun's dissertation research (2015) combined his petrographic techniques with a site distribution analysis of the Holly Site, a 1.3 hectare unpalisaded early Middle Ontario Iroquoian village located near present day Barrie, Ontario, and dating to A.D. 1290-1305. The results reaffirmed his earlier interpretation of the individualistic nature of pipe manufacture and identified the pattern of dark-tempered pipes being intentionally broken and discarded in sweat lodge contexts (Braun 2015:214). This data provided useful insights into the ways that Iroquoian shamanic principles and symbols could potentially inform the manufacture, use and subsequent discard of ceramic objects (Braun 2015:228).

Recent regional studies of pipes from Ontario contexts have been few, with the bulk of research confined to New York State and focusing on interactions between protohistoric Iroquoian nations during the formation of the Iroquoian Five Nations Confederacy (eg. Kuhn 1987; Kuhn and Sempowski 2001; Wonderley 2005). Smith's (1987) work in the Crawford Lake Area near present day Milton is an exception. He applied archaeological systematics to identify distinct pipe styles in sites clustered around Crawford Lake that were demonstrably different from those in the surrounding area. He concluded that pipes represented the social interactions between men of two separate communities and became symbolic expressions of social autonomy (Smith 1987:187-191). More recently, Zepf (2014) analysed pipe collections from sites dating to the Middle to Early Late Woodland transition period in the Lower Grand, Red Hill Valley and Credit River areas. Her results suggested an association between an increase in coalescent and sedentary communities and the advent of larger numbers of pipes with an increased diversity of styles, most notably an increase in effigy pipes (Zepf 2014: 120). The paucity of regional studies in Ontario is likely due to the use of pipe typologies in early site reports, which as mentioned above, have been shown to be of little use as a comparative classificatory framework. Both the Smith (1987) and Zepf (2014) studies utilized a standardized attribute analysis approach that ultimately provided useful insights into Late Woodland sociocultural processes.

3.6 Summary

This review of the literature on pipes clearly suggests that they served a multidimensional role in Indigenous North American lifeways and social practice, which varied considerably depending on both regional and chronological contexts. At the same time, pipes formed part of the basis of a shared worldview and social practice that made them instrumental in processes of

intergroup interaction and identity formation. Despite intensive archaeological research, pipes have proven stubbornly resistant to attempts to order them into seriated frameworks or to reconstruct sociocultural organization at the site level based on depositional context. However, more recent work by Smith (1987) and Zepf (2014) indicates that there is value in attempting to analyse pipes recovered from sites located in relatively close regional and chronological proximity.

The Arkona cluster provides an ideal test case for a multi-scalar analysis of pipes within a changing and dynamic cultural landscape. These sites contain a large collection of pipes, which is highly unusual for the Early Late Woodland Period and may prove to be an ancestral example of social processes identified in later, more intensively developed regional communities. My analysis of the Arkona cluster pipes will interpret the pipe assemblage from the ritualistic worldview, sociopolitical and individualistic models in an attempt to gain a more multi-faceted understanding of pipe use and the underlying cultural dynamics they represent in the region.

Chapter 4: Methods

4.1 Introduction

In light of previous research indicating weaknesses in pipe typology systems (Wright 1968:67), this analysis of the Arkona Cluster pipe assemblages combines intra-site analysis of their spatial distribution with attribute analysis. Attributes can be identified more consistently than types, allowing for more detailed comparisons between sites. While von Gernet (1982) and Smith (1991) did not uncover any recognizable patterns in the spatial distribution of pipes, Braun's work (2015) suggested that the deposition of pipes in certain contexts can be the result of conscious, culturally informed decision making. Additionally, comparison of depositional practices between the different Arkona Cluster sites may yield interesting results about the nature of the relationship between them, given their close geographic and chronological relationships.

4.2 Methodology

4.2.1 Attribute Analysis

In order to compare the pipe assemblages between the Arkona cluster sites, this analysis divided pipes into categories based on raw material (clay versus stone) and section (complete, bowl, stem, elbow, unidentifiable). Elbows and unidentifiable fragments are listed in the next chapter but were excluded from further analysis as there was a small comparative sample and little interpretive data could be generated from the analytical tools employed in this analysis. Stone pipe preforms were also included as a separate category and identified based on the presence of preliminary boreholes and roughened, unworked morphology. Miniature and juvenile pipes were identified based on the criteria defined by Kapches (1992), which consisted of relative size of the pipe compared to the rest of the assemblage, functionality, and the quality

of the construction and decorative techniques. Subsequent analysis involved taking reference photographs of each specimen, and documenting its size, shape and decorative characteristics.

4.2.2 Measurements

This analysis recorded a series of measurements of each stone or ceramic pipe as follows (Figure 5):

Pipe bowls: height (only taken if fully intact and terminating at a recognizable pipe elbow), width, wall thickness, interior bowl diameter.

Pipe stems: stem length (only recorded if fully intact and terminating at a recognizable pipe elbow), mouthpiece width, height, thickness, borehole diameter.

Pipe elbow: angle (also noted as either right or obtuse angled)

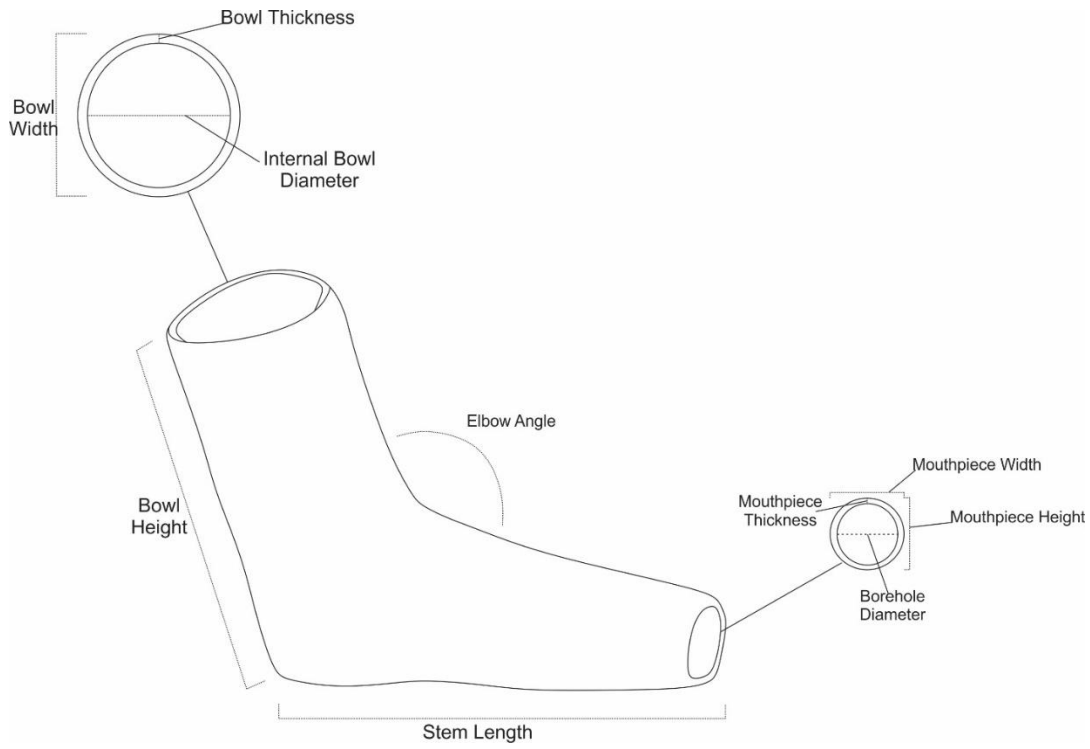

Figure 5: Measurements recorded for Analysis

4.2.3 Morphological features

This analysis also recorded other aspects of the shape of each pipe using a series of morphological categories. The pipe morphological classifications followed von Gernet (1982:40,178). I classified pipe stem profiles as tapered, flat, or rounded (Figure 6). Stem-lip cross sections were classified as circular, oval, plano-convex, or rectangular (Figure 7).

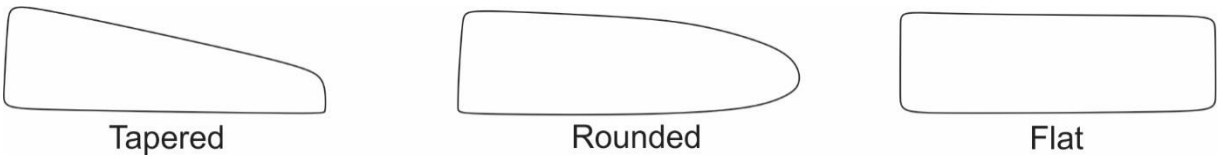

Figure 6: Pipe Stem Profile Morphology

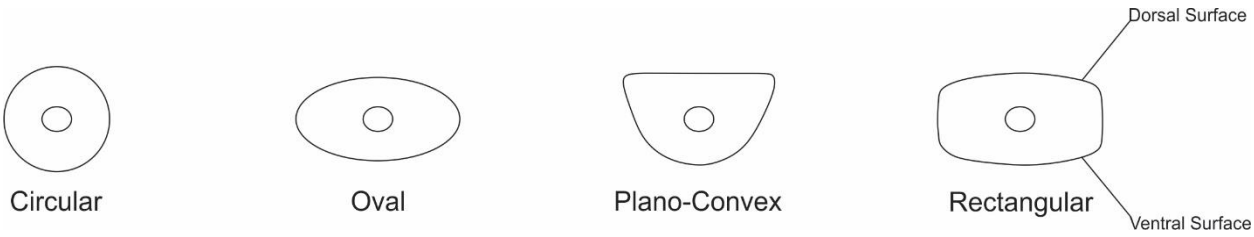

Figure 7: Pipe Lip Cross Section Morphology

For the pipe bowls, I recorded lip shape as flat, round, bevelled, or pointed (Figure 8). A collar was also recorded.

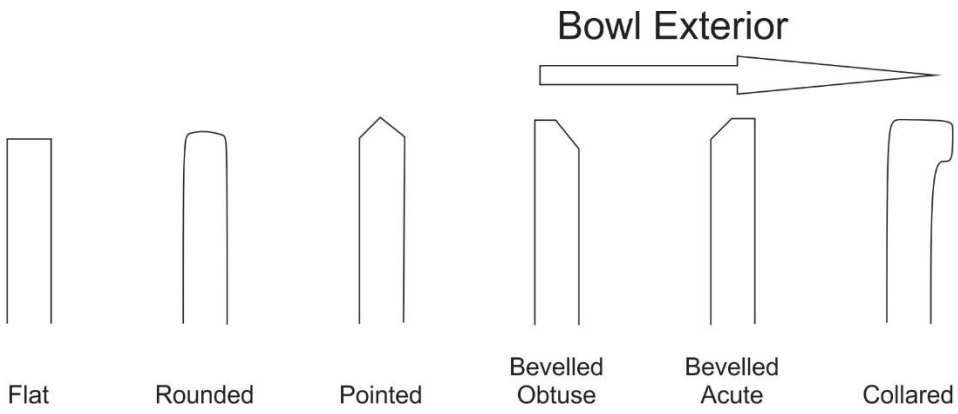

Figure 8: Pipe Bowl Lip Form

There are several different approaches to recording pipe bowl morphology. While Smith has used a more neutral classificatory scheme (1991:14) that is easily reproducible, Emerson's typology (1954, 1967) remains in consistent use in Ontario archaeology, even in studies that are aware of its shortcomings (Zepf 2016:89). Murphy and Ferris (1991:207) applied the standardized pipe typology to Western Basin sites and identified barrel and cylindrical pipe bowls in the Younge Phase. Because the bowl morphology found in the Arkona Cluster exhibits fewer and simpler forms than later Iroquoian assemblages, the risk of mischaracterization of bowl types by different researchers is lessened. Consequently, most of the pipe bowl categories used in this analysis follow the typologies established by Emerson (1954;1967). A number of exceptions were identified that did not neatly fit into Emerson's types. These pipes exhibited straight walls with a slightly flared lip. Emerson classified outflared bowls as trumpet pipes. However, these were identified in specimens with a pronounced outflare that do not correspond well to the flared pipes of the Arkona Cluster. As a result, I added Smith's (1991:14) outflaring category in order to more accurately capture the morphological difference between the pipe bowls. The range of bowl shapes in this analysis therefore consists of: cylindrical, barrel, outflaring, and vasiform (Figure 9).

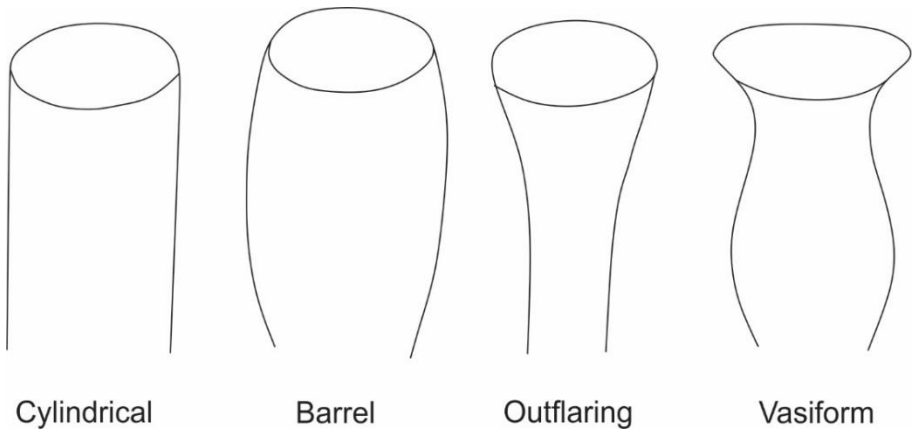

Figure 9: Pipe Bowl Types

4.2.4 Decoration

The clay pipe bowl decoration was recorded using a coding system that recorded both the decorative technique and motif and their presence along horizontal bands of decoration (Figure 10). Decorative motifs included incised lines, punctates, linear stamp, cord wrapped stick, stafford stamping (hollow reed stamp), and dentate stamping. These techniques were organized into bands of motifs described as horizontal, vertical, oblique left, oblique right, chevron, hatched, diamond and complex motifs. These codes where then organised by delimiters to indicate the combination of a number of horizontal bands, as well as the number of rows of a given decoration in a band (see Figure 11 for an example). Pieces labelled as complex exhibited decoration that did not correspond to horizontal bands of decoration or produced an unwieldy code resulting from too many bands and warranted their own specific description in the results section. Lastly, any decorative motif that displayed uneven longitudinal or latitudinal spacing was labelled as irregular.

