The Arbor Ridge Site: A Study in Settlement Dynamics and Population Movement during the Fifteenth Century at the eastern end of Lake Ontario

by

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ABSTRACT

Relationships between the pre-contact Five Nations, the Huron-Petun and the St. Lawrence Iroquois tribes of the lower Great Lakes have been described predominately in terms of tension, conquest, annihilation and assimilation. These images of pre-contact relationships have been moulded by the undeniably devastating, historically documented dispersal of the Huron by the Five Nations during the mid-seventeenth century.

The pre-contact disappearance of the St. Lawrence Iroquois from the St. Lawrence River valley and the presence of substantial percentages of St. Lawrence Iroquois pottery vessels on Late pre-contact 'Huron' sites, has mainly been interpreted as evidence for the destruction of these people by the Huron, and the presence of female, pottery making captives in Huron settlements. In recent years this model has been repeatedly challenged as new information has been acquired and interpretations of old evidence have been proffered. Many scholars now prefer to view the presence of St. Lawrence Iroquois pottery on Huron sites in a more peaceful light.

In this study I attempt to expand our knowledge of Huron - St. Lawrence Iroquois relationships by examining the ceramic similarities and differences between a wide variety of sites. Using the mid-fifteenth century Arbor Ridge site as the primary focus, by using both attribute and typological methods of analysis, and by subjecting the data to coefficient of similarity tests, I have tried to determine whether it is possible to clarify population relationships and movement in the region during the sixteenth century.

The results suggest that strong and long-standing relationships existed between St. Lawrence Iroquois and Huron people before the destruction of the St. Lawrence Iroquois. The people living near the east end of Lake Ontario appear to have enjoyed a porous boundary, through which ideas and techniques passed bi-directionally. In this light, it seems likely that some St. Lawrence Iroquois people from Jefferson County migrated west to amalgamate with Ontario Huron during the sixteenth century.

The presence of St. Lawrence Iroquois pottery on sixteenth century Huron sites is interpreted as evidence for the cordial coalescence of these closely related people, and is seen in the light of the general trend toward population aggregation on both sides of Lake Ontario during the late pre-contact period.

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Chapter 1

Introduction and Research Context

Introduction

When the first French adventurers, traders and Catholic evangelists navigated up the St. Lawrence and Ottawa Rivers into the lower Great Lakes region in the 16th and 17th century, they entered a fully explored world. Compared to the landscape of late mediaeval Europe, the hand of man on the natural world was light, although the region was anything but wilderness. As the early European explorers soon discovered, it was inhabited by distinct and populous First Nations peoples (Figure 1).

The St. Lawrence River valley, from its disbouchure at the eastern end of Lake Ontario to the Gulf of St. Lawrence, was inhabited by people known to archaeology as The St. Lawrence Iroquois. To the south, the Five Nations Iroquois occupied a broad sweep of land stretching from the Mohawk Valley in the east, to the Genessee River and Canandaigua Lake areas of New York State in the west. These five tribes - the Mohawk, Oneida, Onondaga, Cayuga and Seneca - each occupied distinct territories and governed themselves independently, yet were connected through the Great Peace - the Confederacy of the Iroquois. While the origins of the confederacy are uncertain, Iroquois oral tradition suggests that it was in existence prior to European contact, and most authorities date it to the period between A.D. 1400 and A.D. 1600 (Tooker 1978: 420), although recent reexamination of oral traditions and solar eclipse chronologies tend to suggest a date of A.D. 1536 (Warrick 2000: 456).

Further west, the French encountered people they called the Huron. These people, who referred to themselves as the Ouendat (Wendat) were also a confederacy, consisting of five tribes: Attignawantan, Attigneenongnahac, Arendaronon, Tahontaenrat and Ataronchronon (Heidenreich 1978: 368). They occupied a series of large villages lying between Lake Simcoe and Georgian Bay on Lake Huron (Figure 1).

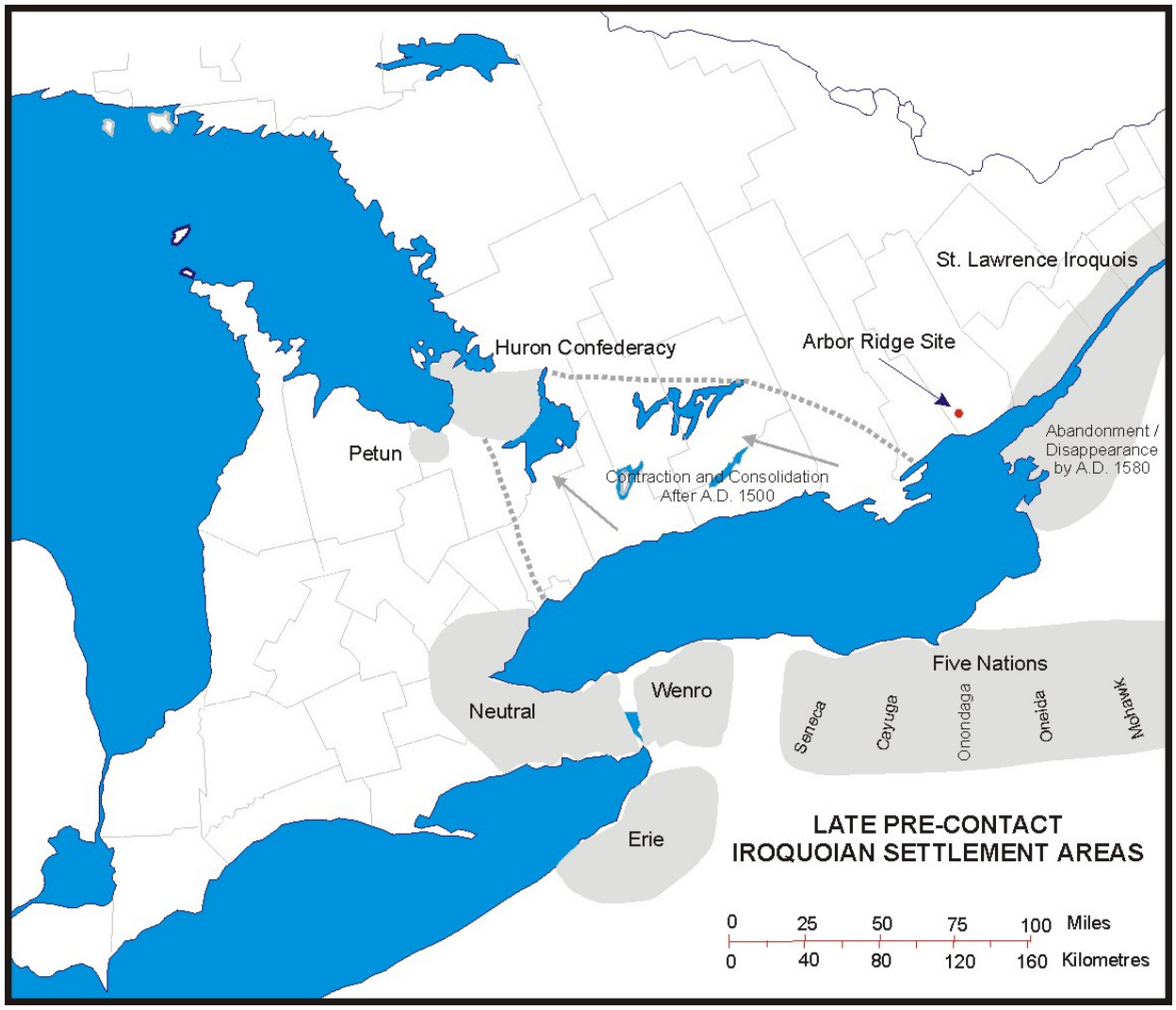

Figure 1: Simplified map of major Iroquoian settlement areas in the late sixteenth century - immediately prior to European Contact.

These people shared much in common. They lived in large, often palisaded villages, hamlets and fishing camps, cleared land to grow corn and other crops, built multi-family 'longhouses', made distinctive clay cooking and storage vessels and smoking pipes, and often lived in a state of tension with their neighbours. They spoke distinct, but mutually intelligible languages, all derived from the same root, of which Cherokee appears to be the oldest branch (Lounsbury 1978: 334), and shared many cultural characteristics, including blood feuds, ritual cannibalism and captive adoption (Heidenreich 1972: 85).

Iroquoian village sites are numerous in the lower Great Lakes region. In south-central Ontario, for instance, it is estimated that there may be as many as 750 Iroquoian villages (Warrick 2000: 419). Villages were generally occupied for a short period of time - on average between

10 and 50 years - before soil depletion, distance from fire wood supplies and the condition of longhouse structures necessitated village movement. This led to clustering of villages in favourable environments. Re-occupation of sites appears to have been rare; Iroquoian villages rarely overlie sites from preceding periods. Each village, therefore, is a temporal time capsule, relating to a short and highly specific period of occupation. In all but a few, somewhat controversial instances such as the Stewart Site midden (Jamieson 1990: 402), stratification is non-existent. In the absence of vertical stratification, archaeologists have relied heavily on ceramic seriation to understand and map population movement and village relocation patterns.

Prior to the mid-fifteenth century, Iroquoian settlements were broadly scattered across the landscape. During the late 15th and early 16th centuries, many formerly occupied territories were abandoned and populations consolidated into a small number of large, defended villages. The formerly occupied lands became ‘‘no-mans-land’’ - used for hunting and fishing, but no longer used for primary settlement. The north shore of Lake Ontario became largely unoccupied, its former occupants moving north to become part of the historically documented Huron. Further to the east, St. Lawrence Iroquois in Jefferson County at the eastern end of Lake Ontario, abandoned lands they had occupied for generations. Portions of the population may have moved down-river to join culturally related people in the Prescott area (Warrick 2000), or west to join with the Huron in Simcoe County (Abel 2001). Certainly, by the end of the sixteenth century, the St. Lawrence Iroquois no longer occupied their former territories along the St. Lawrence River valley. The fate of these people is still a matter of considerable debate (cf. Pendergast 1993).

History of Iroquoian Research

Written speculation about the history and origins of Iroquoian First Nations people in Ontario began with the French missionaries and traders who entered the province in the seventeenth century. In 1641, Joseph Lalemant, a missionary working among the Huron, suggested that Iroquoian people may have migrated into the area only a few centuries before the arrival of Europeans (Jesuit Relations 1896-1901[21]:193-195). The theory that Iroquoian speaking peoples were relative newcomers has been a popular theme throughout the last four centuries of research (cf. Beauchamp 1894, Parker 1916). However, as David Smith has noted,

> "*the migrationary hypotheses were proposed by ethnographers and historians who did not employ archaeological data. Their interpretations were based on meagre historical records, Native oral traditions, and ethnological data, with little attention paid to the archaeological record*" (Smith 1990, citing Trigger 1978a).

The history of late Pre-Contact archaeology of eastern Ontario and adjacent parts of New York State is a story of early discovery, antiquarian looting, the gradual destruction of visible monuments, and the dispersal and loss of key artifacts and collections. In the mid-nineteenth century, numerous "Indian Forts" were mapped and excavated in both Ontario and northern New York State by Ephraim Squire (Squire, 1849, 1851) and W.E. Guest (Guest 1856: 271). As Pendergast (1985: 25) has indicated, although Guest did not directly comment on the similarities between the sites he recorded, they are implicit in his work. On both sides of the St. Lawrence River, these village sites were characterised by the presence of earthen embankments, which when exposed by ploughing, contained,

> *"scattered surface evidenses of habitation such as spots of blackened soil with heat-cracked stones, fragments of stone mortars, weathered potsherds, and bleached freshwater clam shells"* (Wintemberg 1972: 2).

Ephraim Squire visited and mapped many of the earthwork village sites in Jefferson and St. Lawrence Counties as part of his massive 'Moundbuilder' study for the Smithsonian Institution (Squire, 1849, 1851). While his research has provided a vast body of data, it also provided an easy way for people less interested in archaeological research to gain knowledge of the whereabouts of the sites. The visibility of these sites and people's eagerness to acquire interesting native curios led to substantial plundering. Tim Abel (2001: 6), citing an article in the *Watertown Daily Times*, refers to 'archaeological expeditions' consisting of up to 1500

people occurring in the 1940's in Jefferson County. Although nothing on quite that scale occurred in Ontario, well known sites, such as Roebuck, near Prescott, Ontario, have been subject to, "*considerable desultory digging and surface searching by local collectors*" (Wintemberg 1972: 1). Such activities added little to our understanding of pre-contact Iroquoian archaeology, and seriously damaged many otherwise intact village sites.

In his 1985 article on Huron - St. Lawrence Iroquois Relations, Pendergast (1985: 23) provides a comprehensive review of the early archaeology of Jefferson and St. Lawrence Counties. He indicates that little detailed or systematically recorded survey or excavation work was undertaken until the late nineteen sixties when students at the State University of New York at Buffalo conducted surveys and excavations in the Sandy Creek drainage (Weber 1968, cited in Pendergast 1985: 24). Even during the nineteen seventies and nineteen eighties, while other areas were experiencing a growth in archaeological investigations, little activity occurred in northern New York State.

In his doctoral dissertation, Tim Abel summarised the archaeological work in Jefferson County since the publication of Pendergast's 1985 article. Field school excavations were undertaken by Peter and Majorie Pratt at several sites and excavations were conducted at the Camp Drum #1 site by private consultants (Abel 2001: 8). Perhaps most importantly, data from an unfinished PhD thesis by the late Earl Sidler was coordinated by William Engelbrecht. Through a detailed study of the pottery he was able to distinguish clusters of village sites representing sequential occupations, and determine that Jefferson County was abandoned by the middle of the sixteenth century (Engelbrecht 1995, cited in Abel 2001).

Drawing on Engelbrecht's work, and focussing on sites of the 'Clayton Cluster', Abel sought to determine whether cultural characteristics from the archaeological assemblages could be used to further refine the site clusters in an attempt to examine relationships between the clusters and other contemporary Iroquoian manifestations (Abel 2001: 12).