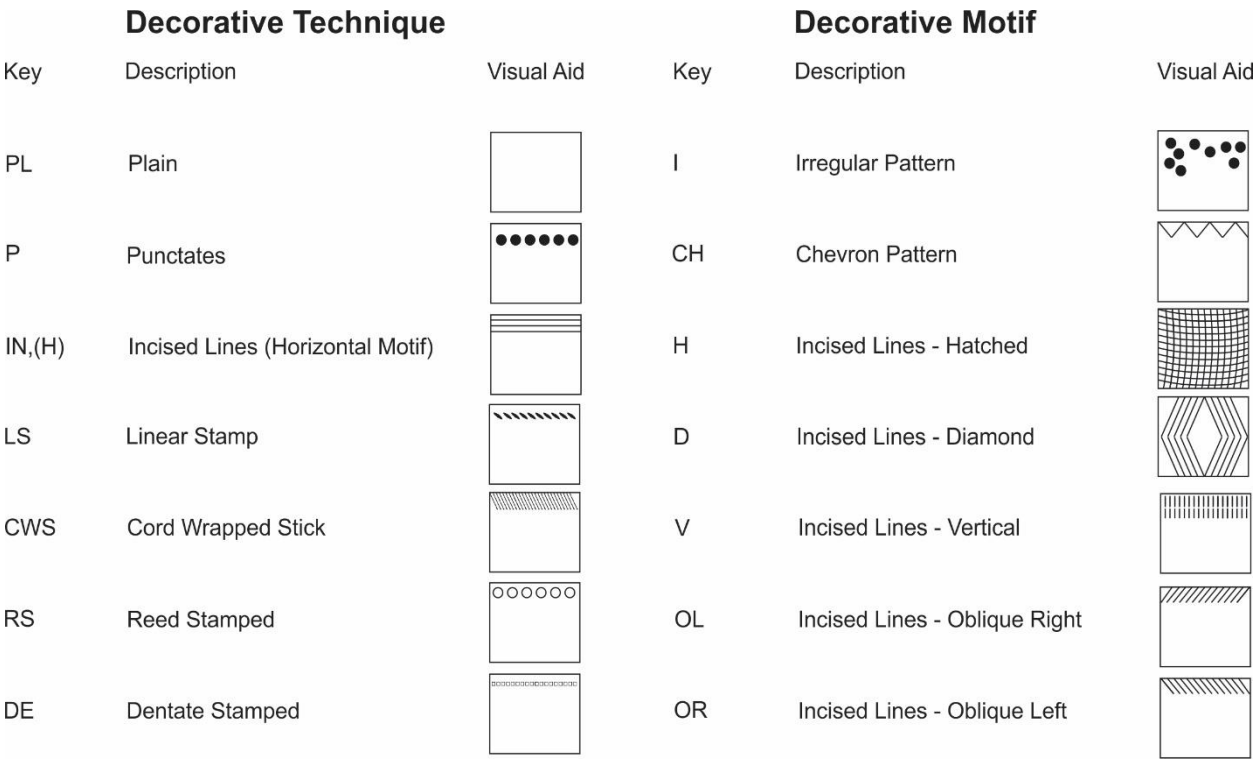

Figure 10: Pipe Bowl Decoration

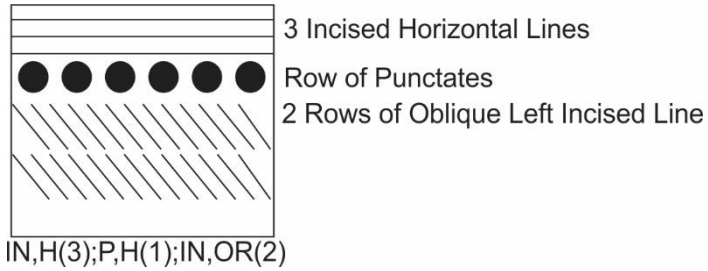

Figure 11: Example of Decorative Code System

The clay pipe assemblage at Bingo Locations 3 and 5, which consisted of a single clay pipe bowl fragment from Location 3 and a clay pipe stem from Location 5, was not accessible for this analysis. The metric data from these pieces is therefore not included here. However, the consultant report included photographs of sufficient quality that their decorative attributes are included for later discussion.

The stone pipe assemblage recovered from Bingo was unusually diverse in form and manufacture. In addition to the standard measurements, I attempted to categorise the different types of pipes. I know of no standardized stone pipe typology nor any large contemporaneous stone pipe assemblage from an Early Late Woodland context in Ontario that would assist in a comparative analysis. I developed a typology of the Arkona cluster stone pipes to facilitate such an analysis should comparable assemblages be identified in future. The stone pipe typology employed here focusses primarily on manufacturing material, elbow shape, borehole width, and surface treatment, and is divided into four separate categories (Table 3).

4.2.5 Spatial Distribution Analysis

In order to explore any potential patterning in the spatial distribution of the pipes, I plotted their distribution on the site maps produced by Archaeologix. Each pipe category defined in Table 4 was assigned a bright primary colour, which was then used to shade the associated feature context from which pipes of that type were recovered. Once the metric and attribute analysis was complete, I used these spatial data to attempt to mend pipe fragments across different feature contexts, and produced a separate map illustrating these connections.

Table 3 Stone Pipe Analytical Categories

Category	Criteria	Example
1	Thin walled pipe bowl Manufactured on a polished, dull green or black igneous stone Incised or collared lip decoration	
2	Pipe bowl or preform. Obtuse Angled Coarse grained rock (Greywacke or Limestone) manufacture Exhibits grinding or pecking at surface	
3	Obtuse angled pipe preform Manufactured on Horn Coral	
4	Early stage pipe preform	

Chapter 5: Results

5.1 Introduction

This chapter presents the results of the pipe analysis, focussing on those characteristics that could be recorded in the largest number of cases to allow for robust comparisons of metric and morphological pipe data between sites. Additionally, the results of the spatial distributions are presented, as well as specific descriptions of pipes that warranted further description due to their distinctive characteristics.

5.2 Arkona Cluster Assemblage

Prior to completing the analysis, I attempted to mend pipe fragments to further inform any spatial analysis and reduce duplications in the dataset. This exercise produced five refits at Bingo Village, which reduced the clay pipe bowl total by four, and one refit of a miniature pipe, which reduced the total number of miniature pipes accordingly. Inland Location 9 produced one refit which reduced the total by one. No mends were identified in the other sites. Table 4 provides a summary of the analysed fragments.

Table 4: Number of Smoking Pipe Pieces Analysed for each site

	Bingo Village		Inland Location 1		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
	Freq	*%*	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*	*Freq*	*%*	*Freq.*	*%*
Analyzed Fragments														
Clay Pipe Bowl	84	40.8	8	40.0	5	55.6	22	53.7	1	50.0	1	50.0	**121**	**43.2**
Clay Pipe Stem	44	21.4	10	50.0	1	11.1	16	39.0	0	0.0	1	50.0	**72**	**25.7**
Complete Clay Pipe	4	1.9	0	0.0	2	22.2	0	0.0	0	0.0	0	0.0	**6**	**2.1**
Complete Stone Pipe	1	0.5	0	0.0	1	11.1	0	0.0	1	50.0	0	0.0	**3**	**1.1**
Stone Pipe Stem	2	1.0	0	0.0	0	0.0	2	4.9	0	0.0	0	0.0	**4**	**1.4**
Stone Pipe Bowl	19	9.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**19**	**6.8**
Stone Pipe Preform	12	5.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**12**	**4.3**
Miniature Pipe	4	1.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	**4**	**1.4**
Juvenile Pipe	0	0.0	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0	**1**	**0.4**
Unanalyzed fragments														
Pipe Elbow Fragment	7	3.4	0	0.0	0	0.0	1	2.4	0	0.0	0	0.0	**8**	**2.9**
Pipe Fragments	29	14.1	1	5.0	0	0.0	0	0.0	0	0.0	0	0.0	**30**	**10.7**
Total	**206**	**100.0**	**20**	**100.0**	**9**	**100.0**	**41**	**100.0**	**2**	**100.0**	**2**	**100.0**	**280**	**100.0**

The assemblage clearly demonstrates that the majority of the clay pipes and pipe fragments were recovered from Bingo Village (71%, n:172 of 242). Additionally, Bingo Village contains 87% (n:33 of 38) of the stone pipe assemblage. I anticipated during analysis that the pipe characteristics and data from the other sites would be represented in the large assemblage from Bingo. However, it became apparent that site specific pipes and deposition practices were present across the Arkona cluster. Prior to presenting the comparative data, the following section will include a discussion of the pipe assemblage from each site, with descriptions of distinctive specimens and a presentation of the spatial depositional analysis.

5.3 Site Specific Pipe Descriptions

5.3.1 Figura

The spatial distribution of pipes from Figura indicates that 26% (n:5) of analysed fragments were located within the confines of the palisaded village (Figure 12). The remainder were located to the west and southwest, and outside of the structure that lies southwest of the palisade wall. All pieces located outside the palisade are highly fragmentary, with no complete clay pipe bowls identified and only two of nine clay pipe stems measuring over 30 millimetres in length. This suggests that the pieces outside of the village were discarded in refuse contexts once their use life had expired. By contrast, the pieces recovered within the palisade were more complete, and in some cases appear to have been deliberately deposited in specific contexts (Figure 13). For example, Cat. 1257 (Plate 1) is a unique specimen within the Arkona assemblage. It is an obtuse angled pipe that bends on a curved line, rather than the sharper elbow of other obtuse angled pipes. It features a dramatic outflare bowl that bears a strong resemblance to a trumpet flower, and its stem is decorated with an incised line that coils around the stem in a single trail until it meets the bowl. The bowl is also decorated with a series of incised lines that connect the end of the coiled line to the bowl lip. It was recovered from Feature 116, which is located within the centre of House 3. Feature 116 appears to be a refuse pit from which 776 additional artifacts were recovered, including charred faunal remains, ceramic vessel fragments and lithic debitage. However, an almost complete, idiosyncratic pipe recovered from the centre of an identified structure is a unique occurrence within the Arkona Cluster, and could potentially indicate an intentional, culturally informed deposition event rather than casual discard. Similarly, Cat. 1260 (Plate 2) is a portion of a pipe stem that has been broken along the longitudinal axis. Accidental breakage of pipes tends to occur at the elbow junction (Zepf

2014:36). A longitudinal break indicates an intentional action, which has been documented in Iroquoian groups as a means of releasing the spirit of the pipe (Mathews 1982:320). It displays a complex decoration of reed stamping and incised designs along a stem that has been moulded into a wave pattern. It closely resembles a coiled snake effigy pipe stem (Plate 3) and was recovered from Feature 12, a refuse pit containing an additional 434 artifacts and located near the western entrance of the village. An intentionally broken pipe with potential symbolic connotations placed at the entrance of the settlement could be suggestive of intentional deposition that relates to ideas of place-making and group identity formation.

Half of a juvenile clay pipe (Cat.1258) was recovered from Feature 92, located in the centre of the village. It differs from the miniature pipes located in Bingo Village as it has not been extensively fired, and the longitudinal cross section shows that the initial stem borehole was placed at a misdirected angle and had to be corrected (Plate 4). This is consistent with the idea that juvenile pipes are made by children that are still learning the pipe manufacturing process (Kapches 1992:71-72). The longitudinal breakage pattern also suggests a deliberate action, also indicating the release of the pipe's spirit.

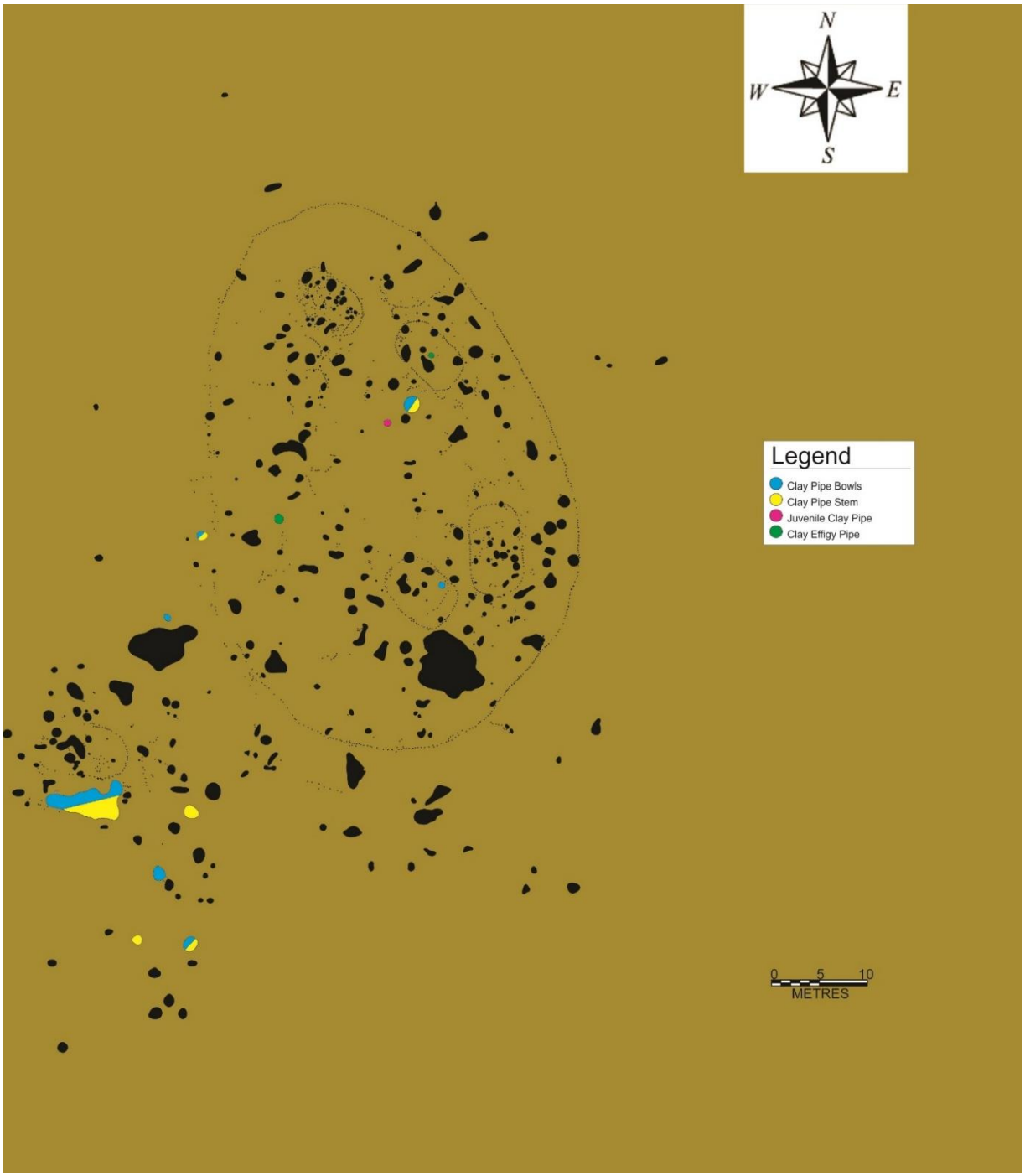

Figure 12: Figura Pipe Distribution

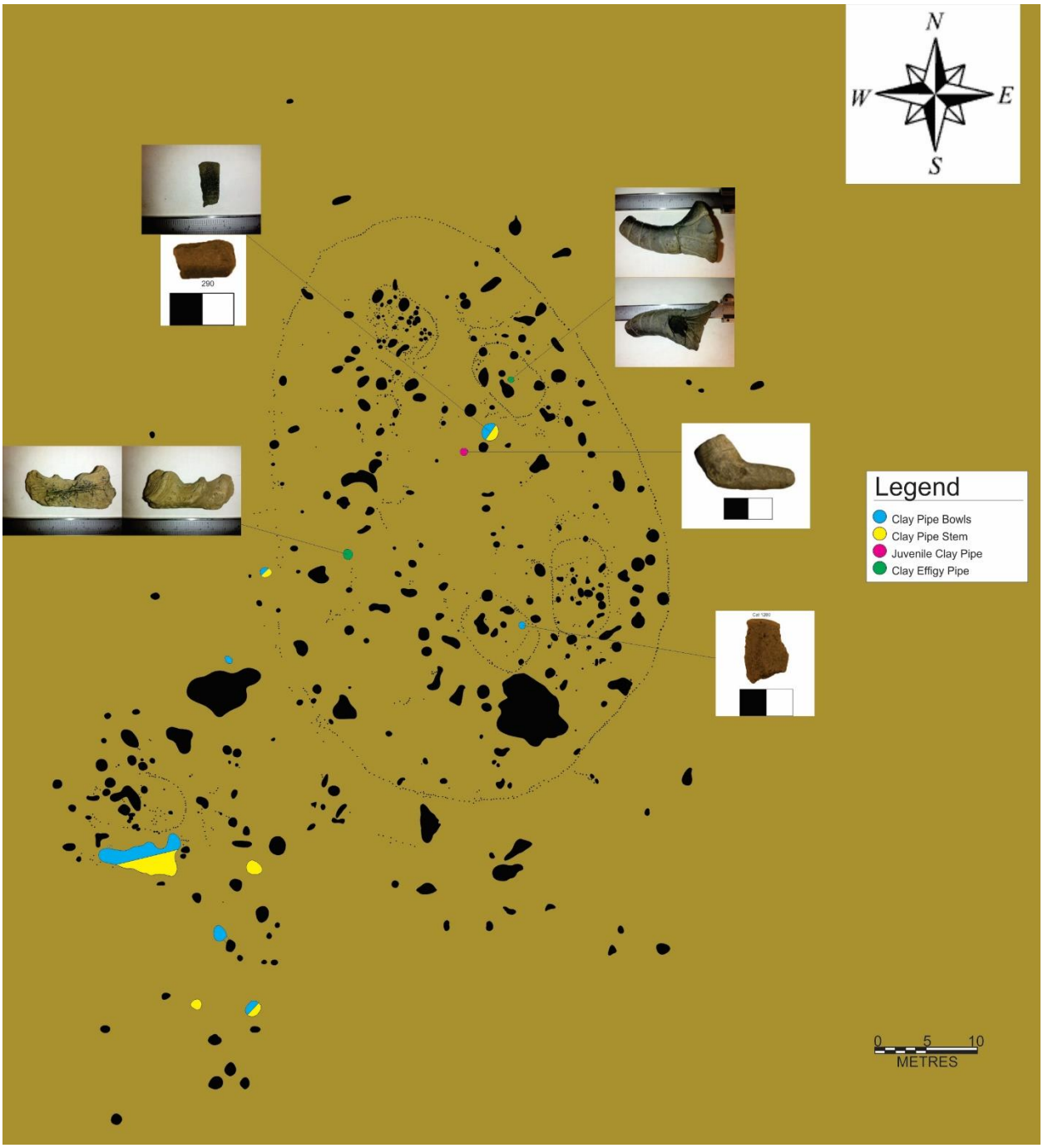

Figure 13: Figura Interior Village Pipes

Plate 1: Cat. 1257

Plate 2: Cat. 1260

Plate 3: Comparison of Coiled Snake Effigy Pipes. Left: Wallace Site (Zepf 2014:199). Center: Figura. Right: Schematic Drawing of Snake Effigy from New York (Wonderley 2005:232)

Plate 4: Cat. 1258

5.3.2 Inland Location 3

At Inland Location 3 a total of two complete pipes and seven pipe fragments were recovered from three features in the centre of the main feature cluster (Figure 14). An additional two pipe bowl fragments were recovered from a one metre square plough zone excavation context that is not included in the maps below. The feature cluster in the bottom left of Figure 14 appears to be the main activity area at the site, as it also contains all the lithic tools and the highest densities of faunal and lithic debris. The recovered pipes are notable for their degree of completeness. Inland Location 3 features the second highest number of complete pipes among the Arkona cluster sites, despite containing only 3.5% of the entire pipe dataset. The site's two complete clay pipes are both obtuse angled and feature punctate and incised line decoration on a cylindrical bowl (Plate 5 left and right). A complete, undecorated pipe bowl snapped at the elbow junction was also recovered (Plate 5 centre). Of the four recovered pipe bowl fragments, two were recovered from features, the first of which featured two rows of vertical linear stamps (Plate 6 bottom left), the second was a complete pipe bowl with an irregular cluster of crescent

punctates on the right lateral surface of the bowl (Plate 6 bottom right). The other two pipe bowl fragments – recovered from plough zone context – were undecorated (Plate 6 upper row).

In addition to the clay pipes, a complete limestone pipe was recovered. This unique pipe has no known parallels in the Ontario archaeological record. It displays a wide, symmetrical trumpet bowl and a smoker-facing set of anthropomorphised features, including a pronounced nose and eyes, and potentially a scored line representing a mouth (

Plate 7). While the flared bowl when viewed in portrait is reminiscent of visual depictions of a thunderbird figure (Robertson 2005:51; Lenik 2012:171), it is likely an anthropomorphic effigy pipe. The pipes are located within the main activity cluster of the site based on artifact frequencies within feature contexts

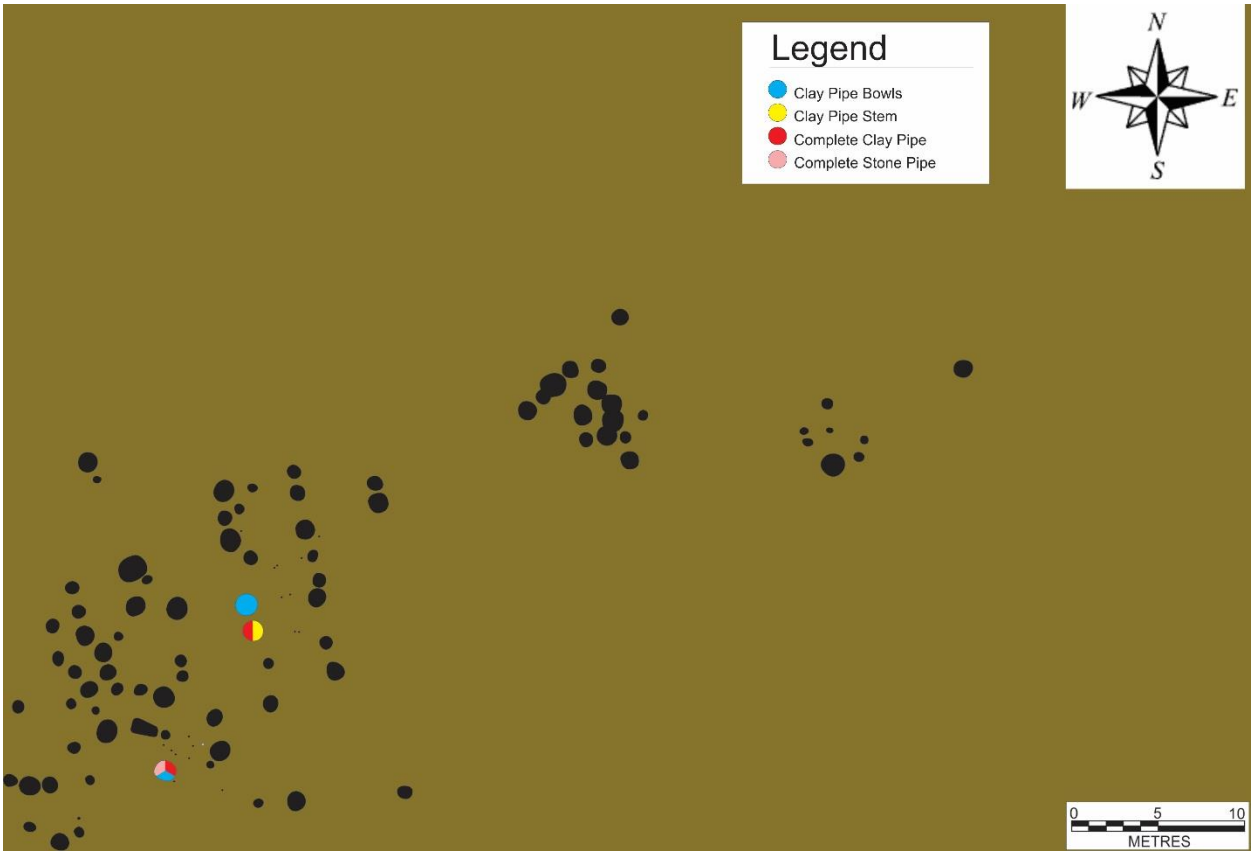

Figure 14: Inland Location 3 Pipe Distribution

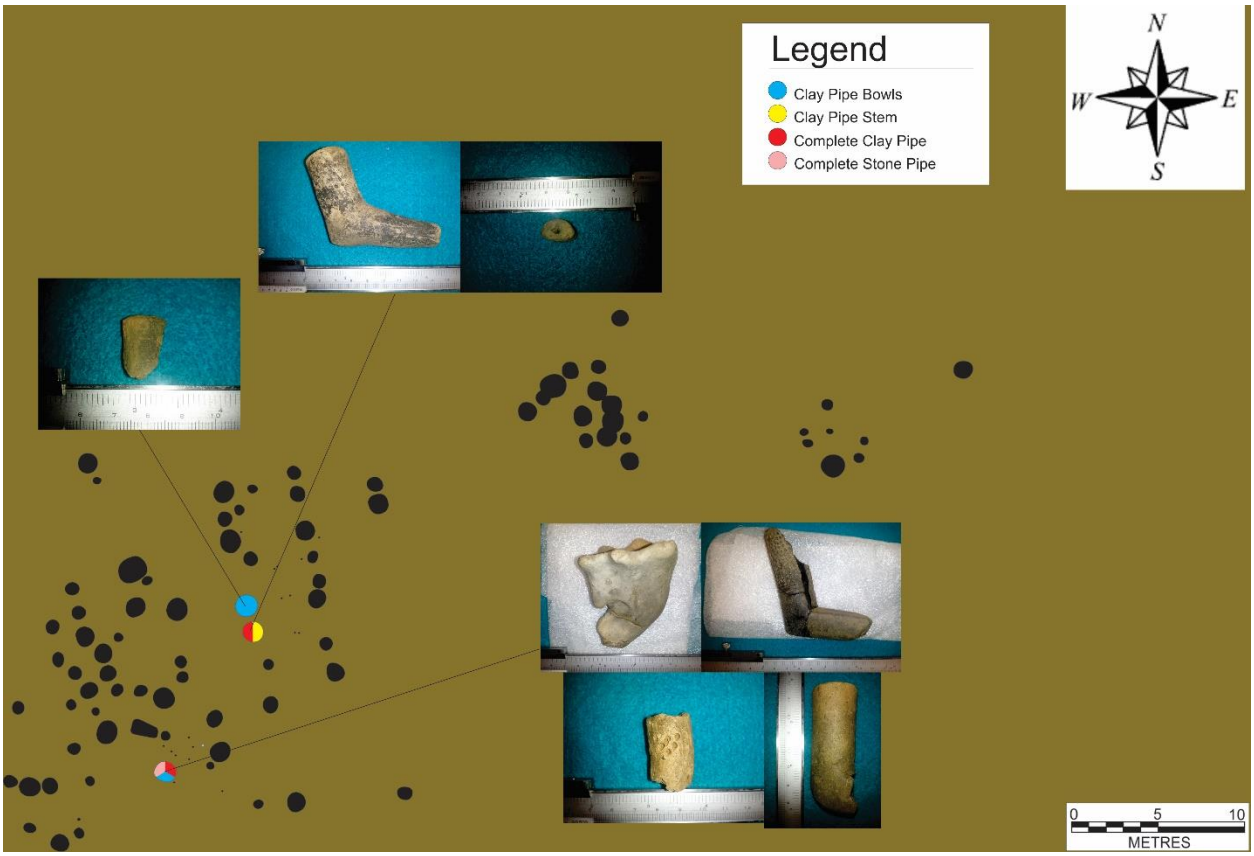

Figure 15: Inland Location 3 Visual Pipe Comparison

Plate 5: Complete to almost complete Clay Pipes Recovered from Inland Location 3

Plate 6: Clay Pipe Fragments recovered from Inland Location 3

Plate 7: Limestone Effigy Pipe Recovered from Inland Location 3

5.3.3 Inland Location 9

Inland Location 9's pipe assemblage is the most fragmentary within the Arkona cluster, containing one ceramic bowl and seven undecorated stems that were complete enough to record a full suite of attributes. The pipe fragments are distributed relatively evenly throughout the site, and there is no indication of a socially motivated deposition strategy beyond refuse discard (Figure 16 and Figure 17). Despite its fragmentary nature, relatively few mends (n:2) were identified, suggesting that the larger sample size was not a product of fragmentation but was more indicative of a greater number of pipes being used on site. Inland Location 9 also displays more variation in bowl decoration, with seven separate technique combinations as opposed to four combinations at both Figura and Inland Location 3. The single complete clay bowl (Plate 8) displays a complex incised design that resembles symbolic iconography documented on Iroquoian archaeological sites east of the Arkona cluster (Robertson 2005:48-49). Two stone pipe fragments were also identified at the site. Cat. 1752 is a stem portion of a stone pipe preform manufactured on a coarse sandstone and displays scored striations organized into a hatching pattern. Its location in a midden context suggests it was discarded during the manufacturing process due to breakage or flaws in the material. Cat. 727 is the stem lip of a finished stone pipe manufactured on a dark slate material. While its fragmentary nature limits its interpretive utility, the lack of any additional slate pipe fragments may indicate the rest of the pipe may have been refashioned to extend its use life, although additional fragments may be located on the unexcavated portion of the site.