In Ontario, the pattern of early exploration of Iroquoian village sites mirrored that of northern New York. Fortunately, however, some early investigations were undertaken under the auspices of the provincial government and published as a series of annual reports to the Canadian Institute. David Boyle, Ontario's first provincial archaeologist, investigated and published information on a large number of Late Pre-Contact archaeological sites in southern Ontario. As Smith (1990: 281) has written, Boyle's major contribution was to bring attention

to some major sites, and compile a large, representative collection of artifacts. Others, such as Andrew F. Hunter and George Laidlaw, collected numerous artifacts and excavated at many sites, their collections eventually finding their way to the Royal Ontario Museum (Emerson 1954: 3). Following Boyle, William Wintemberg expanded on his early work by conducting wide-ranging surveys and the first really scientific investigations of archaeological sites in Ontario. Wintemberg's work formed the basis upon which subsequent researchers have built. In particular, he published a preliminary guideline for distinguishing between Iroquoian and Algonkian cultures in Ontario and Quebec (Wintemberg 1931, cited in Ramsden 1977).

As mentioned above, the publication of MacNeish's (1952) study of Iroquois pottery types was the next major step in the development of Pre-Contact Iroquoian research. MacNeish defined a series of 'types' for each historically defined tribal area. (MacNeish 1952). Since Iroquoian village sites are rarely stratified - each site representing a relatively brief (15 to 30 years) period of occupation - MacNeish believed that by placing the emphasis on the seriation of pottery types, and by working backwards from historically documented sites, it would be possible to establish chronological and spatial relationships (MacNeish 1952: 2).

Ramsden (1977: 5) has pointed out that the organization of MacNeish's type-families along tribal lines (ie. Neutral, Huron, Seneca etc.) built in some fundamental conceptual problems. He has convincingly argued that the 'Huron', rather than being a single tribe, was actually an "*agglomeration of several geographical, cultural and political entities*" (Ramsden 1977: 5), and that the use of the term 'Huron' in the context of discussions of the Pre-Contact archaeology of southern Ontario overly simplifies the subject.

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MacNeish's examination of Huron pottery led him to the conclusion that the Huron had migrated into their historical (17th century) homeland in Simcoe County, from near Toronto on the north shore of Lake Ontario (MacNeish 1952: 31). This projected movement has been the focus of archaeological discussion for decades. Frank Ridley argued strenuously that MacNeish had the flow of migration reversed - that people of his Simcoe County 'Lalonde focus', moved south as a response to Mississippian influences (Ridley 1952). Ridley's assertions have almost universally been rejected by subsequent researchers, and a general movement of Huron people from the north shore of Lake Ontario into Simcoe County has now become part of the accepted canon of Ontario archaeology (see Emerson 1954, Wright 1966, Ramsden 1977, Sutton 1999).

Norman Emerson was one of the key figures in Ontario archaeology during the mid-twentieth century. In his PhD. thesis, Emerson (1954: 243) proposed a general drift of Iroquoian people from the Toronto area, both north into Simcoe County, and west into southwestern Ontario from a 'Middleport focus' base. He also suggested that, on the basis of distinctive eastern ceramic elements on central Ontario sites, that people of his 'Roebuck focus' drifted west to combine with the central populations (Emerson 1954: 248). By this, Emerson not only recognised the significant differences between the Iroquoian manifestations in the St. Lawrence Valley and those further inland, but also that the presence of clear St. Lawrence Iroquois pottery on 'Huron' sites indicated some degree of cultural interaction (Emerson 1954: 259).

In 1966, James V. Wright published the first major synthesis of what he termed 'The Ontario Iroquois Tradition' (Wright 1966). This volume has been immensely influential on subsequent research into Iroquoian sites in Ontario. By the time of Wrights publication is had become accepted by most researchers that the Iroquoians of the lower Great Lakes developed in-situ from a Middle Woodland ''Point Peninsula Culture'' base (MacNeish 1952, Pendergast 1975, but see also Snow 1994: 5). Working from this standpoint, Wright proposed three stages of development for the Ontario Iroquois. The earliest - The Early Ontario Iroquois - was dated to between A.D. 1000 and A.D. 1300. Wright proposed this stage as one of convergence, with Pickering people in the east conquering and assimilating Glen Meyer people to the west of the Niagara Escarpment, to form the Uren Sub-stage - a homogenous complex found throughout southern Ontario (Wright 1966: xii). Many of the identified Early Ontario Iroquois sites were large palisaded villages, often situated on high ground above a ravine or other natural feature, suggesting defence was a consideration. Subsistence was based on corn agriculture and fishing (Wright 1966: 44).

Wright saw the Uren Substage, and the succeeding Middleport Stage -together described as the Middle Ontario Iroquois, dating to between A.D. 1300 and A.D. 1400- as the product of conquest during the preceding Early Ontario Iroquois stage. Most Ontario Iroquoian researchers now reject the 'Conquest Theory' suggesting that,

> "..... *there is no direct evidence of large scale military operations or disruptions in the archaeological record of southwestern Ontario, nor is there any evidence that Early Iroquoian regional populations had any kind of pan-regional cultural or political organization necessary to carry out such a conquest*."(Williamson 1990: 311).

Wright saw the Uren and Middleport horizons as relatively homogenous, extending across peninsula Ontario and into adjacent parts of New York State. He identified the addition of an elaborate smoking pipe complex as one of the major characteristics separating Uren from Middleport (Wright 1966:64). Settlements consisted of numerous small camps and hamlets, with occasional large villages. Wright argued that the absence of obvious defensive concerns is an indication of the military strength of people of the Ontario Iroquois Tradition during this 100 year period (Wright 1966: 64).

He described the period between A.D. 1400 and the historic contact period (the early 17th century) as one during which the distinctive historically documented tribal identities - the Huron-Petun, Neutral and Erie - emerged (Wright 1966: 65). In central Ontario, two 'divisions', a Northern Division, located in the Simcoe County area, and a Southern Division, occupying the north shore of Lake Ontario, gradually coalesced in the northern territory. Separate Late Ontario Iroquois groups consolidated as the Neutral and Erie to the west of Lake Ontario (Wright 1966: 90).

In the decades since Wright's synthesis was published, many of his ideas have been tested against the information derived from additional research. Despite a spirited defence (Wright 1992), his 'Conquest Theory' has largely been abandoned, however much of his synthesis has stood the test of time. In the light of more reliable dates, some revisions to the chronology have been proposed. Dodd et. al. (1990: 324) have suggested that Wrights 'Middle Ontario Iroquois' stage should be extended, with Uren beginning approximately 20 years earlier than Wright proposed, and with Middleport lasting approximately 50 years longer. Notwithstanding these minor revisions, the addition of Princess Point and the Sandbanks Tradition as developmental stages spanning the transition from Middle Woodland into the Late Woodland period, (for a detailed summary see Warrick 2000), Wright's three stage concept of Iroquoian development in southern Ontario remains in common use.

A Commonly Accepted Chronology of the Ontario Iroquois

- *Princess Point (A.D. 500–1000),*
- *Early Iroquoian (A.D. 1000–1300),*
- *Middle Iroquoian (A.D. 1300 - 1420),*
  (Uren: A.D. 1300–1330; Middleport: A.D. 1330–1420),
- *Late Pre-Contact (A.D. 1420–1534)* (Warrick 2000: 420)

Wright did not include the unique Iroquoian manifestations of the St. Lawrence River valley in his Ontario Iroquois development sequence. The distinctive nature of St. Lawrence Iroquois pottery was evident early on. MacNeish described pottery from St. Lawrence Iroquois sites as part of his Onondaga-Oneida series (MacNeish 1952), and early site reports on sites such as Crystal Rock in Grenville County, Ontario used this organizing paradigm (Pendergast 1962).

The development of our current understanding of the St. Lawrence Iroquois is largely based on the single-handed researches of the late James Pendergast. Beginning in the nineteen fifties, Pendergast began to locate and explore St. Lawrence Iroquois sites producing an impressive corpus of work on sites extending from Montreal to Prince Edward County (Pendergast 1962, 1966, 1968, 1972, 1973, 1975, 1981, 1985, 1993, 1997). Prior to Pendergast's researches, the St. Lawrence Iroquois (formerly described as the Laurentian Iroquois) were thought to have been closely related to the Onondaga (Bradley 1987: 33). Pendergast became convinced that the St. Lawrence Iroquois were a distinct cultural group which had developed in-situ from Middle Woodland antecedents in the upper St. Lawrence River valley (Pendergast 1975). Subsequently Pendergast came to believe that, "*following a series of discrete in-situ developments west of Montreal Island, St. Lawrence Iroquoian groups emerged in Jefferson County, New York, and in the Lake St. Francis basin*." (Pendergast 1993: 27). He argued that the people inhabiting a cluster of sites in the vicinity of Prescott, Ontario, were fifteenth century immigrants to the area, perhaps representing the movement of people from the Clayton Cluster (Ibid.). Pendergast's overall hypothesis of St. Lawrence Iroquoian origins is generally accepted by other researchers (Jamieson 1990, Warrick 2000), although an increasingly complex model is gradually emerging.

Other in-situ developments of Iroquoian people occurred in the St. Lawrence River valley, downstream from Montreal and in the Lake Champlain - Richelieu River area. (Ibid.). These people were only peripherally involved in the events in the lower Great Lakes region and will not be discussed further here.

The Impact of Climate Change

Beginning around A.D. 1400, the lower Great Lakes area, in common with much of the northern hemisphere experienced a cooling trend which has become know as 'the Little Ice Age' (Fagan 2000). Little has been written on the impacts this event may have had on the development of Iroquoian cultures in Ontario, however some researchers believe there is evidence that the Neutral people at the western end of Lake Ontario relied more heavily on animal foods

(particularly deer) after about A.D. 1450 (Campbell and Campbell 1989). Fitzgerald (1992) has argued that the essential marginality of Iroquoian horticulture in the face of a deteriorating climate may have been one of the factors influencing inter-cultural conflict, as neighbouring groups competed for deer hunting territories. While he may have been over-stating the marginality of the Neutral agricultural region, it is likely that declining temperatures during the Late Pre-Contact period had some impact on Iroquoian population dynamics after A.D. 1400, especially in agriculturally marginal areas such as those found at the eastern end of Lake Ontario.

The importance of the geographical position of the Arbor Ridge site

That the St. Lawrence Iroquois people disappeared from the St. Lawrence River valley in the late sixteenth century is not in question. However, the forces and influences which brought about this disappearance are still subject to discussion. For decades James Pendergast has contended that they were casualties of protracted hostilities with their neighbours, ultimately being both destroyed as a distinct cultural entity and absorbed by the Huron (Pendergast 1993: 29). Others (Warrick 2000, Ramsden 1990, Jamieson 1990) contend that pressure from eastern Five Nations tribes caused the St. Lawrence Iroquois to seek refuge with the Huron. While Fitzgerald (1992) (see above) has argued that deteriorating weather conditions may have exacerbated inter-tribal tensions.

The mid 15th century Arbor Ridge site, excavated in 1998, lay within the City of Kingston at the east end of Lake Ontario. It occupied the geographical interface between Huron and St. Lawrence Iroquois territory and was the most easterly of all the early Late Ontario Iroquois 'Huron' sites yet discovered. Its geographical position provides a unique opportunity to examine relationships between contemporaneous Huron and St. Lawrence Iroquois occupations.

The value of comparative ceramic studies using Arbor Ridge data

As is common on Iroquoian sites in the lower Great Lakes region, a large number of pottery vessels were recovered during the excavation of the Arbor Ridge site. One hundred and forty-eight separate vessels have been identified on the basis of their distinct morphological and decorative characteristics. It represents a body of analysable data from which valid comparisons to other contemporaneous sites can be drawn.

Pottery sherds are the most common artifacts from Iroquoian sites. They contain decorative and technological elements which have been demonstrated to be both temporally and culturally sensitive. Pottery analysis has been the cornerstone of Iroquoian archaeology since the publication of Richard MacNeish's "Iroquois Pottery Types" (MacNeish 1952). MacNeish examined pottery from Iroquoian sites within traditional Iroquoian tribal areas throughout the lower Great Lakes region. Applying the 'Direct Historical Approach' (Steward 1942), MacNeish sought to establish a chronology of Iroquoian sites by,

> *"the tracing back of a tribal group's history by the analysis of pottery types from historic documented sites and connecting them with prehistoric sites, chronologically ordered, on the basis of seriated or overlapping pottery types and ceramic trends."*
>
> (MacNeish 1952: 1).

Iroquoian pottery vessels are remarkable in the conservatism of their design. Over the last 50 years numerous studies have shown that while the general patterns of design (particularly on the vessel collar and neck) are homogenous, subtle temporal and regional differences can be detected through detailed study and analysis. Typological studies, following MacNeish (1952) have formed the core of much of this work, and provide an extensive and easily accessible body of data for comparative study. More recent work has focussed on analysis through the tabulation and comparison of discrete individual attributes (cf. Engelbrecht et. al. 1990, Abel 2001).

Although pottery analysis remains at the core of many Iroquoian research reports, in recent years, with the rapid explosion of available data from development related salvage projects, detailed studies of other aspects of Iroquoian material culture have emerged. Studies of pipes, osteological remains, faunal and floral remains, bone tools and site settlement characteristics have all expanded and refined the current understanding of Iroquoian culture (Smith 1990: 286). Radio-carbon dating is also beginning to shed some light on site sequences - although the results have tended to cloud, rather than clarify the issue (Jamieson 1990: 402). The relatively recent age of the sites, the presumed short duration of site occupations (usually assumed to be between 10 and 30 years), the brevity of the Late Pre-Contact period as a whole (less than 250 years) means that many radio-carbon samples contribute little to defining the specific period of site occupation (Ibid.).

Inter-site comparisons of pottery characteristics offer a credible way to assess the relative chronological and cultural relationships between Iroquoian sites. Furthermore, using attribute analysis, some archaeologists believe that they are not only able to distinguish broad cultural and temporal differences, but are beginning to be able to define local sequences and relationships between closely situated, and probably related sites (Ramsden 1977, Abel 2001).

Through the analysis of pottery from the Arbor Ridge site, using both attribute and typological methods, and through the application of Brainard-Robinson Coefficient of Similarity tests, this study investigates relationships between pre-contact ancestors of the Huron and the people identified archaeologically as the St. Lawrence Iroquois.