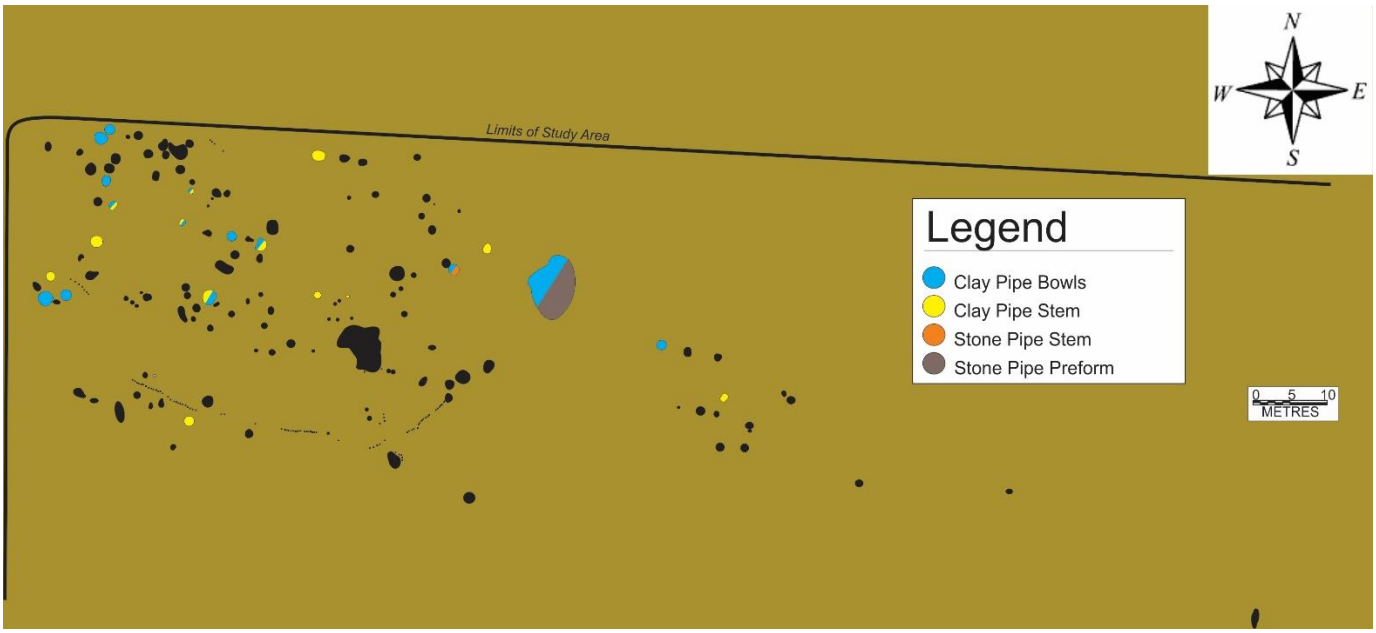

Figure 16: Inland Location 9 Pipe Distribution

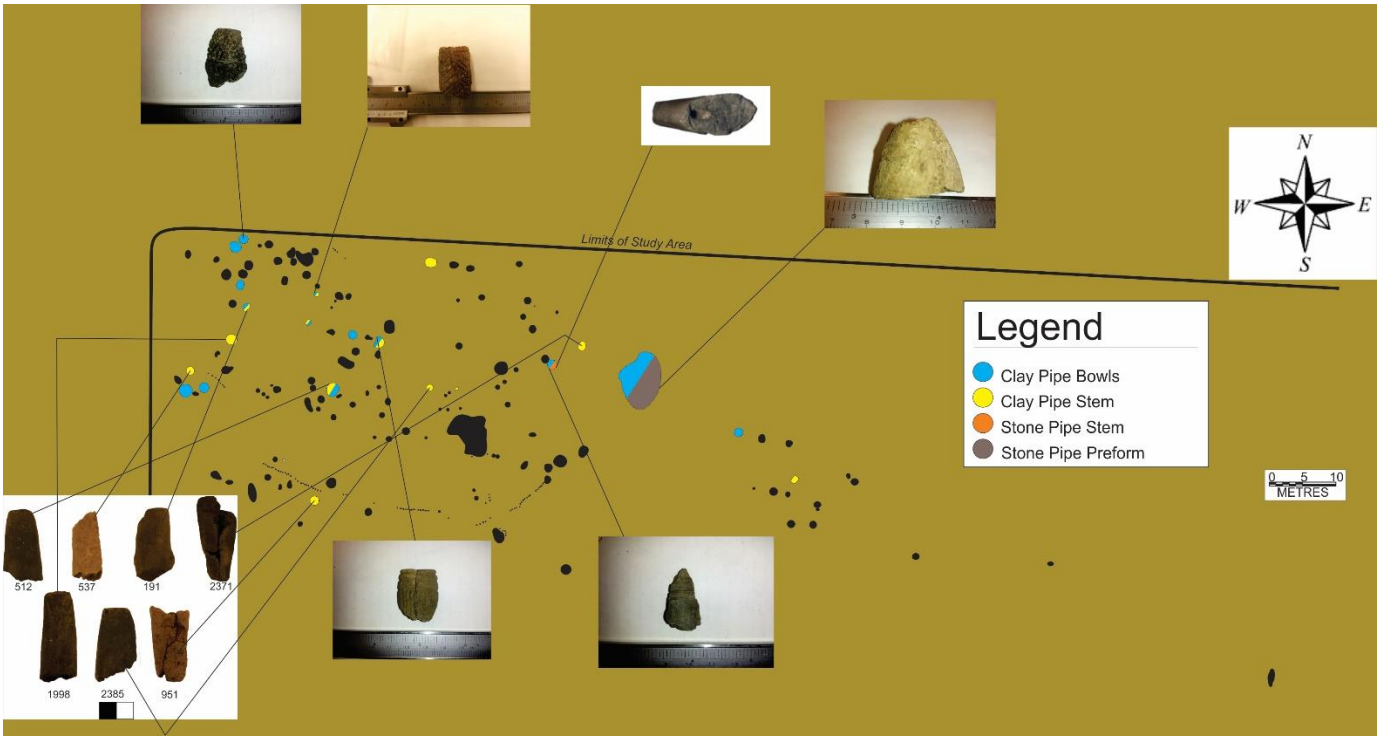

Figure 17: Inland Location 9 Sample of Pipe Locations

Plate 8: Complete Bowl (Cat. 790) recovered from Inland Location 9

5.3.4 Inland Location 12

Two pipe fragments were recovered from Inland Location 12, a stone pipe preform and a clay pipe bowl fragment, both located within the palisade (Figure 18). The clay pipe bowl fragment has a plain decoration and is too small to be of interpretive utility. The stone pipe bowl is an obtuse angled limestone preform that has been polished on a portion of the bowl (Plate 9). It appears to have been in the end stages of the manufacturing process, as the pipe bowl exhibits some polishing and the pipe bowl and stem borehole are well developed. However, they were never connected, and the pipe was not used for smoking before discard. Its morphology and material are similar to the ground limestone pipes recovered from Bingo Village.

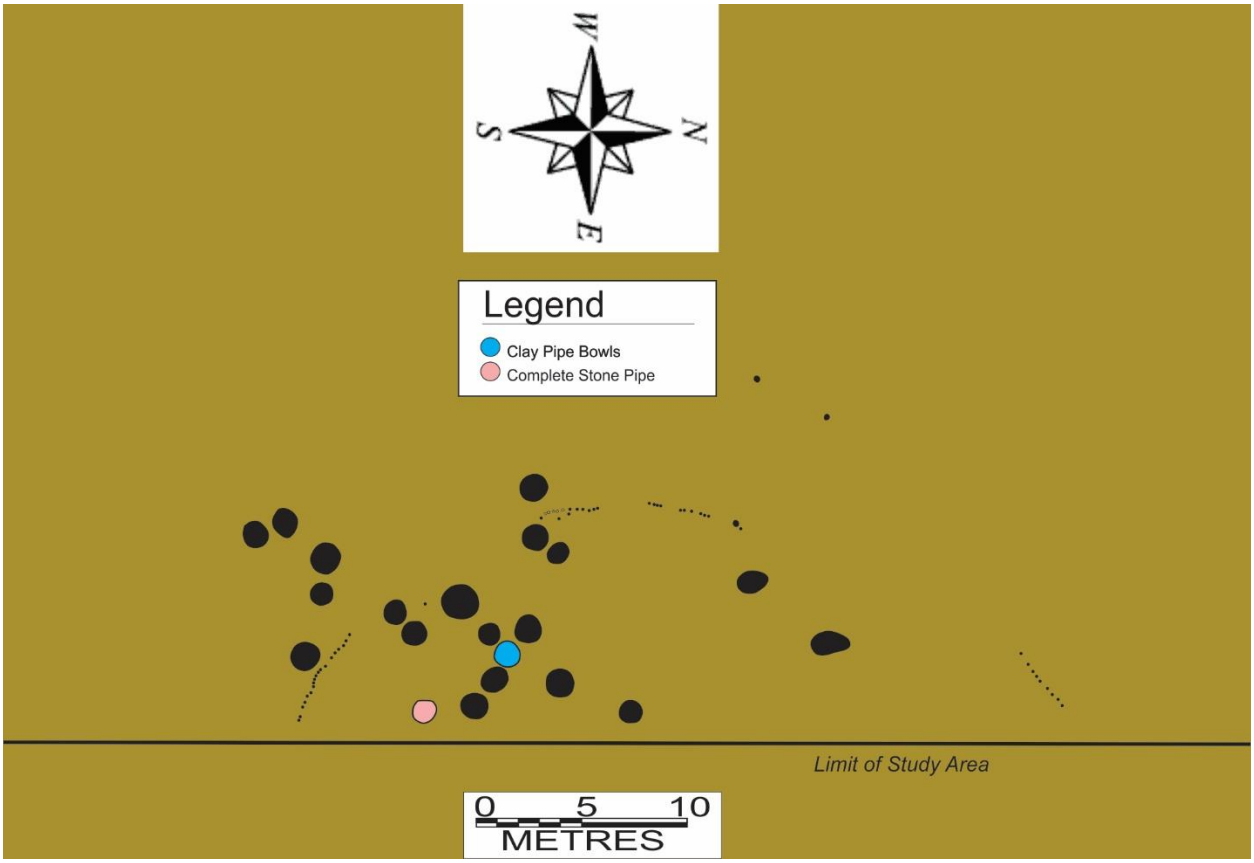

Figure 18: Inland Location 12 Pipe Distribution

Plate 9: Stone Pipe Preform recovered from Inland Location 12 (Image reproduced from Golder 2012a)

5.3.5 Van Bree

A clay pipe stem and a bowl fragment were recovered from the Van Bree site (Plate 10). The stem is undecorated and part of a right-angled pipe with a plano-convex cross section and tapered lip. The bowl fragment is thinly made (3.5 millimetres) with a flat lip and displays two incised lines over rows of punctates. Both pieces were recovered from Feature 41 (Figure 19), but the fragmentary nature of the pipe bowl precluded assigning both pieces to the same pipe. In previous research on the Van Bree site, Feature 41 was considered part of the Central Cluster and associated with ceramics that closely related to contemporary Early Ontario Iroquoian ceramic morphology and decoration (Cunningham 2001:10).

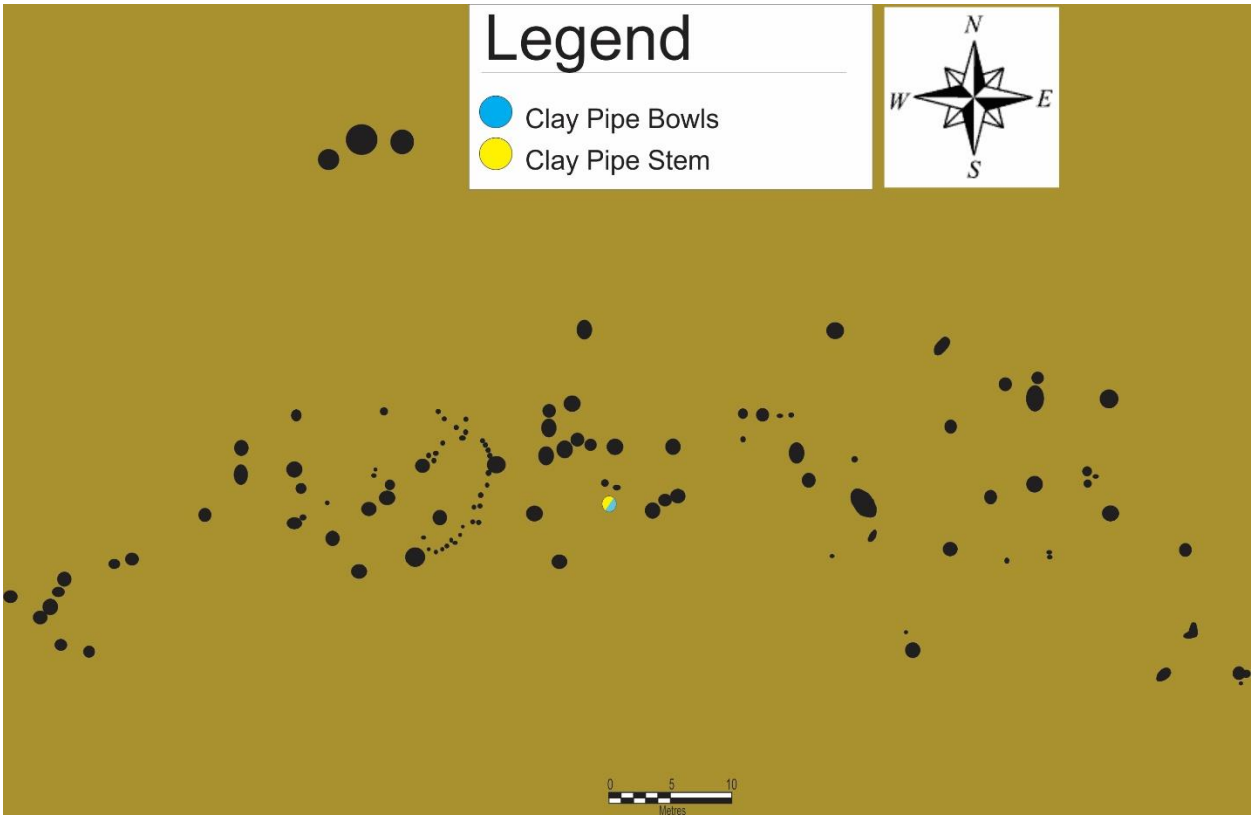

Figure 19: Van Bree Pipe Locations

Plate 10: Pipe fragments recovered from the Van Bree Site

5.3.6 Bingo Village

Figure 20 shows the location of recovered pipes within feature contexts. No apparent deposition patterns were identified, and preliminary results indicated a generalized distribution throughout the site that indicated a deposition strategy that did not correspond to any apparent intentional cultural practices. Not included on the map are two clay pipe bowls, three stone pipe bowls and a stone pipe preform recovered from the ploughzone context. Also excluded from Figure 20 are seven pipe elbow fragments and 29 clay pipe fragments of unidentifiable morphology. An attempt at cross mending pipe fragments produced six mends, of which four occurred between different features (Figure 21). Preliminary attempts were made to associate

pipe styles to specific structures within the village. Various zones were delineated within the village following previous work by Golder (2012b) and Spence and George (2017:64) and are depicted in Figure 22. These zones include four house contexts, a central plaza context, an "interior village context" comprised of the portion of the village within the first internal palisade but outside the houses and plaza, a context between the interior and external palisade, and finally the excavated area outside the external palisade. As can be seen in Table 5, 48% of pipes were located within house contexts, with the remaining 52% distributed across the other four contexts, . Intriguingly, while clay pipe fragments were distributed evenly between village and house context, 59% (n =22) of stone pipe fragments were recovered from an interior village or plaza context and 35% (n=13) from house contexts, potentially reflecting a different use and deposition of pipes within a communal setting.

Table 5: Pipe Distribution within Bingo Village

Village Zone	Pipe Freq.	%	Clay Pipes	%	Stone Pipes	%
Interior Village Outside of Plaza and houses	39	16.4	27	13.4	12	32.4
Between Interior and External Palisade	24	10.1	22	10.9	2	5.4
Outside of External Palisade	4	1.7	4	2.0	0	0.0
Plaza	57	23.9	47	23.4	10	27.0
House 1	36	15.1	30	14.9	6	16.2
House 2	16	6.7	15	7.5	1	2.7
House 3	44	18.5	40	19.9	4	10.8
House 4	18	7.6	16	8.0	2	5.4
Total	**238**	**100.0**	**201**	**100.0**	**37**	**100.0**

Twelve human burial deposits were identified during the excavations at Bingo. They were later reinterred in a protected cemetery following visual analysis of the human skeletal elements and

associated grave goods (George 2011, Spence 2011). Two of these burial features contained pipe fragments. Feature 352 was located in the western house structure and consisted of the secondary burial of a woman and child that contained a pipe fragment, which was not described further (George 2011). Feature 590 was located in the southern section of the central plaza and consisted of a sorted deposit of two individuals aged 14-16 years and 14-22 years respectively (Spence 2011:22). Two stone pipe preforms with incomplete drilled holes and six clay pipe fragments were associated with this feature. George (2011:17) described four pieces as bowl fragments with punctate, triangle, dotted triangle and horizontal decoration, one piece as an elbow and stem, and the last piece as a fragment with horizontals and notches (George 2011:17). Spence (2011:13) interpreted these pipe fragments and the other artifacts associated with the burial as representing a feast during the preparation of the two individuals for secondary burial (Spence 2011:23). All remains and associated grave goods were not photographed or drawn out of respect for the deceased individuals.

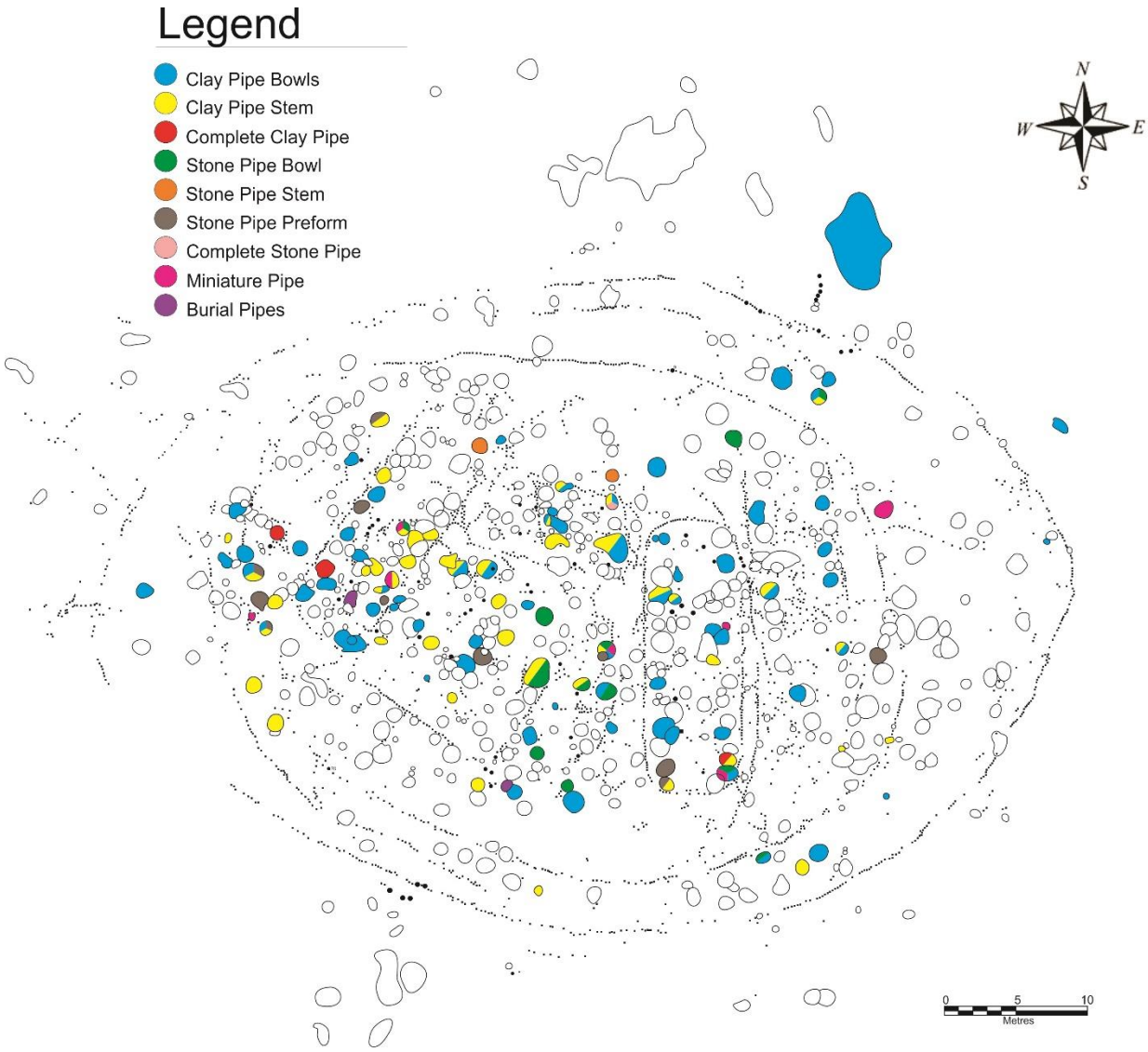

Figure 20: Bingo Village Pipe Distribution

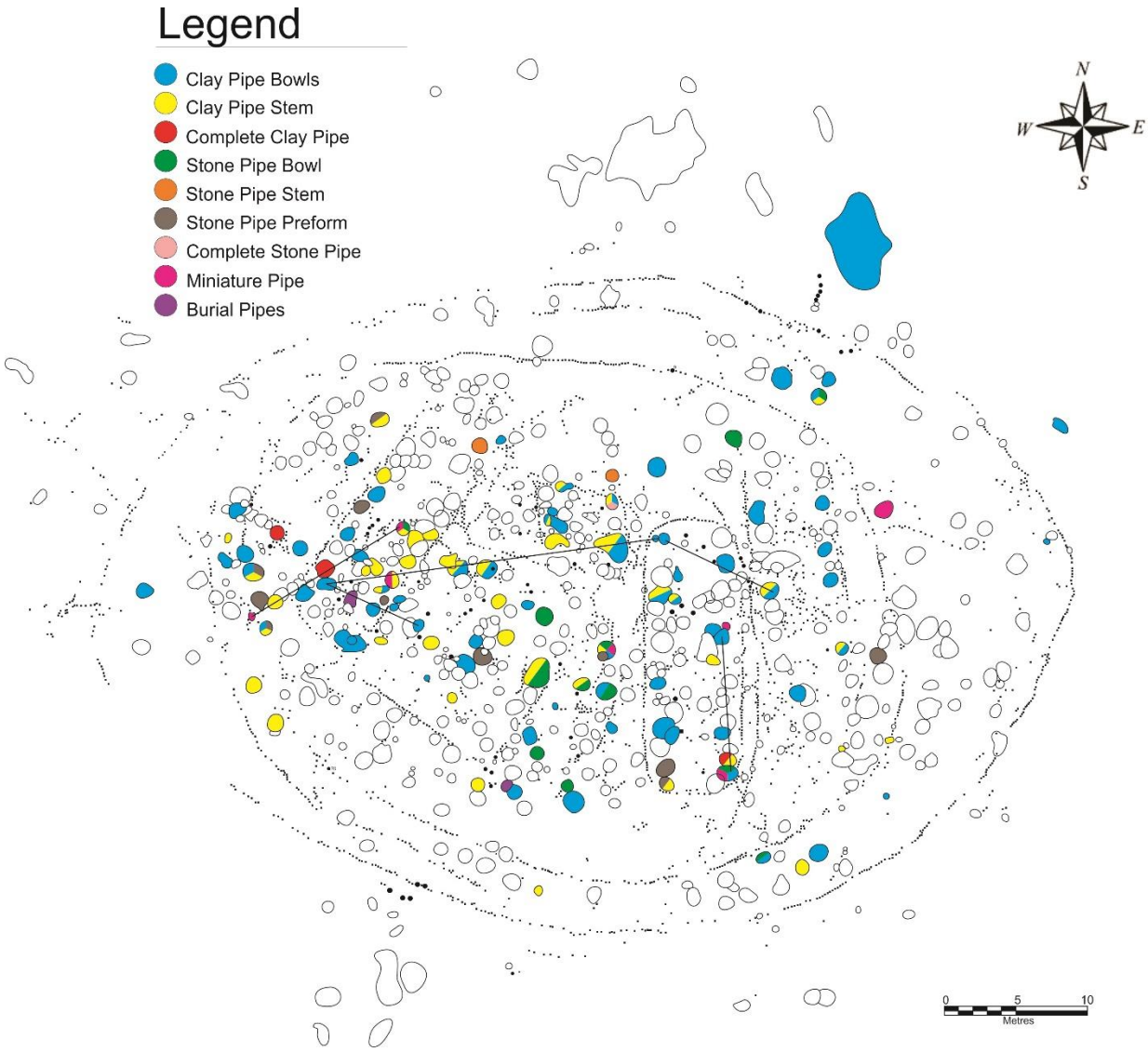

Figure 21: Bingo Village Pipe Mends

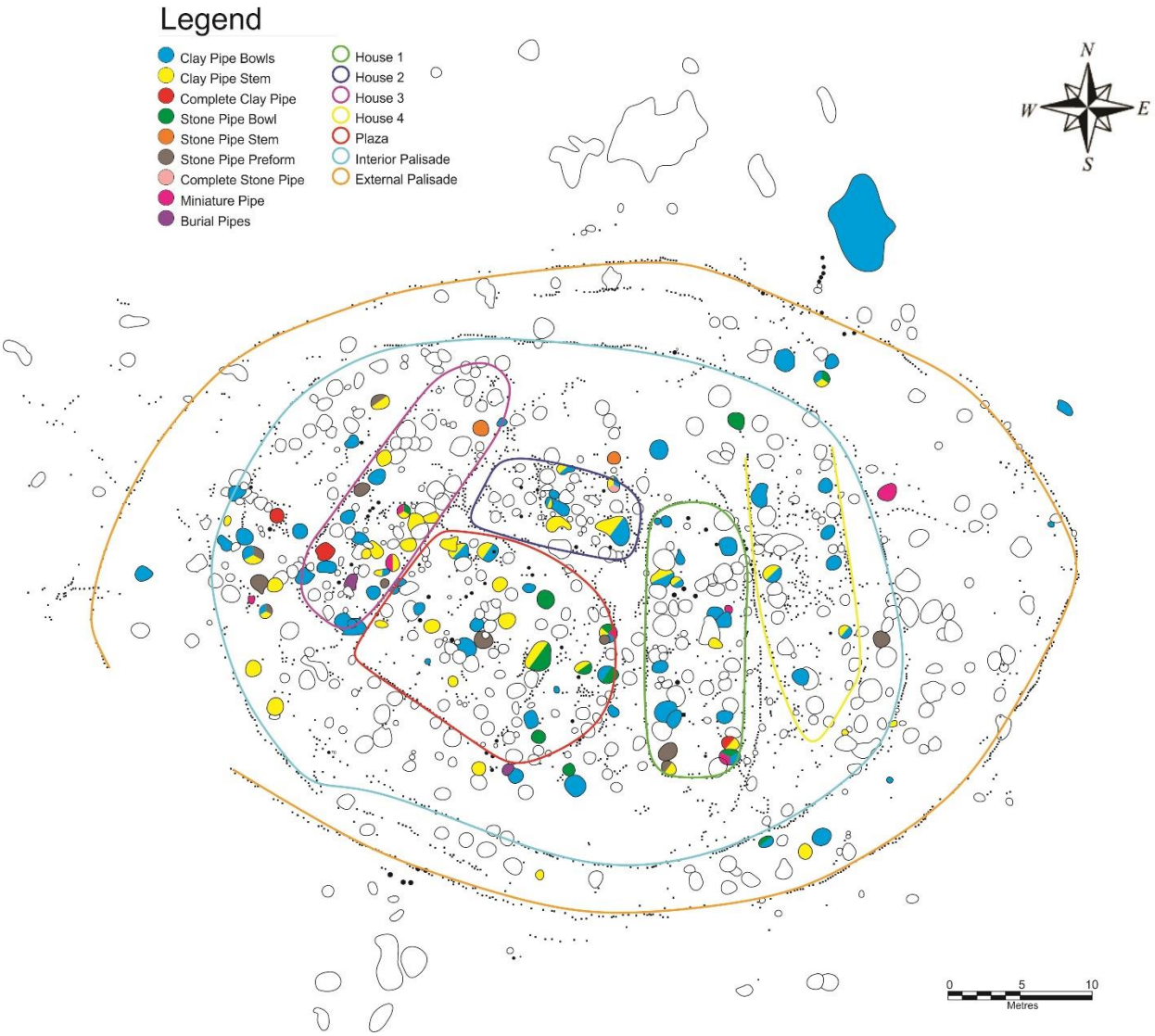

Figure 22: Village Zones

Most of the clay pipes recovered from Bingo were highly fragmented, and the stone pipe assemblage appears to have been discarded in the early stages of manufacture or when a completed pipe was fractured beyond repair. However, a number of specimens in the clay, miniature/juvenile and stone pipe categories were distinctive and warranted individual description.