In conjunction with the pottery analysis, other characteristics of the Arbor Ridge site will be examined in order to determine whether they can shed any light upon the settlement history of the Kingston area, its later abandonment in the sixteenth century, the disappearance of the St. Lawrence Iroquois and the overall Iroquoian trend towards nucleated settlements in the sixteenth century.

A note on terminology

In much of Ontario's archaeological literature, the term 'Huron' is broadly used to describe cultural manifestations ancestral to the historically documented Huron Confederacy of the 17th century (Ramsden 1977). As research continues the origins of the Huron Confederacy are emerging as far more complex than initially conceived when use of the term became popular. Moreover, Huron is a non-native term which some people find offensive. The term 'Wendat' (Ouendat), which came into use in the eighteenth century is considered preferable by modern First Nations historians (Sioui 1992, cited in Warrick 2000: 418). Despite the foregoing, for the sake of clarity I have opted to retain the use of the term Huron in this discussion.

Chapter 2
The Arbor Ridge Site

During the archaeological assessment of the proposed Arbor Ridge Subdivision property, City of Kingston, Ontario, an archaeological site dating to the Early Late Ontario Iroquoian phase (ca. A.D 1425-1450) of the Late Woodland period was discovered on the edge of the ridge overlooking Little Cataraqui Creek (Figure 2, Figure 3).

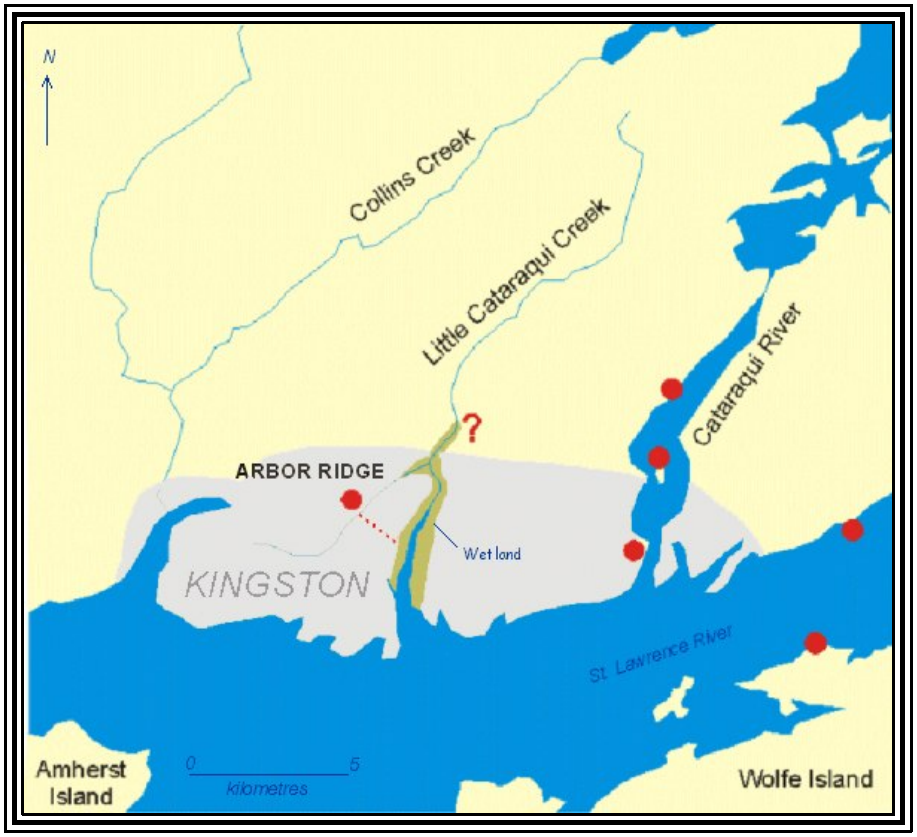


Figure 2: Location of the Arbor Ridge Site (BbGd-10) showing the locations of other recorded or reported archaeological sites from which Ontario Iroquois Tradition artifacts have been recovered.

A total area of 1575 square metres of the site was excavated, 234 square metres of which, because of the undisturbed nature of the archaeological deposits in these areas, were excavated entirely by hand. The remaining 1341 square metres were excavated using mechanical equipment to remove the plough zone, then all cultural features were examined and excavated by hand.

Description of the local site environment

The site was located at the edge of a limestone plateau overlooking the Little Cataraqui Creek Valley. The main occupation area of the site occupied level clay lands close to the valley edge. Middens and activity areas were present on gently sloping bouldery till deposits at the valley edge / break in slope. The site was oriented to the south-east.

Figure 3: Air Photograph of Study Area showing the location of BbGd-10 in relation to the Little Cataraqui Creek

The main occupation area lay approximately 200 metres from the Little Cataraqui Creek, and approximately 50 metres above it.

Description of regional environment: bedrock geology

The underlying bedrock of southern Ontario exerts considerable influence on human settlement in the present, as it has done in the past. The region lies to the south of the Canadian Shield - a vast area of Precambrian granite and gneiss which extends across virtually the whole country from east to west. Despite two hundred years of Euro-Canadian settlement, this area of rolling, glaciated topography remains heavily forested and largely unpopulated. In contrast, the interlake region between Lake Huron and Lake Ontario is underlain by Paleozoic Limestones, masked by drift and till deposited during the Wisconsinan glaciation (Figure 4). It contains abundant farmland, and in Canadian terms at least, is densely populated. Not surprisingly, this region was also much more heavily populated than the Canadian Shield during the Late Pre-Contact period. Indeed, as Gary Warrick has indicated (Warrick 2000: 417), while no Iroquoian villages have been found on the Shield, they are common on the lands between the two lakes.

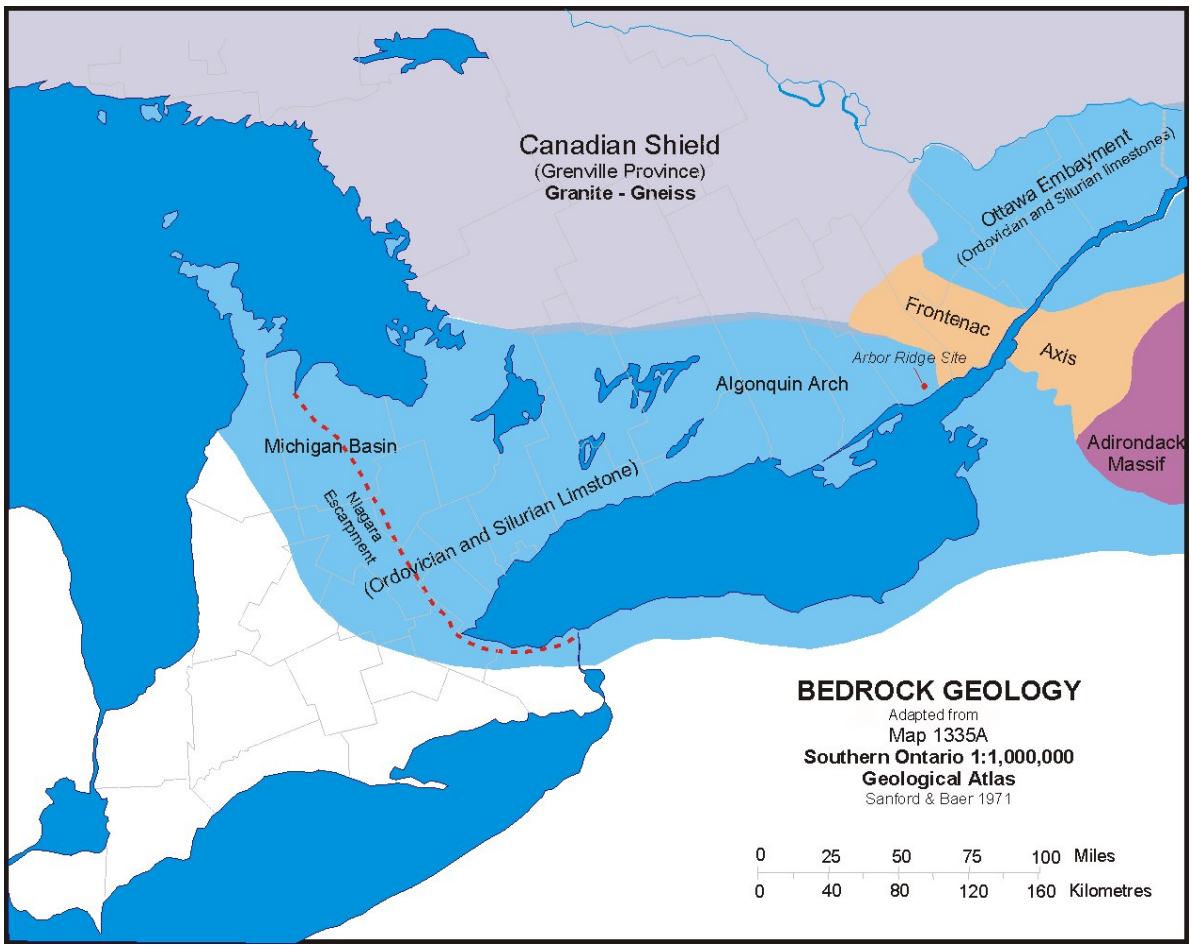


Figure 4: Major geological divisions in the lower Great Lakes Region (after Sanford & Baer 1971).

Near the eastern end of Lake Ontario, a narrow band of Precambrian rocks - the Frontenac Axis - separates the Algonquin Arch from the Ordovician and Silurian rocks of the Ottawa Embayment. It extends from the Canadian Shield, south-east across the St. Lawrence River valley, to connect with the ancient rocks of the Adirondack Mountains (Figure 4). Like the Canadian Shield, the rough, forested terrain of the Frontenac Axis appears to have been unattractive to Iroquoian settlement. While some small fishing settlements have been identified, particularly along the river margins and islands of the 'Thousand Islands', no villages have been recorded in this area.

Description of regional environment: physiography

To the west of the Frontenac Axis, the Napanee and Prince Edward limestone plains give rise to generally level topography. The few variations in elevation are provided by deposits of glacial till in the form of drumlins and hollows where ice gouged into the bedrock during the Wisconsinan glaciation. Lakes, creeks or areas of extensive wetland occupy these shallow, wide valleys (Chapman and Putnam 1984: 188). Where limestone bedrock is close to the surface, thick clay soils predominate. Areas of lighter soil are present where outwash sands and post-glacial lake beach deposits have accumulated - particularly in Prince Edward County and along the fringes of Lake Ontario.

Northeast (ie. downstream) of the Frontenac Axis is an area of till and clay plains. In the Prescott area, the Edwardsburg Sand Plain occupies the headwaters of the South Nation River. The light, easily tilled soils of this area, and the extensive wetlands between the sand deposits were attractive to St. Lawrence Iroquois people. A major cluster of archaeological sites - the Prescott Cluster - dating to between A.D. 1350 and A.D. 1550 have been recorded in this area.

In the vicinity of the City of Cornwall, till ridges of the Glengarry Till Plain (Chapman and Putnam 1984: 201) also seem to have proven attractive to St. Lawrence Iroquoians. A number of villages sites - the Cornwall, Summerstown or Hochelaga Cluster - have been found on the bouldery uplands of some till ridges, and on the sandy soils of outwash plains in this area.

The topography on the American side of the St. Lawrence River, is similar to that encountered on the limestone plains of eastern Ontario. It consists of fossil lake plains, areas of elevated limestone plain, and areas of till and outwash plains (Abel 2001: 42). In common with much of the Ontario side of the river, soils are not particularly good for agriculture, although localised deposits of post glacial lake beach sand and sand outwash appear to have been attractive to

St. Lawrence Iroquoians. Most of the known St. Lawrence Iroquois village sites in Jefferson and St. Lawrence Counties are located on fluvioglacial terraces (Tim Abel, Personal Communication).

Description of regional environment: vegetation and climate

Prior to European colonisation, other than a few isolated Native farm clearings and areas denuded of vegetation through natural or man made forest fires, the whole eastern Lake Ontario basin and the St. Lawrence River Valley area was covered in forests of the Great Lakes - St. Lawrence Forest Region - Upper St. Lawrence Section (Rowe 1959: 44). The area supported a mixed forest of both deciduous and coniferous species. Hardwood species included sugar maple, beech, red maple, white elm, basswood, white ash, largetooth aspen as well as a number of less well represented species such as rock elm, red and burr oaks, butternut and cottonwood. Many poorly drained areas supported a hardwood swamp forest comprised mainly of black ash (Rowe 1959: 45). Coniferous species include hemlock, white pine, white spruce and balsam fir. Areas of coarse soils - particularly on the Frontenac Axis - supported white and red pine, while black spruce and eastern white cedar grew on wet soils (Ibid.).

The faunal remains from three excavated longhouses at the McKeown Site (ca. A.D. 1500) provide an indication of the faunal resources supported by these forest. The sample included rabbit, white-tailed deer, dog/wolf, beaver, muskrat, raccoon, porcupine, weasel, black squirrel and various mice (Stewart 1992: 17), to which could be confidently added black bear, otter, fisher, woodchuck, skunk and red fox. In addition, the river and its associated wetlands and drainages supported a wide variety of reptiles, amphibians and invertebrates, many of which were selected as food items. Various species of geese, ducks, grouse and pigeons were also hunted (Ibid. Table 2: 24). Even today, and despite the impacts of the St. Lawrence Seaway shipping canal, the St. Lawrence River and its associated streams support a great variety of fish species. Those of particular importance to Iroquoian people of the region include pike, suckers, catfish, eels, sunfish, perch and freshwater drum (Ibid.).

The modern climate of the upper St. Lawrence River valley is best described as, “cool or snow forest climate without a dry season with warm summers” (Petterssen 1958, cited in Lapczak et. al. 1979). Summer temperatures are moderated by the cooling effects of Lake Ontario, thus temperatures in the vicinity of the lake shore and river valley are slightly cooler than those of inland areas. In the winter the reverse is true, with the lake and river keeping ambient temperatures slightly higher than those of corresponding inland areas (Lapczak et. al. 2). The following table of Kingston weather is representative of the region as a whole (Table 1).