5.3.6.1 Bingo Village Clay Pipes

In addition to their larger numbers relative to the other Arkona Cluster sites, the Bingo village clay pipes also display more complex decorative motifs and techniques on their bowls. Cat. 3119 (Plate 11) is a salient example, exhibiting a row of punctates near the lip, superimposed on a row of oblique left incised lines, followed by another row of punctates, two horizontal rows of cord wrapped stick, one row of punctates, one row of cord wrapped stick, one row of punctates and terminated with a row of vertical incised lines (full code: IN, OL/P, H(1)/ IN, OL; P, H(1); CWS, H(2); P, H(1); CWS, H(1);P, H(1);IN,V(1); recorded as C). Plate 12 illustrates the range of decorative variation. In contrast to Figura and Inland Location 3, there does not appear to be a definitive effigy pipe present. The only possible exception is Cat. 9171, a clay pipe stem with an oval lip cross section and a series of punctates applied on every surface (Plate 13). The dorsal surface exhibits a unique protuberance with two punctates at its base, which appears to be a nose when viewed from the superior angle. However, I was unable to identify additional pipe stem pieces that would assist in classifying the pipe as an effigy, and could find no comparable examples in the literature. Another pipe style unique to Bingo is the separate stem bowl, which consists of the pipe bowl with a large borehole drilled at the base for inserting a reed stem. Plate 14 illustrates the two examples identified at Bingo. These specimens are distinct from the similar Cat. 201 recovered from Inland Location 3 or Cat. 8251 and 2198 recovered from Bingo, which were broken at the elbow and not repaired. The separate stem pipe is frequently described in ethnohistoric literature and is considered a sacred pipe used in social ritual and communion (Paper 1988:12,36). Cat. 2197 also displays a unique collar with three incised lines located halfway between the lip and the base, which acts as a constricting belt from which the bowl and the base expand. Two additional complete clay pipes were recovered. Cat.

1103 (Plate 15) consists of an obtuse angled pipe with a single row of punctates near the lip of the bowl, and a cluster of smaller punctates that face the smoker. Cat. 9748 (Plate 16) is a plain, right-angled pipe with a wide, flat ventral surface and a rectangular stem cross section.

Plate 11: Cat. 3119

Plate 12: Additional Examples of Complex Clay Pipe Bowl Decoration

Plate 13: Cat. 9171

Plate 14: Separate Stemmed Pipes Recovered from Bingo (Cat. 2197 and 13129)

Plate 15: Cat. 1103

Plate 16: Cat. 9748

5.3.6.2 Bingo Village Miniature Pipes

The three miniature pipes recovered from Bingo Village exhibited decorative and metric characteristics that justified their inclusion in a separate category from the rest of the assemblage. Specifically, miniature bowl diameters ranged from 7.8 to 8.9 millimetres, while the remainder of the assemblage pipe bowls varied between 11 and 16.5 millimetres, indicating two distinct types. Additionally, all three pipes were functional, and two exhibited unique decorative attributes that would fit well with Kapches' (1992) definition of miniature pipes as gifts or charms. The unique morphology and decoration of each individual pipe is discussed below.

Cat. 10620 is a miniature clay pipe bowl decorated with columns of punctates. It has an internal bowl diameter of 8.2 millimetres. It is likely part of the same pipe as Cat. 10621, a miniature, rectangular cross sectioned, plain decorated pipe stem that was also recovered from Feature 302A (Plate 17). Cat. 2968 is a clay pipe bowl that was not connected to a stem before discard. It displays an idiosyncratic decorative technique of fibre impressed punctation on the bowl surface, as well as a ring of punctates on the lip surface (Plate 18). Cat. 3507 is a complete, obtuse angled undecorated pipe featuring a thicker stem and more uneven surface treatment than the other pipes in the assemblage (Plate 19). However, despite the comparatively crude appearance, the charred interior bowl and connecting stem borehole indicate its use as a fully functional pipe. Cat. 1693 and 2010 are pieces of a single mended pipe, which were recovered from two separate features. The pipe displays a complex, iconographic incised line design, with symbols similar to those on Cat. 790 from Inland Location 9 (Plate 20).

Plate 17: Cat. 10620 and 10621

Plate 18: Cat. 2968

Plate 19: Cat. 3507

Plate 20: Cat. 1693 and 2010

5.3.6.3 Bingo Village Stone Pipes

The stone pipes from Bingo Village (Plate 21 to Plate 25) represent a unique pipe manufacturing tradition in the Early Late Woodland Period of Ontario, with no comparable assemblages identified to date. Mending resulted in a reduction to 16 total stone pipe bowl fragments. Table 6 indicates the abundance of each of the pipe categories defined in the Chapter 4. There were few stone pipe attributes recorded in sufficient quantities for comparison due to the lack of finished specimens and the fragmentary nature of the assemblage. The most consistently recorded attribute was pipe bowl bores, which were present on 37.5% of the assemblage. Table 7 presents the range of borehole diameters within each of the stone pipe categories. The majority of stone pipes were Category 2 limestone pipes and preforms, which displayed the widest range of borehole diameters. Category 1 represents fragments of finished pipes, and borehole diameters cluster at the same range. Category 3 boreholes clustered at the

small end of the range, which may be a function of the material being worked. Given the fragmentary nature of the assemblage and small sample size, the full range of variability in manufacturing and form is likely not being captured by the available dataset.

Table 6: Stone Pipe Category Frequencies at Bingo Village

Category	**Freq.**	**%**
1	6	17.6
2	15	44.1
3	3	8.8
4	4	11.9
Uncategorized	6	17.6
Total	**34**	**100.0**

Table 7: Stone Pipe Bowl Borehole Diameters

	Stone Pipe Category			
Bowl Borehole Diameter Range (mm)	**1**	**2**	**3**	**4**
9.01-10.00	0	1	1	0
10.01-11.00	0	0	2	0
11.01-12.00	0	0	0	1
12.01-13.00	0	2	0	0
13.01-14.00	2	0	0	0
14.01-15.00	0	2	0	0
15.01-16.00	0	1	0	0
Total	**2**	**6**	**3**	**1**

Plate 21 to Plate 25 illustrate the range of pipes assigned to each category. Category 1 included two finished stone pipe stems manufactured on a dark slate material, which exhibited a unique biconvex or diamond cross section (Plate 22). The stone pipe assemblage is notable for the wide range of materials chosen for manufacture, as well as the discarded, unfinished preforms that show no sign of breakage. The initial excavation data did not make a distinction

between refuse and storage pits, and no conclusions could be made about whether the preforms were deposited as a result of the abandonment of the manufacturing process or as a caching strategy. The horn coral material identified in Category 3 may represent pipe manufacture experimentation, as naturally occurring horn coral shares similar morphological features with finished pipes.

Three pipes could not be categorized. Cat. 3925 (Plate 26) is a complete, obtuse angled pipe manufactured on a porous, spongy fossilized coral material that is noticeably different from the striated horn coral identified in the Category 3 preforms. Cat. 5779 (Plate 27) is a pipe elbow manufactured on a dark, reflective material that displays a band of vertical incised lines along its edge and a potential anthropomorphic design incised onto the ventral surface. Cat. 12915 and 13099 (Plate 28) together comprise a mended bowl that was recovered from the plough zone. It is manufactured on a dark brown sedimentary material and is notable for its cuboid bowl morphology and bevelled acute lip, both of which are unique within the Arkona Cluster.

Plate 21: Category 1 Stone Pipes

Plate 22: Category 1 Stone Pipe Stem

Plate 23: Category 2 Stone Pipes

Plate 24: Category 3 Stone Pipes

Plate 25: Category 4 Stone Pipes

Plate 26: Cat. 3925

Plate 27: Cat. 5779

Plate 28: Cat. 12915 and 13099

5.3.7 Bingo Locations 3 and 5

While the pipe fragments from Bingo Locations 3 and 5 were not directly analysed, the small sample size and the photographs from the consultant report allowed their inclusion in the dataset. A single clay pipe bowl fragment was recovered from Bingo Location 3. It was decorated with at least three rows of oblique linear stamps (Plate 29). It was located within an apparent house structure in the northwest corner of the site (Figure 23). Bingo Location 5 contained an undecorated clay pipe stem fragment (Plate 30), recovered from a refuse pit at the southern edge of the site (Figure 24).

Plate 29: Pipe Bowl Fragment recovered from Bingo Location 3 (Image reproduced from Archaeologix 2005)

Plate 30: Clay Pipe Stem Fragment Recovered from Bingo Location 5 (Image reproduced from Archaeologix 2005)

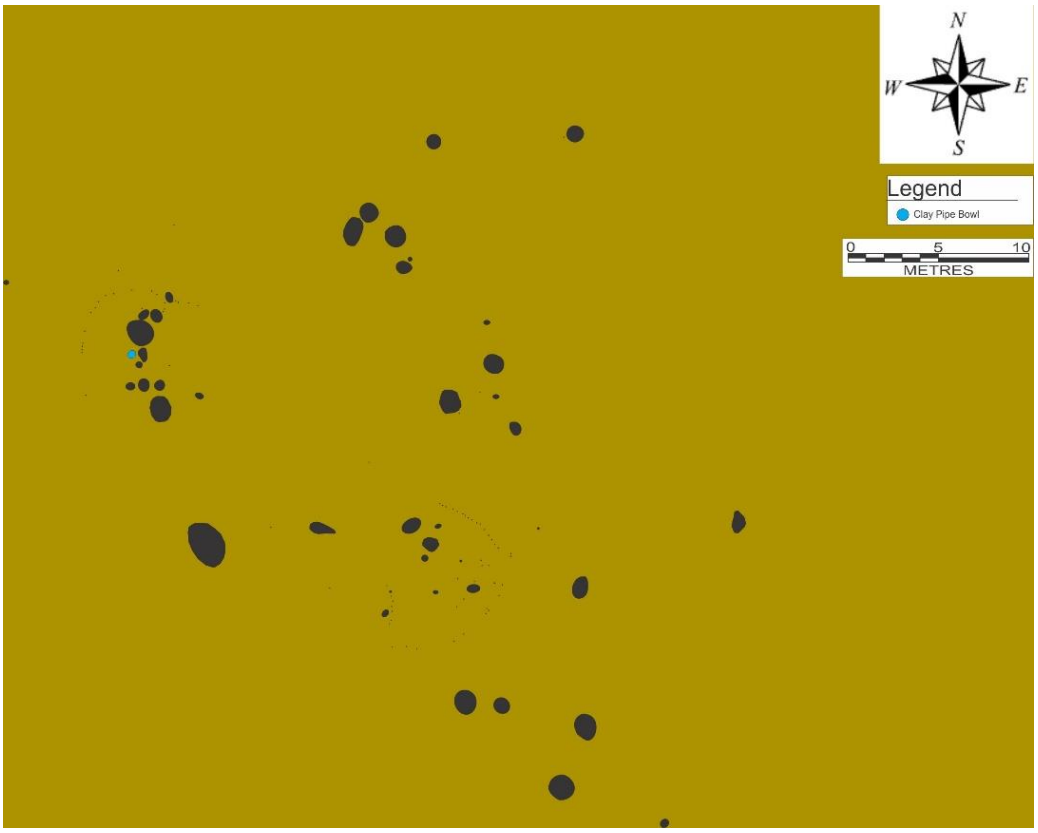

Figure 23: Bingo Location 3 Pipe Bowl Location

Figure 24: Bingo Location 5 Pipe Stem Location

5.4 Comparative Dataset

Due to the fragmentary nature of the pipe assemblage, relatively few measurements could be recorded in sufficient quantities to facilitate a meaningful comparison between sites. The most consistently available data were clay bowl lip thickness, clay bowl lip type, clay bowl decorative techniques, clay stem mouthpiece type (lip cross-section), and clay stem borehole diameter. Only cylinder, barrel, and outflare clay bowl types were present, together comprising 28% (n:37) of the total assemblage. Additionally, while decorative motifs were recorded, many of the pipe bowls were too fragmentary to be able to assign a complete motif pattern and were therefore not included in a comparative analysis.