	Kingston Climate						
Month	Mean Temperature		Mean Rainfall		Mean Snowfall		Sunshine
	°C	°F	(mm)	(in.)	(cm)	(in.)	Hours
January	-8.0	17.6	28.2	0.7	45.6	18.0	99.1
February	-7.0	19.4	31.5	0.8	34.9	13.7	119.1
March	-1.4	29.5	46.8	1.2	27.9	11.0	144.7
April	5.6	42.1	70.5	1.8	8.3	3.3	186.5
May	11.7	53.1	78.1	2.0	0.3	0.1	221.2
June	16.5	61.7	75.2	1.9	-	-	239.4
July	20.3	68.5	60.3	1.5	-	-	283.5
August	19.5	67.1	83.0	2.1	-	-	248.9
September	15.2	59.4	92.7	2.4	-	-	167.0
October	8.8	47.8	88.0	2.2	1.2	0.5	145.5
November	3.0	37.4	83.7	2.1	12.5	4.9	84.1
December	-4.3	24.3	53.4	1.4	51.9	20.4	72.8
source: http://www.rideau-info.com/canal/climate.html							

Table 1: Kingston climate.

The portion of northern New York State just inland from the eastern end of Lake Ontario (the area which includes the 'Clayton Cluster' of St. Lawrence Iroquois sites) is not significantly cooler during the winter than adjacent parts of Ontario, yet warms up more quickly in the spring, is hotter than the surrounding areas in mid-summer, and stays warmer through the autumn (Figure 5). It is also well known for the extent of the 'lake-effect' snow fall during the winter, which is significantly greater than that of surrounding areas. As indicated on Figure 5, the variations in seasonal temperatures experienced by the lands inland from Lake Ontario are small. Assuming this general pattern was also present in the Late Pre-Contact period, they may have been sufficient to have influenced settlement in the area.

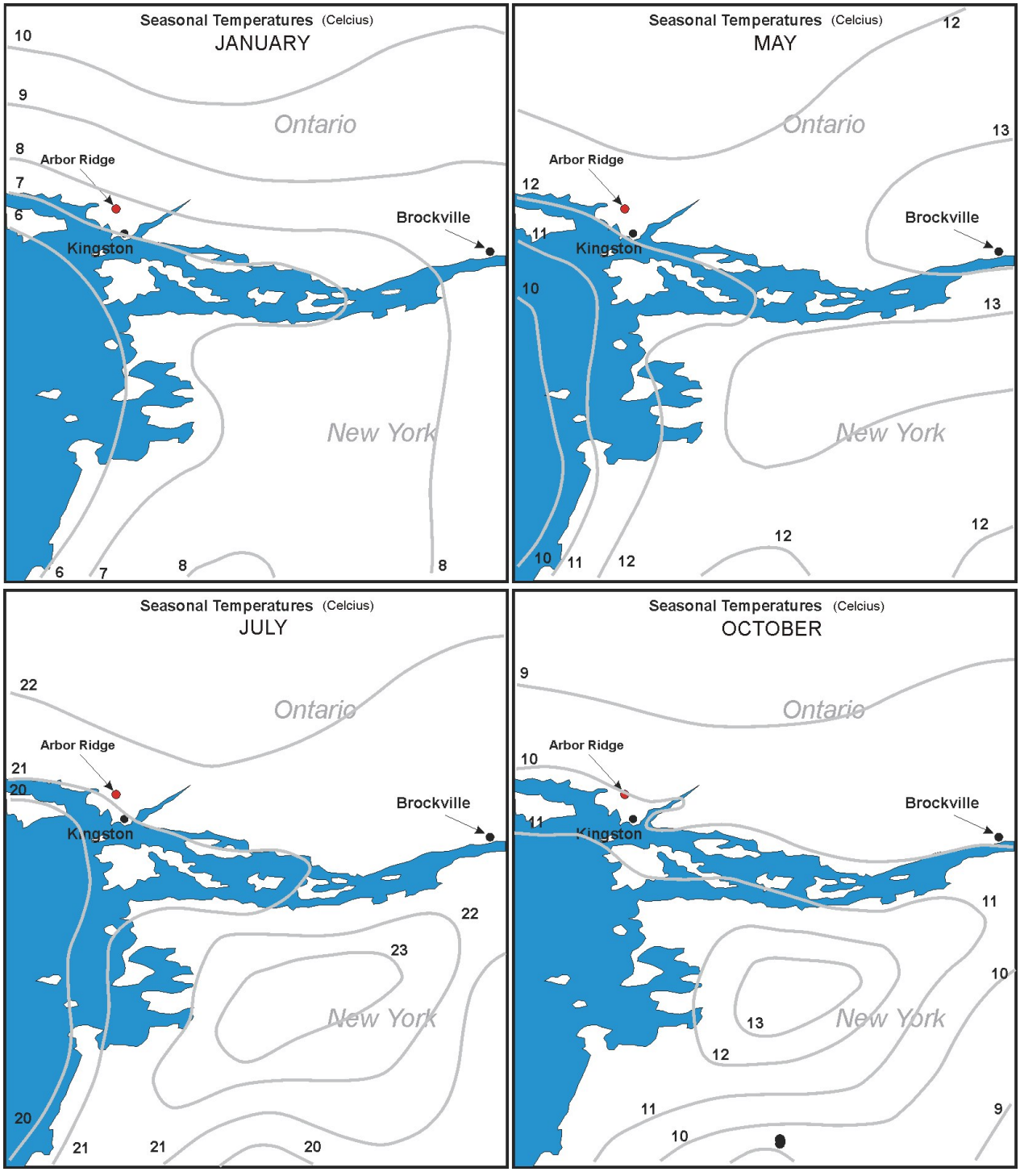


Figure 5: Seasonal temperatures at the east end of Lake Ontario.

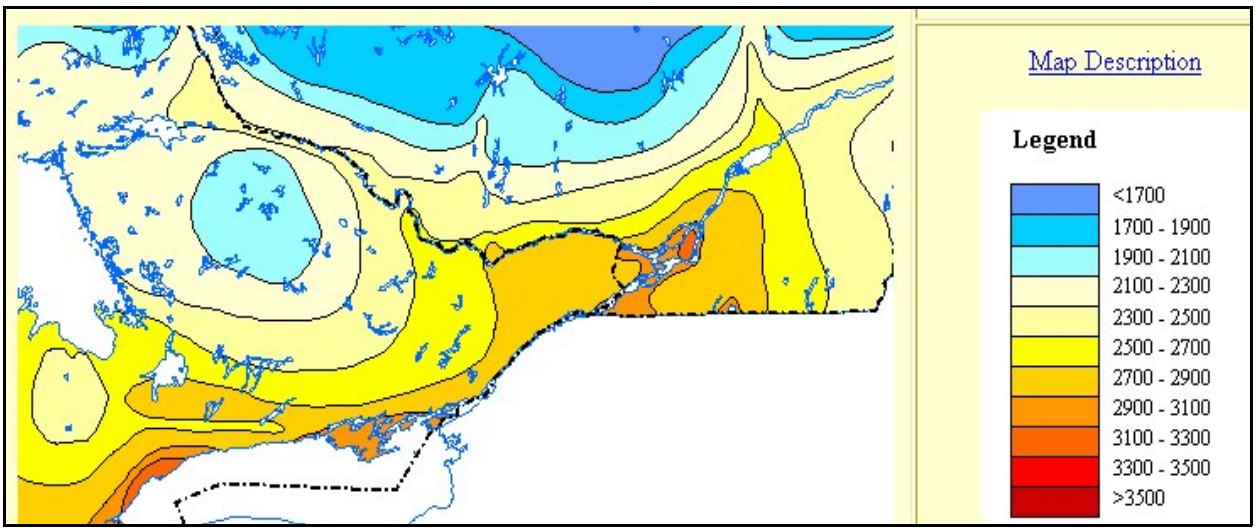


Figure 6: Crop Heat Units for southern and eastern Ontario (source: Research Branch, Agriculture and Agri-Food Canada, Ottawa, Ontario - web site).

The number of frost free days, critical for the success of corn and bean agriculture, varies within the St. Lawrence River valley, being influenced by Lake Ontario. On average the region experiences approximately 160 frost free days, reducing slightly as one progresses east (Ibid.).

Modern agriculture uses 'crop heat units' to determine the viability of particular areas for the production of certain kinds of crops. As can be seen from Figure 6, much of the study area lies within a zone of moderate crop heat unit measurement. Indeed, if crop heat units were the sole measure of suitability, the St. Lawrence Valley would be considered more ideal for corn agriculture than the seventeenth century Huron 'homeland' of Simcoe County.

Despite favourable climatic conditions, because of the shallowness and low fertility of the soils, much of the land at the eastern end of Lake Ontario is of marginal value for agricultural production, thus the specific areas suitable for Pre-Contact, horticulturally based village life were limited.

Description of excavations

The excavations at the Arbor Ridge site did not extend over the whole site area (Figure 7, Figure 8). During the nineteenth century, parts of the site area had been disturbed when small scale quarrying had occurred along the valley edge. Furthermore, some pre-development land alterations may have removed a portion of the archaeological site, particularly along its southern-western edge. The total impact of these actions can only be guessed at, however it is estimated that approximately 50% of the site may have been removed by these activities. Excavations concentrated on the examination of the single large midden at the valley edge (Plate 1), as well as the exposure of faint post-moulds representing the remains of at least one longhouse (Figure 9).

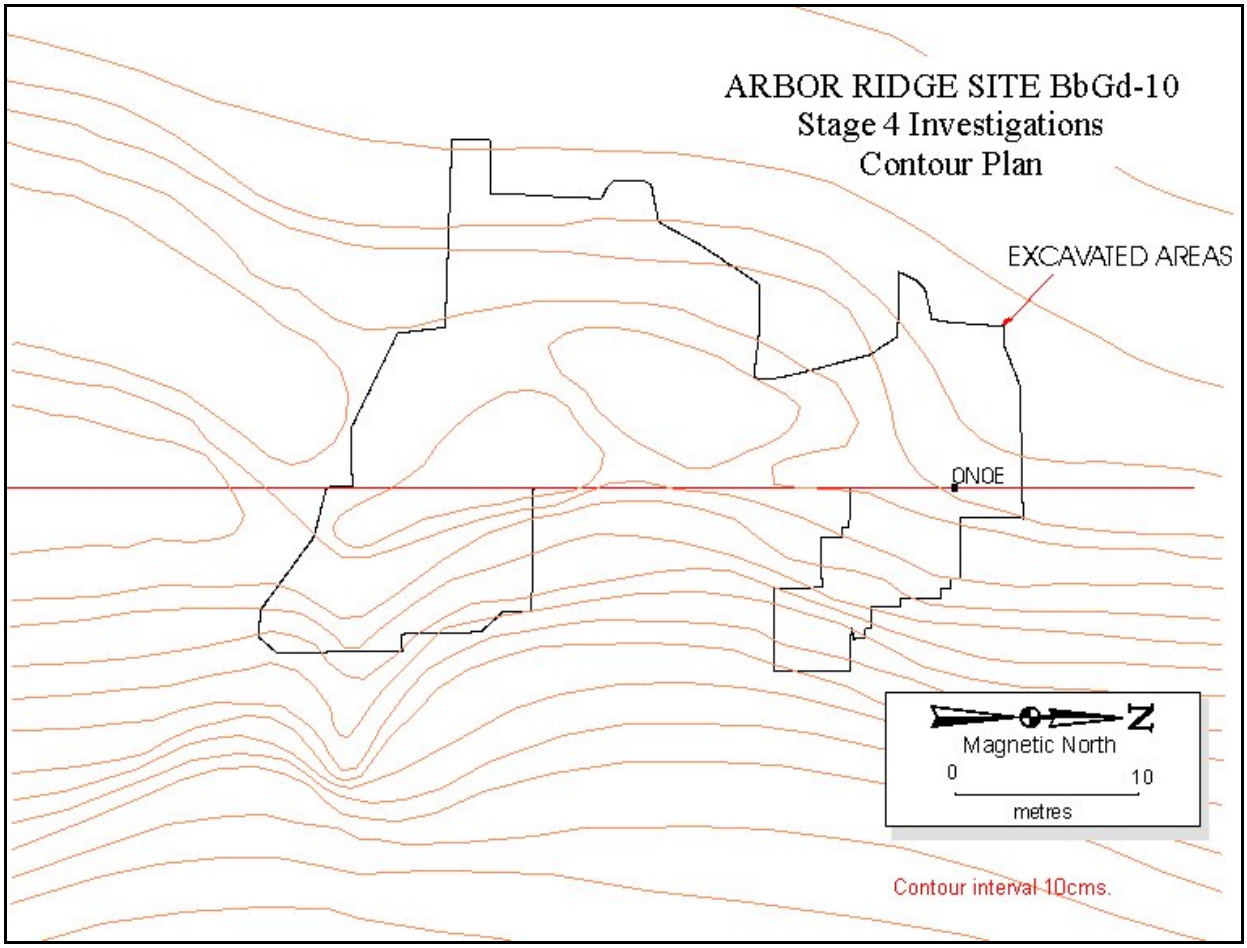


Figure 7: Arbor Ridge Site (BbGd-10) - Contour Plan

Plate 1: Excavating the Arbor Ridge midden. Note shallow deposits over bedrock at valley edge.