Table 8: Clay Pipe Bowl Lip Thickness

	Bingo Village		Figura		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
Thickness Intervals (mm)	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
3.00-4.00	12	13.6	4	50.0	2	28.6	3	13.6	1	100.0	1	100.0	23	18.1
4.01-5.00	35	39.8	0	0.0	2	28.6	6	27.3	0	0.0	0	0.0	43	33.9
5.01-6.00	26	29.5	2	25.0	2	28.6	3	13.6	0	0.0	0	0.0	33	26.0
6.01-7.00	10	11.4	0	0.0	0	0.0	5	22.7	0	0.0	0	0.0	15	11.8
7.01-8.00	3	3.4	1	12.5	1	14.3	5	22.7	0	0.0	0	0.0	10	7.9
8.01-9.00	2	2.3	1	12.5	0	0.0	0	0.0	0	0.0	0	0.0	3	2.4
Total	**88**	100.0	**8**	100.0	**7**	100.0	**22**	100.0	**1**	100.0	**1**	100.0	**127**	**100.0**

Table 9: Clay Pipe Bowl Lip Types

	Bingo Village		Figura		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
Lip Type	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Flat	38	43.2	5	62.5	1	14.3	7	31.8	1	100.0	1	100.0	53	41.7
Flat with a Collar	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8
Rounded	15	17.0	3	37.5	4	57.1	7	31.8	0	0.0	0	0.0	29	22.8
Rounded with Collar	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8
Bevelled Obtuse	4	4.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	3.1
Bevelled Obtuse with Incised Lines	0	0.0	0	0.0	1	14.3	0	0.0	0	0.0	0	0.0	1	0.8
Bevelled Acute	2	2.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	1.6
Pointed	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8
Unknown	26	29.5	0	0.0	1	14.3	8	36.4	0	0.0	0	0.0	35	27.6
Total	**88**	100.0	**8**	100.0	**7**	100.0	**22**	100.0	**1**	100.0	**1**	100.0	**127**	**100.0**

Table 10: Clay Pipe Bowl Decorative Techniques

	Bingo Village		Figura		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
Decorative Technique Combinations	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Complex	2	2.33	1	12.5	0	0	1	4.55	0	0	0	0	4	3.1
Cord Wrapped Stick	3	3.49	1	12.5	0	0	0	0	0	0	0	0	4	3.1
Cord Wrapped Stick;Incised Lines	1	1.16	0	0	0	0	1	4.55	0	0	0	0	2	1.6
Dentate Stamped; Incised Lines	1	1.16	0	0	0	0	0	0	0	0	0	0	1	0.8
Incised Lines	7	8.14	0	0	1	14.3	5	22.7	0	0	0	0	13	10.2
Incised Lines;Punctates	1	1.16	0	0	0	0	0	0	0	0	1	100	2	1.6
Incised Lines;Cord Wrapped Stick	1	1.16	0	0	0	0	0	0	0	0	0	0	1	0.8
Linear Stamp	1	1.16	0	0	0	0	0	0	0	0	0	0	1	0.8
Punctates	26	30.2	5	62.5	2	28.6	3	13.6	0	0	0	0	36	28.3
Punctates;Incised Lines	5	5.81	0	0	1	14.3	4	18.2	0	0	0	0	10	7.9
Punctates;Incised Lines;Punctates	0	0	0	0	0	0	1	4.55	0	0	0	0	1	0.8
Plain	33	36.1	1	12.5	3	42.9	7	31.8	1	100	0	0	45	35.4
Reed Stamped	3	3.49	0	0	0	0	0	0	0	0	0	0	3	2.4
Reed Stamped; Incised Lines	3	3.49	0	0	0	0	0	0	0	0	0	0	3	2.4
Reed Stamped; Incised Lines; Reed Stamped	1	1.16	0	0	0	0	0	0	0	0	0	0	1	0.8
Total	**88**	**100.0**	**8**	**100.0**	**7**	**100.0**	**22**	**100.0**	**1**	**100.0**	**1**	**100.0**	**127**	**100.0**

Table 11: Clay Bowl Types

	Bingo Village		Figura		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree	
Bowl Type	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Cylinder	18	20.5	0	0.0	3	42.9	1	4.3	0	0.0	0	0.0
Barrel	5	5.7	0	0.0	0	0.0	2	8.7	0	0.0	0	0.0
Outflare	6	6.8	1	12.5	1	14.3	0	0.0	0	0.0	0	0.0
Vasiform	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Unknown	58	65.9	7	87.5	3	42.9	20	87.0	1	100.0	1	100.0
Total	**88**	**100.0**	**8**	**100.0**	**7**	**100.0**	**23**	**100.0**	**1**	**100.0**	**1**	**100.0**

Table 12: Clay Pipe Stem Lip Cross Sections

	Bingo Village		Figura		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
Stem Type	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Plano-Convex	24	50.0	1	10.0	2	66.7	4	25.0	0	0.0	1	100.0	32	41.0
Circular	7	14.6	3	30.0	0	0.0	2	12.5	0	0.0	0	0.0	12	15.4
Oval	4	8.3	1	10.0	1	33.3	0	0.0	0	0.0	0	0.0	6	7.7
Rectangular	1	2.1	1	10.0	0	0.0	1	6.3	0	0.0	0	0.0	3	3.8
Broken/Unknown	12	25.0	4	40.0	0	0.0	9	56.3	0	0.0	0	0.0	25	32.1
Total	**48**	100.0	**10**	100.0	**3**	100.0	**16**	100.0	**0**	**0.0**	**1**	100.0	**78**	**100.0**

Table 13: Clay Pipe Stem Borehole Diameters

	Bingo Village		Inland Location 1		Inland Location 3		Inland Location 9		Inland Location 12		Van Bree		Total	
Stem Borehole Diameter Intervals (mm)	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
1.01-2.0	1	2.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.3
2.01-3.0	6	12.5	2	20.0	1	33.3	2	12.5	0	0.0	0	0.0	11	14.1
3.01-4.0	17	35.4	2	20.0	1	33.3	1	6.3	0	0.0	0	0.0	21	26.9
4.01-5.0	11	22.9	1	10.0	1	33.3	2	12.5	0	0.0	1	100.0	16	20.5
5.01-6.0	5	10.4	0	0.0	0	0.0	1	6.3	0	0.0	0	0.0	6	7.7
6.01-7.0	0	0.0	1	10.0	0	0.0	1	6.3	0	0.0	0	0.0	2	2.6
Unknown	8	16.7	4	40.0	0	0.0	9	56.3	0	0.0	0	0.0	21	26.9
Total	**48**	100.0	**10**	100.0	**3**	100.0	**16**	100.0	**0**	**0.0**	**1**	100.0	**78**	**100.0**

The tables demonstrate a degree of overlap in morphological characteristics and decorative attributes across the Arkona cluster sites, which is unsurprising given their close chronological associations indicated by the radiocarbon data. The data from the pipe bowls indicate a central range of manufacturing preferences. For example, 78.6% (n:99) of clay pipe bowl lip thickness measurements fall between a range of three to six millimetre across the sites, while Van Bree, Figura and Inland Locations 9 and 12 exclusively exhibit flat or rounded bowl lips. Similarly, clay pipe bowls are mostly undecorated or display simple rows of incised lines or punctates (74%). However, despite this confluence of manufacturing and decorative choices, a

significant amount of diversity is also present. In describing this variability, I will exclude Inland Location 12 and Van Bree, as relatively few observations can be gained when one fragment was recovered from each site. Both clay bowl thickness and decorative technique metrics show a similarity between site assemblage size and the accompanying range of variation. Bingo Village is the obvious example, displaying cord wrapped stick, dentate stamp, linear stamp and reed stamp techniques in addition to exhibiting combinations of different techniques that produce unique specimens and containing bowls within each range of measured lip thickness. The next largest assemblage was Inland Location 9, which also displayed decorative stylistic combinations in 32% of the pipe assemblage and lip thickness ranges greater than 6.00 millimetres that accounted for 45% of the pipe bowls. Despite the greater variability within larger sites, most sites (excluding Bingo Location 5, Van Bree and Inland Location 12) contained idiosyncratic pipe designs. This was even present in the pipe bowl decoration from the fragment recovered from Bingo Location 3, which displayed rows of linear stamping that were not identified in the rest of the Arkona cluster.

The inherent range of variability is more evident in the pipe stem cross section data. Murphy and Ferris (1991:207) identified plano-convex pipe stems as the primary type in the Younge Phase and while that is present in 41% of the assemblage, each site contains additional pipe stem types, regardless of assemblage size. Figura in particular shows a marked preference for circular pipe stems, while oval and rectangular forms are identified in Bingo, Figura and Inland 9. Similar to the clay pipe bowl lip thickness, 61.5% of stem borehole diameters cluster in a small range between 2.01 and 5.00 millimetres, indicating a broadly shared manufacturing approach. Unfortunately, the number of fragmentary pieces that could not be measured account

for 26% of the pipe stem assemblage, and skew additional attempts to compare metrics between the sites to assess the range of variability.

5.5 Summary

The Arkona cluster pipe assemblages reveal a striking diversity of morphological and decorative attributes across sites, despite their geographic and temporal proximity. One of the more eye-catching observations is the presence of idiosyncratic pipes unique to Bingo Village, Figura, Inland 3, and Inland 9. Specifically, the anthropomorphic effigy pipe from Inland Location 3 and the possible coiled snake effigy pipe recovered from Figura are unique specimens, and contrast noticeably with Bingo Village and Inland Location 9 pipes that display incised iconographic designs.. Furthermore, the spatial distribution analyses suggest different pipe depositional practices between sites that may be culturally informed. The essentially random distribution of pipes on Inland Location 9 contrasts with the clustering of pipes in the main activity area in Inland Location 3 and the placement of effigy pipes within house and village contexts in Figura. Bingo Village is unique in its collection of stone pipes and their concentration within a more communal village context. Lastly, the comparative dataset indicated a broadly shared approach to clay pipe manufacture with a range of variability that suggests a certain amount of experimentation and individualised manufacturing choices were occurring. This is further supported by the stone pipe assemblage recovered from Bingo Village, which utilizes a wide range of materials and size in the manufacturing process. The implications of these broad trends within a regional and theoretical context are discussed in the following chapter.

Chapter 6: Discussion

6.1 Introduction

The results from the analysis of the Arkona cluster pipes suggest that they played a significant and multidimensional role in the lives of its inhabitants during a period of social change and reorganization. This chapter explores the Arkona Cluster pipes through each of the three explanatory models outlined in Chapter 3 in order to interpret past practice and behaviour. While these models are useful for archaeologists, it is important to recognize that they are unlikely to reflect conceptions of pipes by the people who made and used them in the past. Instead, pipes were woven through the fabric of social practice in people's day to day lives. After using the models as analytical lenses through which to discuss the pipes, the Chapter moves on to discuss the implications of this analysis within a larger regional and theoretical context. Ultimately, it draws a connection between the use of pipes and attempts by their users to communicate and negotiate shifting elements of personal and group identity. Due to the size of their pipe assemblages and relative completeness of excavations, discussion will focus primarily on Figura, Bingo Village, Inland Location 3 and Inland Location 9.

The precise nature of the relationship between the Arkona sites is yet to be fully delineated. The radiocarbon data presented in Chapter 1 indicate the potential for a significant degree of overlap in site occupation (with the exception of the demonstrably earlier Van Bree site). However, it remains possible that the sites were occupied sequentially rather than contemporaneously. While the pipe data suggest a difference in group organization and identity construction between the four main sites it could be a product of either differences between contemporaneous groups, or temporal changes in material culture and settlement organization within one or more cultural lineages. Should Inland Location 3 and Figura prove earlier than

Bingo or Inland Location 9, the pipe data generated from this thesis would potentially generate additional discussion about the nature of cultural change in the Arkona cluster. However, further studies will need to be conducted to tease out more precise relationships.

6.2 Symbolic and Ritual use of Arkona cluster pipes

As described in Chapter 3, a primary interpretive model of pipes in North America revolves around their use in a set of ritual beliefs and practices that correspond to a shared ideological conception of the world. The symbolically charged decorated bowls and effigy pipes recovered from four of the analyzed Arkona Cluster sites potentially indicate the importance of pipes in ritual practice and belief. One of the advantages of the shared view model is the potential to make inferences about the archaeological data and the underlying cultural dynamics by drawing analogies from geographic and chronological contexts that are removed or seemingly unrelated from the archaeological context under study (Hall 1977; von Gernet and Timmins 1987). This approach allows for the incorporation of ethnohistoric records and archaeological research that has primarily focussed on later period Iroquoian sites, when it would normally be considered suspect given the age and potentially unique cultural affiliations of the Arkona cluster. However, as Brown (1997:472) points out, analysis using the worldview model should be careful to assess the importance of pipes within their specific regional context and avoid drawing conclusions that serve to 'set the stage' for later archaeological sites or documented events in the ethnohistoric record.

Perhaps the most dramatic pipe in the Arkona cluster is the limestone anthropomorphic effigy pipe recovered from Inland Location 3. Effigy pipes are believed to be the physical representation of guardian spirits, with which shamans communicate during the dissociative state

brought about by smoking tobacco. Such pipes are thought to be restricted to ceremonial, ritual use (Braun 2012: 8; Noble 1979; Wonderley 2005:215).

Figura also contains two effigy pipes. The first is the potential snake effigy pipe (Cat 1260; Plate 2). Coiled snake effigies have been frequently recovered from Ontario Iroquoian Sites (Noble 1977:70). The second is the flared trumpet bowl pipe (Cat 1257; Plate 1) recovered from the house structure at Figura. Both of these effigy pipes may have been broken intentionally to release the pipe's spirit before deposition, a practice which has been documented among later Iroquoian groups (Mathews 1982:320).

In contrast to Figura and Inland Location 3, Bingo Village and Inland Location 9 exhibit symbolic pipe decoration in the form of complex geometric incised designs. Both sites contain pipes (Bingo - Plate 20; Inland Location 9 - Plate 8) that exhibit oblique lines bounded by an incised geometric shape. This design has also been identified at the Holly Site, a fourteenth century Iroquoian settlement in southern Simcoe County (ASI 2009; Plate 31). The fact that these designs are not found on the other Arkona cluster sites suggests the inhabitants of Inland Location 9 and Bingo Village may have produced distinctive physical expressions of their ideological or spiritual beliefs, different from those made by occupants of Figura and Inland Location 3. The decoration represents a different manipulation of the pipe medium to achieve those symbolic expressions (incising for symbols vs moulding for effigy forms) and represents distinct belief systems, or at least distinctive forms of expression of those beliefs at Figura and Inland Location 3 versus Bingo and Inland Location 9. Additionally, the presence of separate stemmed pipes and mortuary feasting pipes at Bingo Village suggests differential engagement with smoking and the associated spirit realm.

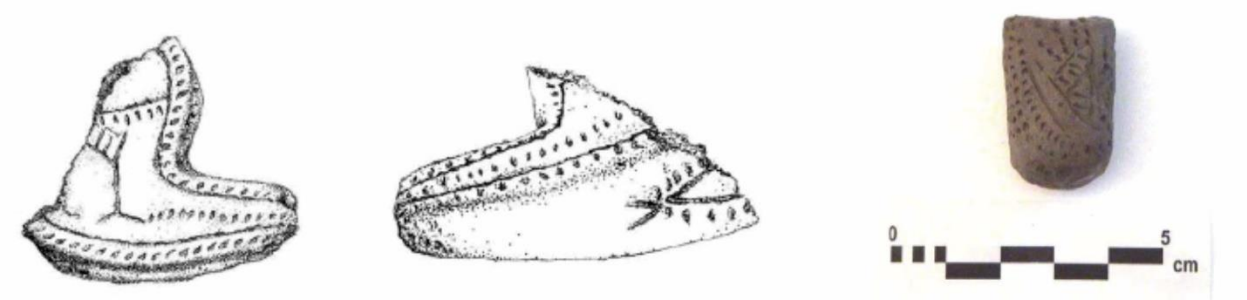

Plate 31: Incised Designs on Holly Site Pipes (Image reproduced from ASI 2009:93-94)

The distributions of pipes at Figura and Inland Location 3 are distinct from those at the rest of the Arkona cluster sites. Inland Location 3 pipes were deposited in the middle of the main activity area in three features. The effigy pipes from Figura were located at the entrance to the palisade and in the middle of a house, while the majority of pipe refuse was discarded outside the palisade wall. This is in direct contrast to the more homogenous deposition patterns observed at Bingo and Inland Location 9. This more structured deposition suggests intentional placement of the pipes, especially at Figura. Deliberate placement of these symbolically charged items at the settlement entrance (in the case of Figura) and in the centre of the settlement (at both sites) could be interpreted as a means to express the identity of the occupants of the site and link it to a fixed location within a previously fluid and mobile landscape.