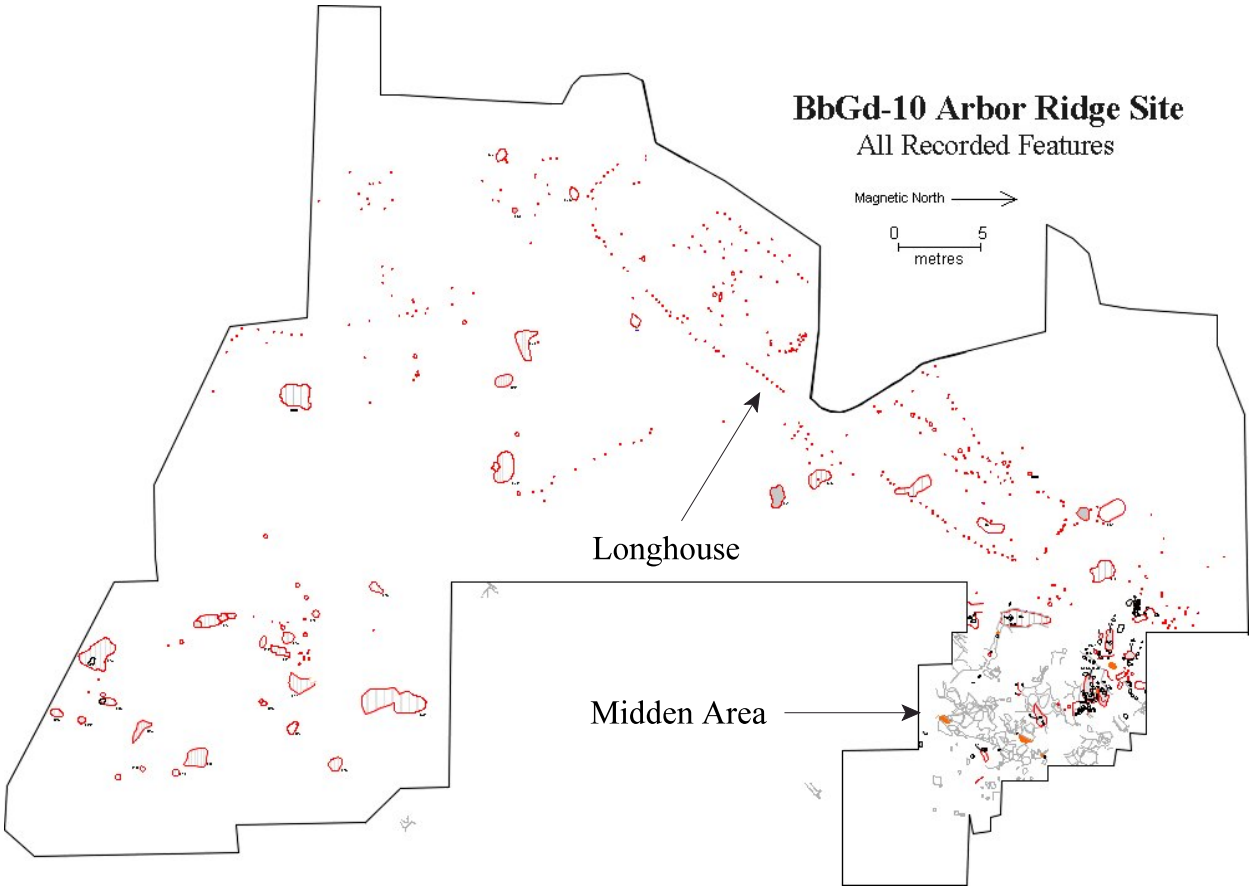


Figure 8: The Arbor Ridge Site - Plan.

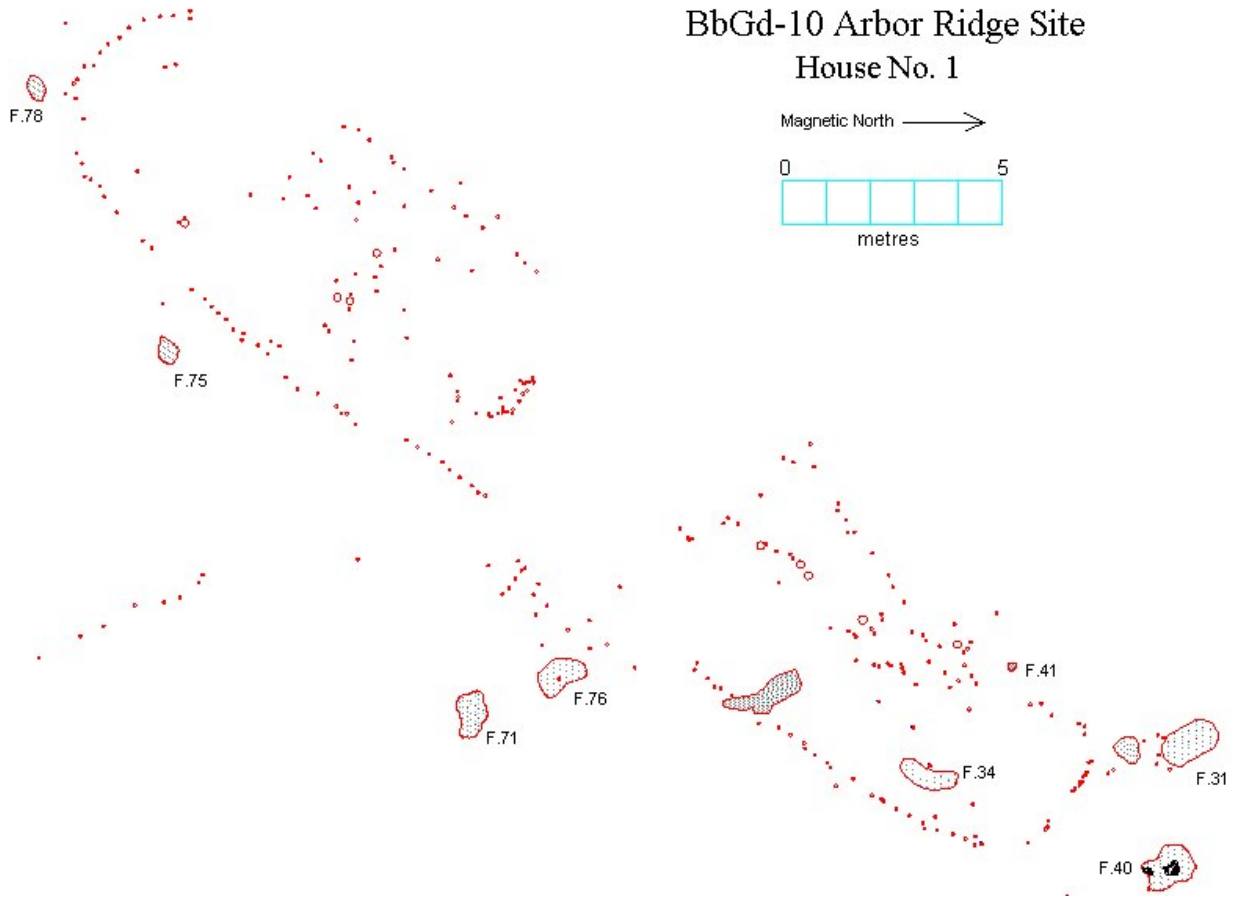


Figure 9: Principal longhouse at the Arbor Ridge site. Note the relative absence of internal pits and hearths, suggesting a warm season period of occupation.

Stone tools

Stone tools were poorly represented at the Arbor Ridge Site. A total of 27 flakes or flaked tools were recovered, while 5 ground stone items were found. They can be summarized as follows:

Table 2: Flaked and Ground Stone Tools		
Flaked Stone		
	Unmodified Flakes	18
	Utilized flakes	2
	Scraper Fragments	3
	End Scraper	1
Fig. 10	Projectile Points	2
	Biface fragment	1
Ground Stone		
	Beads	2
Fig. 11	Adze	1
	Axe fragments	2

Figure 10: The two stone projectile points from Arbor Ridge. Left: Onondaga Chert, Right: LeRoy Chert

Figure 11: Ground stone adze fragment.

Pipes

The pipes from the Arbor Ridge site are typical of those found on Late Middleport and early Late Ontario Iroquois period sites in Ontario (Dodd, et. al. 1990: 332, Ramsden 1990: 369). Pipe bowls include both decorated and undecorated barrel (Figure 12), vasiform, conical (collared and uncollared ring types), and trumpet forms (Emerson 1967: Figures 42 & 43). The most common form of decoration consists of a single or multiple horizontal incised bands just below the pipe bowl lip. This occurs on all forms, but is most frequent on conical, barrel and vasiform pipes. Trumpet pipes are commonly decorated with oblique or zoned areas of finely incised decoration (Figure 13). In some instances this lies below a single horizontal incised band just below the lip. Zones are often separated by lines of small, finely executed punctates.

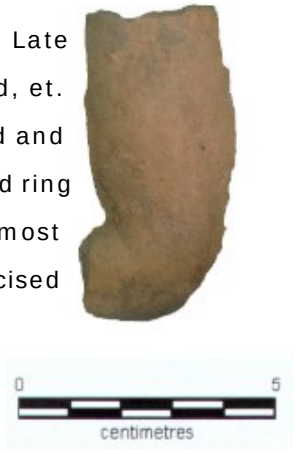


Figure 12: Plain barrel pipe (1S6E L2_1).

As Dodd et. al. (1990: 338) have indicated, the prevalence of trumpet pipes is a good chronological indicator for late Middleport and early Late Ontario Iroquoian sites.

Figure 13: Decorated trumpet pipe (1S6E L2_1).

Fragments of a single effigy pipe were recovered from the Arbor Ridge site (Figure 14). Effigy sites occur on some Middleport sites, becoming common on Late Ontario Iroquoian sites (Ibid.).

Table 3. Ceramic Pipe Form Frequencies

Bowl Form	No.
Conical	10
Trumpet	12
Vasiform	1
Barrel	7
	30

Figure 14: Frog effigy on pipe bowl (4S3E_1).

Bone Tools

The bone tools from the Arbor Ridge site are typical of bone assemblages from the eastern end of Lake Ontario, consisting of bone points (8), awls (4), beads (2), and a variety of modified bone slivers or fragments of undetermined function (8). Some of the bone objects have been incised with patterns of parallel lines very reminiscent of pottery decorations. A sample of decorated bone objects from Arbor Ridge are depicted in Figure 15.

Figure 15: Selected decorated bone objects from the Arbor Ridge Site

Jamieson (1993: 56) has suggested that awls with a distinctive centrally located notch may be corn husking pins. He has determined that these are a characteristic artifact of St. Lawrence Iroquois sites. One was located at Arbor Ridge. Conversely, modified deer mandibles were extensively used for corn husking on Huron sites and appear to be primarily a Huron tool. None of these were discovered at Arbor Ridge - however, it should also be noted that since no corn kernels or carbonised corn cobs were discovered at the site, corn production may not have been a significant activity at the site. The faunal remains from the midden suggest that the rich resources of the nearby Little Cataraqui Creek wetland provided their primary sustenance.

Pottery from the Arbor Ridge site

A description of the nature of the Arbor Ridge ceramic collection, and the process of analysis of the pottery is described in Chapter 3. A selection of rim sherds from the site is presented below as Plates 2, 3 and 4.

Date of the Arbor Ridge site

The typological examination of the pottery and the nature of the smoking pipes from the site suggest that it was occupied during the period between A.D. 1425 and A.D. 1450. Oxygen Carbon Ratio (OCR) dates from longhouse post-hole and feature soils provided dates of 515±15 YBP (A.D. 1435±) and 500±14 YBP (A.D. 1450±)(Frink 1999).

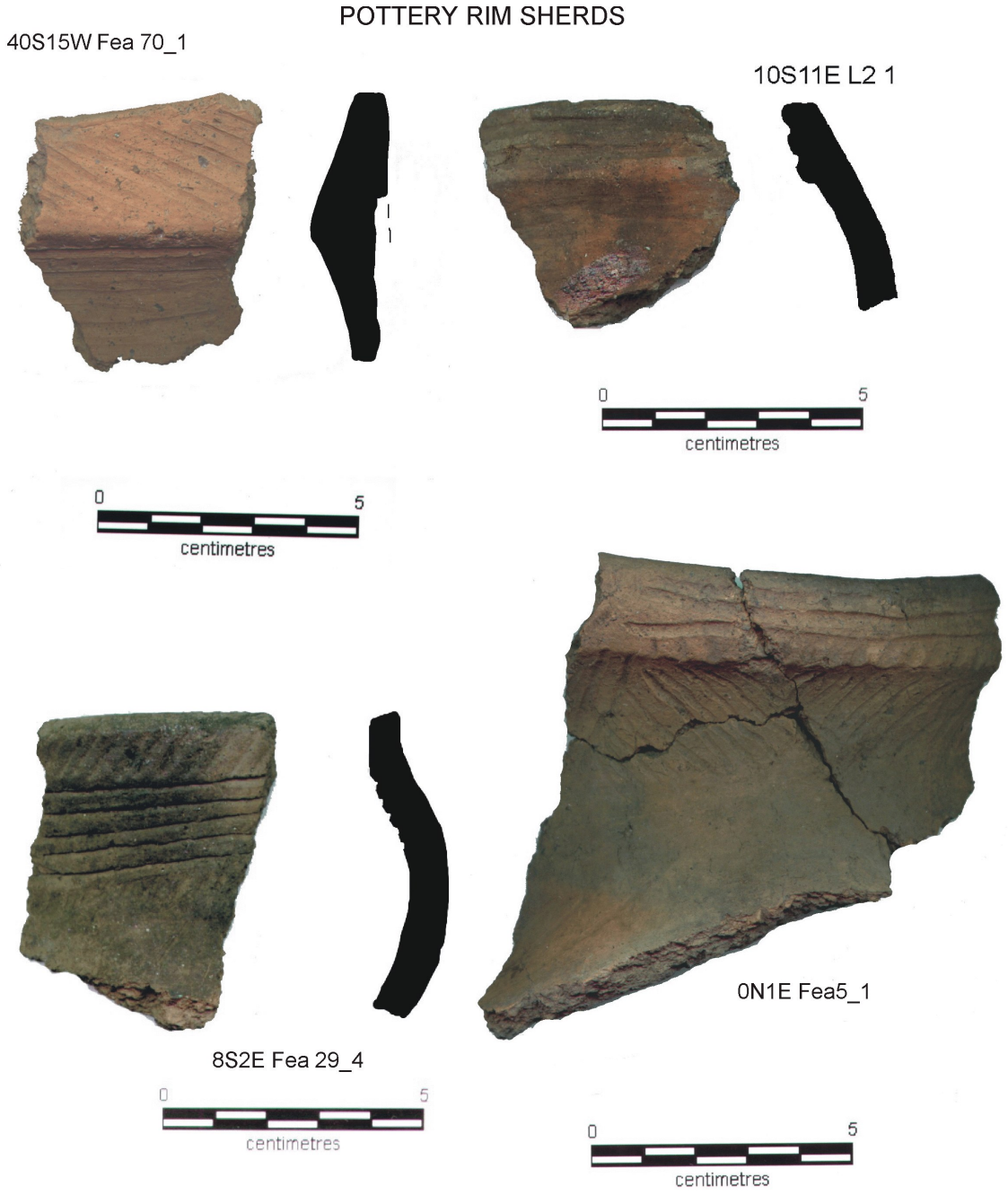


Plate 2: Sample rim sherds from the Arbor Ridge Site (BbGd-10)

Plate 3: Sample rim sherds from the Arbor Ridge Site (BbGd-10)

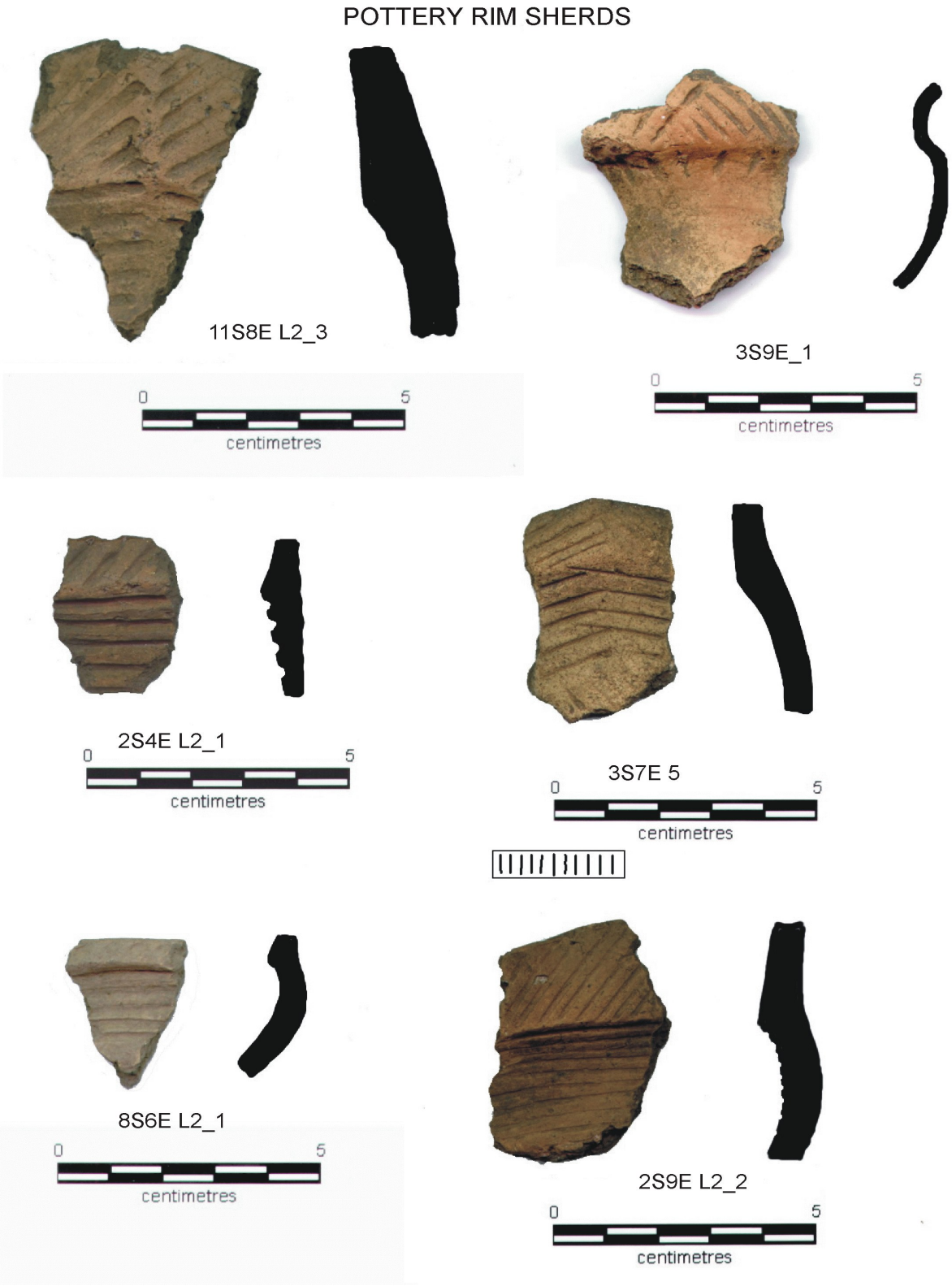


Plate 4: Sample rim sherds from the Arbor Ridge Site (BbGd-10).

Chapter 3

Methodology

A large number of rim sherds were recovered from the Arbor Ridge site. Many were small, recognisable as rims, but without the necessary features which would allow for viable comparisons, not only within the collection from the site, but with other contemporary sites in Ontario and New York State. In order to be included in this analysis, the following elements of each rim had to be visible:

- *lip surface and decoration*
- *exterior lip and collar surface*
- *collar base*
- *sufficient neck to allow for decoration interpretation*
- *interior lip surface*
- *interior rim surface*

An attempt was made to determine the number of individual vessels represented by the collection. This was a two stage process. Once the rim sherds had been sorted from their overall contexts, they were laid out on trestle tables and an any obvious visual matches were made. Then, as the specific characteristics of each rim sherd was recorded, a second attempt at matching was made. In total 148 vessels have been identified.

The pottery from the Arbor Ridge site, while showing variations in workmanship, vessel size and decoration application, shows a remarkable degree of uniformity. The majority of vessels could be described as squat and globular with a slightly constricted neck below a low collared, sometimes castellated rim. The most common decoration consists of oblique incised lines on the collar above a zone of horizontal incised lines on the neck. Horizontal or vertical incisions on the collar are not common. Collar base notching is rare (1.0%), although a number of vessels have oblique incisions or punctates immediately below the collar. Collar decorations from Arbor Ridge pottery are schematically represented on Figure 16. In some instances neck decoration consists of zones of oblique and/or reverse oblique lines between zones of horizontal lines. Decoration rarely extends on to the vessel shoulder. Vessel bodies are plain. A small number (less than 1%) of body sherds are check-stamped.

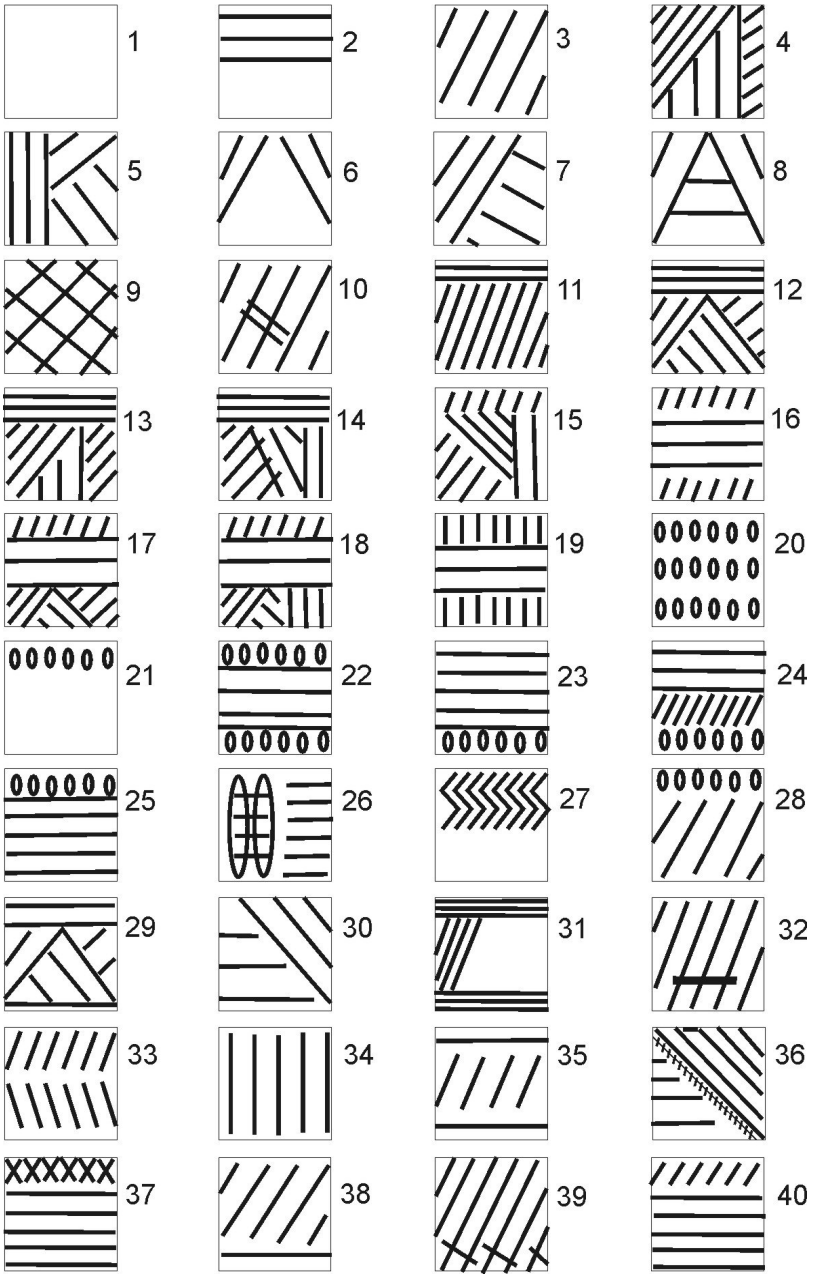


Figure 16: Stylistic representations of the collar designs on the Arbor Ridge pottery vessel sample.

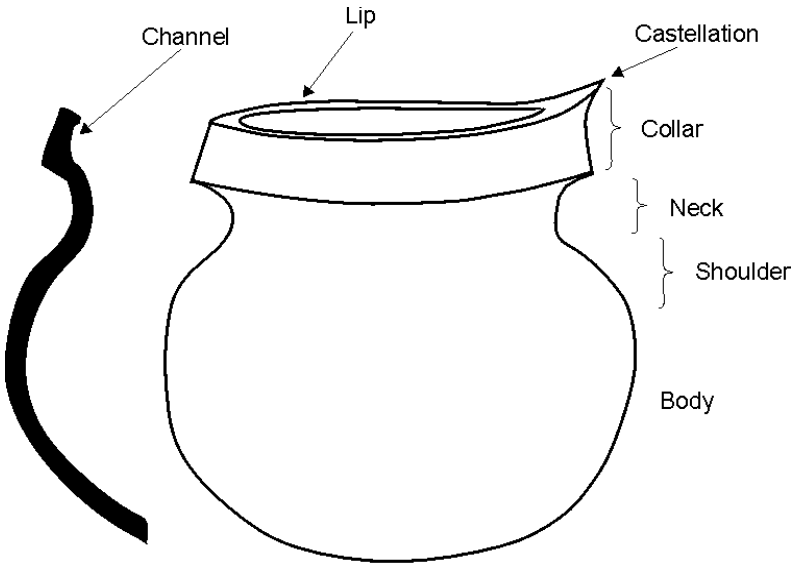
The majority of vessels have flat, undecorated lips and slightly more than half the vessels have clearly concave (channelled) interior rim surfaces. Interior rim decoration is rare and exterior lip notching is absent. Dentate stamping and interrupted linear decoration techniques were rare (2% and 4% respectively). No cord-wrapped stick decorated vessels were identified.

Table 4. The Arbor Ridge site pottery vessel types.		
Type (MacNeish 1952)	**No. of Vessels**	**% of total sample**
Black Necked	14	9.5
Durfee Underlined	2	1.4
Huron Incised	2	1.4
Lalonde High Collared	3	2
Lawson Incised	8	5.4
Lawson Opposed	7	4.7
Middleport Oblique	2	1.4
Middleport Criss-Cross	4	2.7
Ontario Horizontal	4	2.7
Pound Necked	86	58.1
Richmond Incised	2	1.4
Salem Horizontal	1	0.7
Seed Incised	2	1.4
Warminster Horizontal	1	0.7
Untyped	10	6.7
Totals	**148**	**100.2**

Decoration characteristics typical of classic St. Lawrence Iroquois pottery: the corn ear, the ladder plait, and circular punctates (Pendergast 1993: 16), were entirely missing from the Arbor Ridge ceramic assemblage. Collar base notches were only present on one vessel. A breakdown of the Arbor Ridge pottery vessels by type is presented in Table 4. Selected rim sherds are presented on Plates 2, 3 and 4. A more complete image catalogue can be found on-line at: http://adamsheritage.com/bbgd_10/small/BbGd-101htm.

Pottery sherds are the most common artifact found on late pre-contact period 'Iroquoian' archaeological sites in the lower Great Lakes region. Excavations of even quite small settlements can result in the collection of assemblages of rim sherds representing hundreds of individual vessels. Large village excavations typically result in the identification of thousands of discrete vessels. Fortunately for archaeologists, not only was much of the pottery durable, but the patterns and styles of decoration in use during the period between A.D. 1300 and A.D. 1650 have been found to be temporally and regionally distinctive.

Vessels share many characteristics across the region and throughout the period. They tend to be squat and globular, with pronounced collars and constricted necks (Figure 17). Decoration is generally restricted to the collar and neck, rarely extending far down the shoulder of the vessel.



Form attributes of Iroquois Pottery Vessels (after Emerson 1956, Figure 1).

Figure 17: The physical characteristics of a typical Late Pre-Contact Iroquoian pottery vessel.

Patterns of parallel incised lines are the most common decorative technique. These may range from extremely simple arrangements of oblique incisions, restricted to the collar (Figure 18), or may consist of complex, zoned arrangements, completely covering the collar and extending down the vessel neck (Figure 19).

Decorations range from simple.....

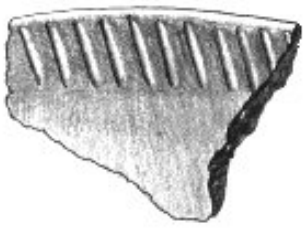


Figure 18: Huron Incised Rim

to complex.....