6.3 Sociopolitical Model

The use of pipes in social interaction and intertribal diplomacy is well documented among historic Iroquoian groups (Kuhn 1987, 2004; Wonderley 2005). Apart from the similarity in incised designs between Bingo and Inland Location 9, the pipes in the Arkona Cluster exhibit a wide range of morphology, techniques and motifs that makes it difficult to draw conclusions about the nature of any potential inter-site interactions solely based on visual and metric pipe

comparisons. However, the presence of miniature pipes is suggestive. The two specimens with idiosyncratic designs from Bingo fit Kapches' (1992) miniature pipe criteria, indicating they could have been used as charms or gift exchange items. Additionally, ethnohistoric accounts document how separate stem pipes similar to those recovered from Bingo Village were used in peace negotiations and inter-group exchange (Paper 1992). A similar function has been posited for a unique separate stem pipe recovered from the temporally contemporaneous and culturally distinct Calvert site (von Gernet and Timmins 1987). Furthermore, the recovery of copper beads at the site indicate potential connections with groups on the north shore of Lake Superior (Fox 2008; Golder 2012b:171). Inland Location 9 may similarly have functioned as a hub for regional interaction, given its similar degree of variability in pipe form and the apparently unstructured deposition of the pipes across the site. Given their shared idiosyncratic incised pipe design, Bingo and Inland 9 may have been more closely related to one another than to the rest of the Arkona cluster. Both settlements may have seen the coalescence of multiple culturally distinct groups of people, who were experimenting with changing forms of social and settlement organization.

6.4 Individual Pipe Use model

This relatively recent model forwarded by Creese (2016a,b) deals with the role of pipes at the level of the individual and how they functioned in personal identity formation and the regulation of emotional states as a means to build social cohesion in the development of a successful village life. The model relates to his earlier work examining how longhouses performed a similar role at the community level (Creese 2013:188). It draws on the notion that larger pipe assemblages made by people with a wide range of skill levels in the Late Woodland reflect a democratization of smoking and associated shamanistic rituals (summarized in Rafferty

2016:21). This shift coincides with the establishment of coalescent villages. Braun's (2012; 2015:212) laser ablation and petrographic analysis of pipes from the Antrex and Holly sites likewise indicates an increase in individualised pipe manufacture. The morphological and spatial distribution analysis presented here suggests similar processes were taking place in the Arkona cluster, specifically at Bingo and Inland Location 9. The size and diversity of the pipe assemblage at these two locations indicates that smoking was becoming increasingly democratized as the inhabitants began to adjust to changing social circumstances that were placing new tensions on these emerging communities. As a result, pipe manufacture was becoming more individualistic, and likely played an integral role in establishing and managing relationships that would lead to the successful establishment of village life. The comparatively low number of pipe at Figura and Inland Location 3 and the presence of effigy forms suggest that pipes may not have been required to mediate these kind of tensions, and that shamanistic use of pipes may still have been the primary function for the inhabitants of these settlements. This is further supported by the percentage of features containing pipes between the sites, which shows a clear difference in pipe deposition frequencies between the sites (Table 14)

Table 14: Pipe Distribution across Features

	Van Bree	**Bingo**	**Figura**	**Inland 3**	**Inland 9**	**Inland Location 12**	**Bingo 3**	**Bingo 5**
No. of Features	74	593	303	90	129	21	37	14
No. of Features containing Pipes	1	118	12	3	21	1	1	1
% of features containing pipes	1.35	19.90	3.96	3.33	16.28	4.76	2.70	7.14

The individual model is intricately linked to the world view and sociopolitical models, as these new social circumstances would inevitably lead to the materialization of new symbols that would

identify and reinforce these new conditions and were informed by a shared ritual and cultural belief system.

The stone pipe assemblage at Bingo warrants further discussion. The Arkona cluster is the earliest example in southern Ontario of a stone pipe complex that is commonly associated with later Iroquoian sites to the east (eg. Wintemburg 1939). Furthermore, their distribution within the village suggests they may have been used and manufactured within a more communal setting rather than the individualised practice posited for the clay pipes. This seemingly sudden appearance of a heretofore unknown yet fully realised pipe manufacturing tradition is a startling discovery and suggests that multiple methods and conceptions of pipe manufacture – and by extension multiple communities of practice – may have been coalescing into a distinct settlement that resulted in new cultural expressions and experimentation with pipes.

6.5 Pipes, Identity and Territorialization in a Borderland

The Arkona cluster pipe assemblage affords a unique opportunity for a theoretically informed discussion examining the sociocultural processes occurring in the region during a period of change and re-organization. In particular, a multiscalar analysis at the site, regional, and inter-regional level incorporating conceptions of identity, practice theory, placemaking and borderlands can lead to a richer understanding of how people in this region were redefining themselves and their associated groups in response to previously unprecedented upheavals in settlement and subsistence change.

The communities of practice theoretical approach described in Chapter 1 frames a number of recent studies of Western Basin and Iroquoian ceramics, which have posited that during the Late Woodland, Early Late Woodland communities incorporated differing

conceptions of vessel form and decoration to inform new communities of practice based on shared learning and experiences (Watts 2008; Mather 2015; Suko 2017). Certainly, the Arkona cluster is seen as an area of admixture between communities of practice, leading to a pronounced dynamism in material culture that is apparent in the diversity of Arkona cluster pipes. The most salient example of this process is Bingo Village, where the diversity, size and spatial distribution of the pipe assemblage indicates competing conceptions of pipe manufacture (e.g. clay vs stone) and the experimentation in form and material that would result from the cross-pollination of different approaches to pipe creation and use. From the deep time perspective afforded to archaeologists, it would appear that Bingo Village was potentially the site of occupation by communities that incorporated practices from groups that would archaeologically be recognized as Western Basin Younge Phase and Early Ontario Iroquoian. This is supported by ceramic and settlement data, which indicates Younge Phase ceramics located within a palisaded village context that is commonly associated with the EOI. These competing conceptions of practice within a bounded village context likely created social tensions that were mediated through the relatively widespread use of diverse pipes. The daily interactions of peoples within the village would be a constant negotiation of differing norms to reach the kind of mutual understandings necessary for a functional village settlement. A similar process may have been occurring at Inland Location 9, as there are similarities in site layout, pipe distribution, pipe morphologies and symbolic pipe iconography which suggest parallels with Bingo, albeit on a smaller scale (which is partly a result of the partial excavation of the site). It remains to be seen if Inland Location 9 represents an earlier phase of occupation by the Bingo inhabitants or a contemporaneous occupation of a closely related community within the region.

While the relatively large and distinctive pipe assemblages at Bingo and Inland Location 9 suggest that these sites were co-occupied by communities with different conceptions of *habitus*, the paucity of pipes at Van Bree suggests that different social processes were at play. As previously mentioned, Cunningham (2001:10) argued that the settlement and ceramic data suggested that Van Bree was occupied by two distinct groups that occupied the site sequentially rather than concurrently. Furthermore, Watts' (2008:79) argued that Van Bree was home to a distinct group that incorporated manufacturing traditions from the WBT and EOI to create a regionally specific syncretic tradition. Both interpretations suggest the occupants were part of a small, internally homogenous group with a set of shared norms that would not have required intercultural mediation or expression through the use of pipes. There was a similar paucity of recovered pipes at Bingo Locations 3 and 5, which were of similar or smaller size to Van Bree and suggest different social processes were taking place at these sites in comparison to the nearby Bingo Village.

The pipes from Figura and Inland Location 3 differ most clearly from those at Bingo Village and Inland Location 9 in the presence of effigy pipes. The deposition of more complete pipes at Figura and Inland Location 3 appears to be structured, with pipes placed within structures or in areas of activity or habitation. In addition, previous research on Inland Location 3 ceramics indicates the inhabitants blended different ceramic manufacturing practices in the creation of a single shared identity (Suko 2017:44). These factors suggest the occupants of these sites approached the manufacture, use and discard of pipes in a distinctly different manner to the inhabitants of Bingo Village and Inland Location 9, and utilized pipes in a way that was more preoccupied with spiritual beliefs and shamanistic use. Pipe use appears to have been less 'individualised' in these communities than at Bingo and Inland 9, where the assemblages are

diverse and deposition appears less structured. These distinct trends suggest that multiple distinct communities of practice were engaged in pipe manufacture in the region.

The data also suggests that the pipe assemblages were intrinsically related to the materially embedded territorialisation processes described by Creese (2013) in other Early Late Woodland contexts. While Creese focussed on how longer term residential structures entangled people in new and more enduring relationships with each other and the surrounding locale, pipes were clearly also implicated in this process. At Bingo Village and Inland Location 9, the individualised pipe manufacturing practices likely mediated interpersonal interactions and would have served to reinforce the relationships being forged in the new community types in the region. These daily interactions would have served to create a shared sense of identity among the occupants of both sites, and perhaps also cemented intersite social ties. Furthermore, the deposition of pipes in a mortuary context at Bingo Village drew a specific connection between the inhabitants and the spiritual realm, in effect establishing a spiritual marker of ownership in the region. These processes were a place-making activity that helped to establish a connection between the individual, the group, and the surrounding locale.

A similar process of place-making and territorialisation may also have been occurring at Figura and Inland Location 3 through a slightly different use of pipes. In a variety of contexts pipes associated with specific groups have been used to draw inferences about sociopolitical interaction (Kuhn 1987; Wonderley 2005). The presence of effigy pipes that appear to have been intentionally deposited in the middle of the main habitation areas strongly indicates a place-making activity whereby groups establish their connection to the surrounding locale through the direct placement of effigy pipes symbolizing their shared spiritual beliefs. This act of deposition thereby serves as both a territorial marker and a marker of their group identity. There is evidence

for a similar process in the Early Woodland Period in Ohio, where Rafferty (2004) noted pipes utilized in mortuary ritual were deposited at the edge of loosely defined territories.

Understood in the context of this territorialisation, the Arkona cluster pipe assemblage provides a new line of evidence in examining the borderland processes taking place in the region, and points to multiple communities engaging in novel and diverse forms of identity construction and placemaking (Ferris and Wilson 2009). Fundamentally, the Arkona assemblage demonstrates heterogenous distribution of a variety of pipe styles as well as individual pipes that are unique to certain sites. The effigy pipes at Figura and Inland Location 3 and the highly symbolic incised decorations at Bingo Village and Inland Location 9 likely reflect distinct groups engaging in a fluid regional dynamic that spurred the formation and reinforcement of new concepts of social identity (Mullin 2011). This is reinforced by the pipes' associations with distinctly different settlement types than previously practiced in the region. The pipes also served, through the practice of place-making via settlement construction at Bingo, Figura and Inland Location 9, and through mortuary feasting rituals at Bingo, to develop new concepts of the relationship between settlement inhabitants and both the landscape and other communities. The presence of a defensive triple palisade wall at Bingo Village suggests that these new regional dynamics were not a completely peaceful process. The landscape around what is now Arkona was likely contested and continually negotiated by separate groups with distinct collective identities.

Chapter 7: Conclusions

The results from the analysis of the Arkona Cluster pipe assemblage yielded unique insights into the potential sociocultural dynamics that were underway in a complex cultural landscape. Furthermore, it showed the value in approaching an analysis of the Arkona Cluster from a comparative perspective, as differences in both the morphology and distribution between the pipe assemblages from these sites appear to result from deliberate, culturally informed choices in manufacture and use. These differences, outlined in Chapter 6, provide insights on the nature of the relationship between different sites and highlight some of the processes taking place in the formation of regionally specific group and individual identities within the larger context of subsistence and settlement change. Pipes played a multidimensional role in navigating group interaction and exchange in a highly dynamic and fluid region. They indicate social ties between Bingo Village and Inland Location 9 on one hand, and Figura and Inland Location 3 on the other, and suggest that pipes primarily mediated more individual interpersonal relations at the former and served in more communal spiritual contexts in the latter, where they helped to signify shared group identity and territoriality. The study of pipes in the Arkona Cluster provided a useful base line for considering larger questions about the nature of intergroup interaction and land use and allows for the possibility that insights may be gained through the analysis of additional artifact classes. The data collected here could also provide a useful foundation for the further study of the Arkona Cluster pipe assemblages using the latest in archaeological science techniques. Clearly, the wealth of information collected from the region provides abundant opportunities to explore a diverse range of analyses and discussions.

7.1 Future Research

The next step in the analysis of the Arkona Cluster is to incorporate additional datasets into a more comprehensive regional analysis. This study clearly demonstrated that clear differences exist in both the settlement organization and pipe use between sites, and the incorporation of ceramic, faunal, and lithic studies (among others) could provide invaluable insight into the nature of the differences and interaction between sites. Furthermore, an extensive radiocarbon dating study that is informed by seriation studies is essential in building a more nuanced settlement sequence in the region in order to tease out a more complete understanding of the development of the regional cultural landscape. These kinds of studies would hopefully provide fertile ground to inform discussions of neighbouring, contemporary occupations of Western Basin and Early Ontario Iroquoian sites.

The question of whether the processes identified in the Arkona cluster represent a purely localised phenomenon or had ramifications for the expression of later archaeological cultures is beyond the scope of this thesis. However, there are intriguing hints of connections between the Arkona cluster and succeeding archaeological groups. In particular, the stone pipe assemblage recovered from Bingo appears to be the earliest known example of a large stone pipe assemblage in the Ontario archaeological record, with no known antecedents. Stone pipes appear in later, geographically removed groups, and bear a visual resemblance to the Bingo assemblage (Wintemburg 1939). The origins of the Bingo stone pipe complex and their potential relation to the larger archaeological context should be explored though a regional comparison of archaeological datasets that provide further insight into the rich mosaic of southern Ontario cultural traditions.

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Curriculum Vitae

Name:	Shane McCartney
Post-Secondary Education and Degrees	McMaster University Hamilton, Ontario, Canada 2003-2007 B.A. Western University London, Ontario, Canada 2010-2018 M.A.
Related Work Experience	Field Technician Archaeologix Inc. 2007-2008 Licensed Field Director, Project Archaeologist, and Cultural Sciences Group Manager Golder Associates Ltd. 2009-2014 Archaeologist and Partner Earthworks Archaeological Services Inc. 2014-present

Conference Presentations

2013 "Lessons in Scale: Large scale archaeology for renewable energy projects in Haldimand County" Ontario Archaeological Society Symposium

2014 "The archaeological ramifications of the Green Energy Act: Regional data from the Samsung Renewable Energy Project" Canadian Archaeological Association Annual Conference

2016 "The Use of Pipes as a Transformative Vehicle in the Borderlands: A Multiscalar Analysis" Ontario Archaeological Society Symposium