(after Emerson 1967: 168)

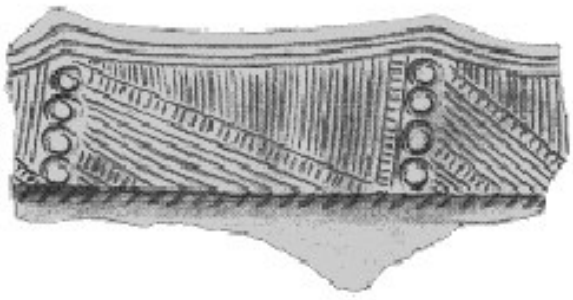


Figure 19: Onondaga Triangular Rim

Typology or Attribute Analysis?

For many years MacNeish's (1952) landmark study of Iroquois pottery types has been the corner-stone of Iroquoian ceramic analysis. As Engelbrecht (1980: 27) has pointed out, MacNeish's types are still in use, partly because they provide a simple way of describing the material which has stood the test of time, and partly because they give, "*cognoscenti an immediate impression of the ceramics at a site in a way that attributes cannot*." Once one has spend the time required to become familiar with the types, it is easy to visualise a collection of ceramics based on the reported material.

Unfortunately, no matter how closely authors adhere to the original typological criteria, the interpretations are still subjective, leaving significant room for error and misidentification. Secondly, some researchers have expanded on or diverged from MacNeish's original definitions, either to incorporated hitherto undescribed material, or because they place a different emphasis on key features within a type. This had added to the complexity of conducting inter-site comparisons, and has detracted from the elegance of the original typology. Furthermore, while Iroquoian pottery decorations do fall within MacNeish's types with remarkable consistency, the typology is dealing with hand-made, individually executed vessel designs and forms. Individual potters wares display differing levels of skill and design sense. Inevitably there are 'grey' areas separating the various types.

By 1968, problems with the application of MacNeish's types prompted Dr. J.V. Wright to write a plea that researchers abandon the 'type' approach in favour of attribute analysis (Wright 1968: 65). He reinforced this plea in 1980, proposing specific considerations to refine the use of attribute studies (Wright 1980: 21). Attribute analysis involves the recording of discrete,

individual elements of the morphology and decoration of the vessel according to a predetermined set of criteria. As Wright has pointed out, recording attributes leaves far less room for misidentification and error (Wright 1968:67). With attribute analysis, the impact of a single mis-identified attribute will be minimal.

Attribute analysis has the profound advantage of virtually eliminating subjective influence. With types, it is easy to be swayed towards a particular typological determination by the presence of key characteristics such as collar decoration or interior collar shape. With attribute analysis, each of a suite of attributes is documented, independent from the vessels most visually engaging characteristics. In this study, all elements of the upper vessel form are equally weighted. Determinations, relationships and similarities are thus based on a truer picture of the individual rims, and the assemblage as a whole. Visually subsidiary characteristics (for instance, interior lip notching) which could easily be overlooked or ignored in a typological study - and yet which may well reflect local, temporal or regional traditions - are able to contribute to the data to an appropriate degree.

Unfortunately, while attribute analysis appears to offer a more rigorous mechanism to record and compare pottery from one site to another, in practice it is often problematic. During this study it became clear that it can be difficult to extract meaningful attribute data from archaeological reports because many so authors have constructed their own attribute categories. Some authors (cf. Williamson and Robertson 1998) have chosen to use a plethora of attributes, while others (notably Ramsden 1977) have found order in lumping groups of attributes into larger units. Others, (such as Abel 2001) have selected only to record specific attributes they deem temporally or culturally sensitive. Methods of presenting and describing the data are almost as numerous as the published reports. This problem has been overcome by selecting specific attributes considered by most authors.

Assumptions

Implicit in MacNeish's (1952) study was the assumption that ceramic decoration styles represented an ethnic 'stamp' which could be used to identify the ethnicity or cultural origins of its makers. Indeed, MacNeish organized his study along tribal lines, describing series of pottery styles as 'Oneida Pottery Types' or 'Neutral Pottery Types' etc. Some early reports go as far as to describe the pottery in terms of the percentages of "Onondaga-Oneida", "Mohawk" or "Seneca" pottery, based on MacNeish's criteria (eg. Pendergast 1964a) - the assumption being that these types reflect direct contact and liaison with the specified groups.

Pottery is generally assumed to be the product of Iroquoian women. This assumption is based on a 1632 eye witness account of pottery making among the Huron,

> "*The women make them, taking suitable earth, which they clean and knead very well, mixing in a little sandstone, then the mass being reduced to a ball, they make a hole in it with the fist, which they enlarge continuously while beating it inside with a little wooden paddle.....*" (Sagard-Théodat 1632, quoted in MacNeish 1952: 7).

It has been recognised for decades that female mobility into patrilocal societies may partly explain the presence of Iroquoian pottery on archaeological sites in the Canadian Shield areas of Ontario. Algonkian people in the Ottawa Valley may have been locally manufacturing pottery virtually indistinguishable from that found on known Iroquoian sites (Mitchell 1975: 65). Wright (1969) suggested that the acquisition of brides from a considerable distance was the most plausible explanation to account for the consistent presence of 'Iroquoian' pottery in all the deposits on the at the Michipicoten site which post date the mid-fifteenth century. The Michipicoten Site lies on the north shore of Lake Superior, approximately six hundred miles from areas typically associated with Iroquoian occupation. Fox (1990: 463) has suggested that Iroquoian pottery on Odawa (Cheveux relevés) sites could have been made locally by Odawa people copying Iroquoian styles, and arrived as vessels (and presumably their contents) acquired in trade. Clearly ascribing the ethnicity of an archaeological site solely on the basis of pottery is fraught with problems.

Attribute analysis in this study

In this study, I have chosen to use the attributes used by Abel (2001) (see Figure 20). The reason for this is simple; Abel's PhD thesis presents the most comprehensive and up-to-date compilation of pottery analysis data from archaeological sites in Jefferson and St. Lawrence Counties, New York State. Many of these sites are not only contemporary with the Arbor Ridge site, but lie only a few miles to the south-east, separated by the St. Lawrence River. Abel presents data from twenty-one Late Pre-Contact archaeological sites in northern New York State. In addition, for comparative purposes, he also converted data from Emerson's 1967 report on excavations at the Payne Site in Prince Edward County (Emerson 1967), and from Pendergast's attribute analysis of the ceramics from the Roebuck Site in Grenville County, Ontario (Pendergast 1973).

Where possible, I have expanded the scope of Abel's data by extracting comparative data from existing, published reports of archaeological sites to the west of Arbor Ridge, and further down the St. Lawrence River. This was done, not only to extend the quantity of comparative data available, but to extend the geographical range of sites under comparison. In some instances the authors recorded the details of rim characteristics in such a way that it was possible to convert their information to the format I have used with confidence. In other cases, it was not possible to extract specific attributes with any degree of certainty. Rather than incorporate errors, I decided to ignore the attributes for which data was not readily available. While, inevitably, this means that some attributes were not available for inter-site comparison, I feel that as long as the primary characteristics (primary technique, rim form, neck design, collar design etc.) were available, the comparisons would still retain some validity.

Once the data had been entered into a spreadsheet and the percentages of the various attributes totalled, the Brainerd-Robinson Coefficient of Similarity test was applied (Brainerd 1951, Robinson 1951, Engelbrecht 1974). Each pottery collection in turn was evaluated against the data set from the Arbor Ridge Site following the technique described by Emerson (1956).

The percentages of each attribute were compared and the difference of the totals was subtracted from 200, to provide a number expressing the degree of similarity with the Arbor Ridge ceramic collection. Numbers closest to 200 indicated a high degree of similarity; those further from 200 indicated a low degree of similarity. A table of attribute coefficients of

similarity for twenty-eight sites is presented in Appendix 2.

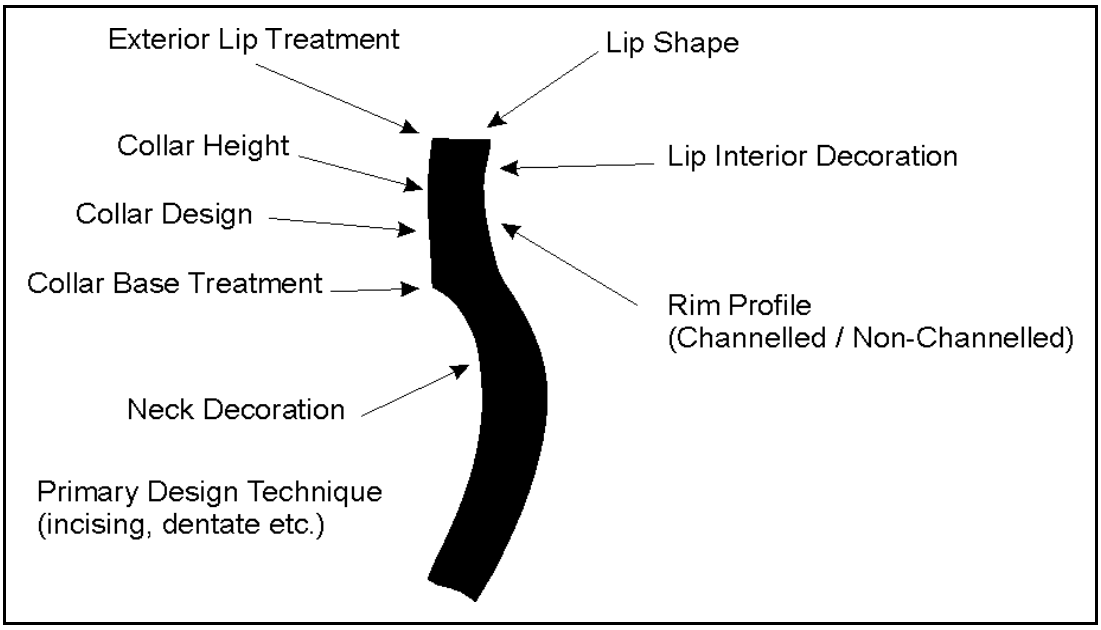


Figure 20: Pottery vessel rim sherd attributes used in this study.

Type analysis in this study

Most of the Iroquoian sites excavated before the nineteen seventies for which publications exist contain ceramic 'type' analysis tables based on MacNeish's (1952) "Iroquois Pottery Types" study. Locating and re-analysing the collections from all these sites was beyond the scope of this study, so I opted to incorporate the data by conducting a 'type' analysis of the Arbor Ridge site collection, then performing inter-site comparisons using the technique described above. Since it was likely that the data from the attribute studies and that from the type studies would be divergent, no initial attempt was made to combine the two data sets. The sites chosen for type comparison were those which, a) corresponded chronologically to the Arbor Ridge site (eg. Payne, Waupoos, MacLeod, Gibbs, Bark, Wilson), b) provided a broader background for comparison throughout the north shore of Lake Huron region (eg. Parsons, Woodbridge, Draper, Doncaster), and which would provide a broader basis for comparison with closer and more chronologically related sites. The assumption was made that sites which lay at the greatest distance from Arbor Ridge, and those which were later in the Pre-Contact period would have the lowest levels of ceramic correlation. A low level of correlation was also expected with St. Lawrence Iroquois sites. Unfortunately no type data was readily available for Jefferson County,

St. Lawrence Iroquois sites, making direct comparisons between type and attribute analysis impossible.

A table of coefficients of similarity for nineteen sites based on types is presented in Appendix 3. Some of the more common Middle and Late Ontario Iroquoian pottery types are shown on Figure 21.

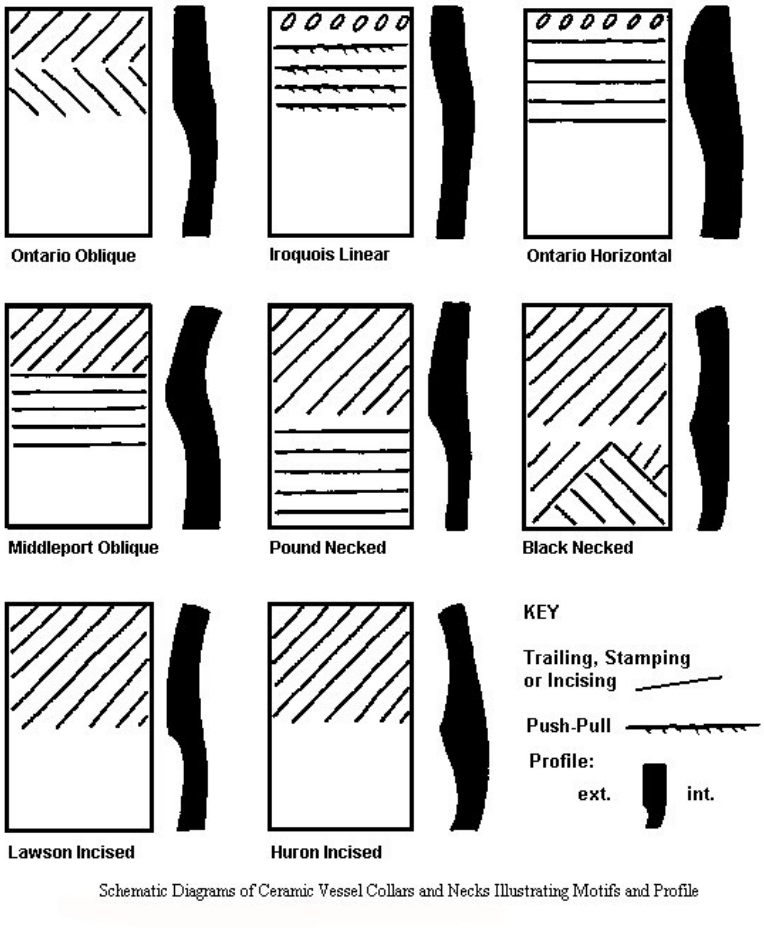


Figure 21: Some of the more common pottery decorations on Middle and Early Late Ontario Iroquoian sites. (from Dodd. et.al 1990, Figure 10-4).

The nature of the data available for this process was variable. Some reports contained type-tables based on rim frequency, while others were based on vessel numbers. In the end, I decided that such different approaches would not significantly affect the overall balance of the study, since the purpose of the evaluation is to explore general trends and relationships, which should still be apparent within the data sets. Indeed Lennox and Kenyon (1984) have convincingly demonstrated that even when ceramic types are subjected to some vigorous lumping, basic chronological and geographical relationships can survive intact.

Lastly, some of the archaeological reports used in this study included ceramic data analysed using both attribute and type techniques. These data provided some measure of control, and a way of viewing the divergent patterns between the two analysis approaches.

Trace element analysis

Conducting any trace-element analyses of Iroquoian pottery was beyond the scope of this current exercise. However, it is clear that if one is attempting to trace population movements, investigating the similarities and differences of clay composition on different pottery types within a single sample could be a valuable exploratory tool. One might assume that if clays from a particular area have a distinctive chemical signature, this could be used to determine whether vessel styles typically associated with a particular region or people, yet which occur on sites distant from where expected, were made locally or were brought in from elsewhere.

Bruce Trigger and colleagues from McGill University (Trigger et. al. 1980) conducted trace-element analysis on approximately 650 rim sherds from Iroquoian sites in Ontario and Quebec. Specifically, they were looking to determine whether distinctively St. Lawrence Iroquois pottery sherds found on sites east of the Frontenac Axis (ie. on Huron-Petun sites), were manufactured from local clays, or were of distinctly alien clays. Although the results were complex and somewhat inconclusive, the authors were able to ascertain that there was "*no indication that any of the St. Lawrence Iroquoian-style sherds found at sites west of Kingston actually came from the St. Lawrence Valley*." (Trigger et. al. 1980: 127). In particular, the authors noted that even at Waupoos, on Prince Edward County - a site lying quite close to the St. Lawrence Iroquois 'homeland' in Jefferson County, New York State- no significant differences in chemical composition of the clays could be detected. The implications of these results will be discussed in Chapter 5.

Chapter 4

Analytical Comparisons: Iroquoian Pottery at the Eastern End of Lake Ontario

In this section the results of the 'coefficient of similarity' tests are presented. A master list of the relationships amongst all the sites was compiled, based on the attributes 'coefficients of similarity' table (Appendix 2). This provides a ranking of the relationships between the twenty-eight sites under examination. Not surprisingly, in many instances, given the narrow chronological range between all of the sites (less than 150 years) the physically closest sites usually provided the closest matches. A general chronology of sites discussed in the text is provided as Appendix 1.

In the following examination, I have focussed on a small number of sites in the vicinity of the Arbor Ridge site, in the hope that the results may clarify relationships between the various sites. The locations of the main sites and site clusters discussed in the text are presented in Figure 22. Data from attribute analysis is presented first, followed by data derived from typological studies. The numbers adjacent to the site names in the following diagrams indicate the 'score' of similarity with the featured site (out of a maximum of 200). While scores of 170 and above are considered to indicate close similarity - possibly even direct ties - lower scores are indicative of trends and less direct relationships.

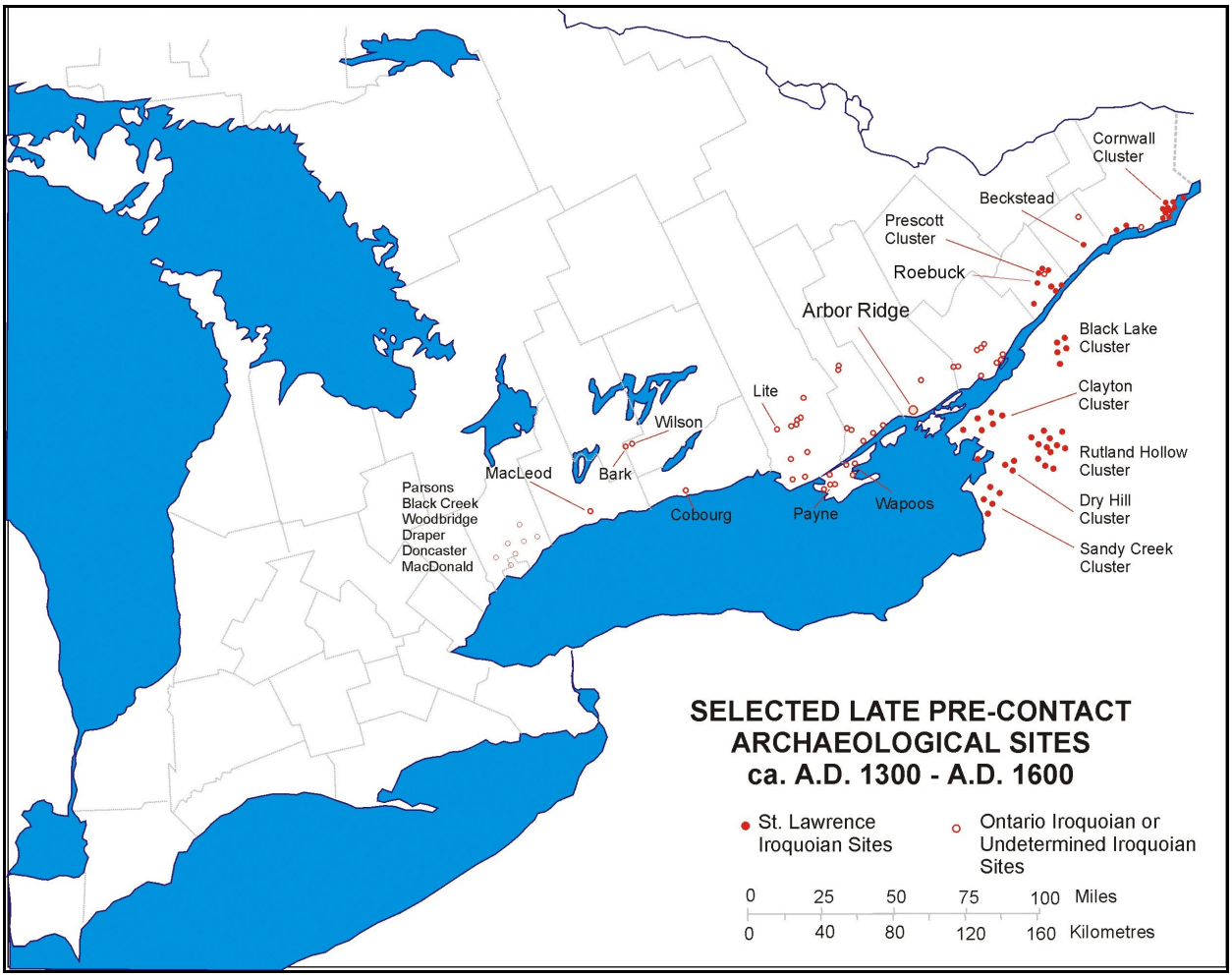


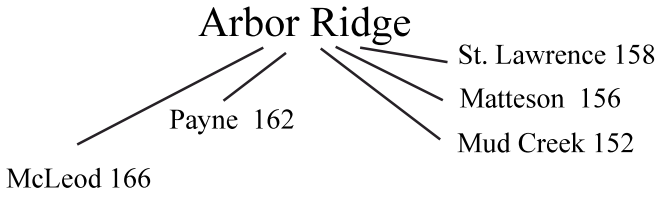
Figure 22: The locations of the archaeological sites used in this study. Sites within site clusters are presented in Table 5 below.

Cornwall Cluster	Prescott Cluster	Clayton Cluster	Dry Hill Cluster
Summerstown Station	Roebuck Bridge	Wetterhahn Mud Creek	Talcott Falls Whitford
Glenbrook	McIvor Maynard-McKeon	Depauville St. Lawrence	Morse Freeman
Berry	27/7 Crystal Rock	Chaumont	Heath
MacDougald	Cl;eary Stewart	Matteson	Carlos
Sandy Creek Cluster	**Rutland Hollow Cluster**	**Black Lake Cluster**	
Nohle	Drum	Devendorf	
Potocki	Putnam	Washburn	
Durfee	Durham	Pine Hill	

TABLE 5.
Site within clusters indicated on Figure 22.[1]

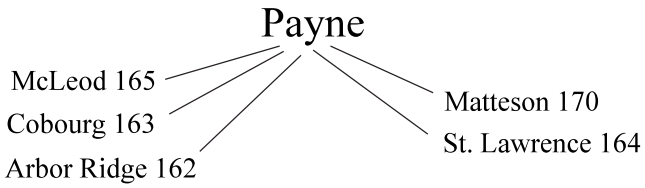
[1] Other sites exist within these clusters, however the ones named here have been used extensively in this discussion.

Attribute Analysis Results - Arbor Ridge



The results from attribute analysis suggest that the pottery from the Arbor Ridge site shares some characteristics with pottery from sites lying along the north shore of Lake Ontario, and with the physically closest sites in Jefferson County (Appendix 2). To the west, the closest correlations with Arbor Ridge are with McLeod and Payne, both of which lie near the Lake Ontario shore in central southern Ontario (Reed 1993, Emerson 1967). Both sites are slightly later than Arbor Ridge. To the southeast, the closest correlations are with St. Lawrence, Matteson and Mud Creek. These sites are part of the Clayton Cluster of St. Lawrence Iroquois sites. Both Mud Creek and Matteson are slightly later than Arbor Ridge, while St. Lawrence may have been occupied as much as fifty years later (Abel 2000). Other roughly contemporary sites, such as Nohle, Potochi and Drum - all of which lie only a few miles across the east end of Lake Ontario from Arbor Ridge - have much lower levels of correlation. Arbor Ridge had a low correlation with the contemporary Roebuck site to the east.

Attribute Analysis Results - Payne



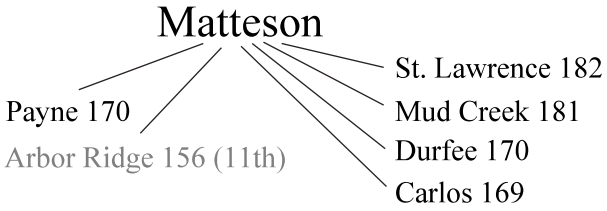
The Payne Site is located on the Prince Edward County peninsula. Excavated independently by two researchers without one another's knowledge, Payne has long been cited as an example of how well ceramic analyses can work - each author deriving essentially the same results from different samples, analysed in isolation (Pendergast 1964a , Emerson 1967). It is considered a southern Huron site by some authors (Ramsden 1977: 73).

Payne's closest attribute relationships lie not with other southern division Huron sites on the north side of Lake Ontario, but with two of the Clayton Cluster sites to the east in New York State. The St. Lawrence and Matteson sites share more similarities with Payne than McLeod, Cobourg and Arbor Ridge - sites which one would expect to be closer matches. Perhaps of greater significance, the degree of similarity between Matteson and Payne is higher than that between Matteson and Carlos, Freeman, Whitford, Heath and Talcott - all roughly contemporary Jefferson County sites lying just to the south of Matteson in the Dry Hill Cluster. Indeed the closeness of these sites is higher than that which exists between Payne and roughly contemporary Cobourg and McLeod sites.

Attribute Analysis Results - St. Lawrence

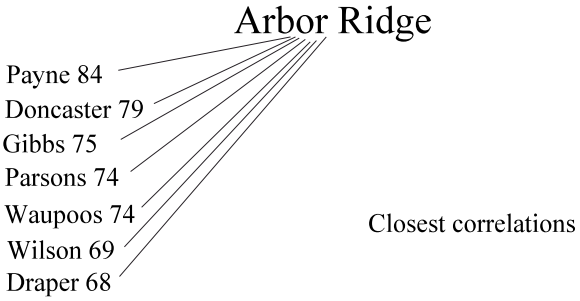
The St. Lawrence site is an early 16th century St. Lawrence Iroquois village in Jefferson County, New York State. Abel (2001) noted that while the closest specific attribute correlations for the St. Lawrence site were with its nearest physical and temporal neighbours (within the Clayton, Dry Hill and Sandy Creek clusters), it also closely resembled Payne. Its similarities with Arbor Ridge, while present, are not as pronounced as those with Payne. This may reflect the temporal differences between the two sites. Interestingly, the sites with the closest general correlations to the St. Lawrence site do not lie within the Clayton Cluster but with sites of the adjacent Dry Hill Cluster. This tends to support Abel's assertion that Dry Hill and Clayton Cluster people may have been related (Abel 2001: 175). Abel (Ibid.) has also argued that the similarities between the pottery of the St. Lawrence site and Payne may be interpreted as an indication of population movement from Jefferson County towards the west.

Attribute Analysis Results - Matteson



Matteson is another St. Lawrence Iroquois site of the Clayton Cluster. The relationship between Matteson and Payne is the strongest correlation between Jefferson County and Ontario sites (170). Not surprisingly, however, the correlations with other Clayton Cluster sites are much closer, with the similarities shared by St. Lawrence, Matteson and Mud Creek being among the highest of all the sites examined. As with the St. Lawrence site, high correlations of similarity with sites outside the Clayton Cluster (ie. Durfee and Carlos) were somewhat unexpected, suggesting that the internal relationships within the Clayton Cluster are complex. As noted above, however, Matteson has more in common with some Ontario 'Huron' sites than other Jefferson County sites.

Type Analysis Results - Arbor Ridge



The typological correlations between the Arbor Ridge site and the others for which data was available are not impressive (Appendix 3). This can best be explained by the exceedingly high frequency of Pound Necked vessels from the site (see Table 4) - a characteristic which appears to have had a significantly skewing effect on the data, since all the correlations are consistently below what one might otherwise expect. The presence of such a high

percentage of Pound Necked vessels may reflect the chronological position of Arbor Ridge, right at the beginning of the Early Late Ontario Iroquois phase (Dodd et. al. 1990:337), the local preferences of the relatively small number of potters working at the site (Nick Gromoff, Personal Communication), or error on my part in correctly assigning typological placement. In any event, since all correlations are based on the same data set, the relative positions and values are likely to hold some significance.

As indicated in the illustration above, the closest typological match is with the Payne Site, with slightly lesser degrees of similarity with other sites across the north shore of Lake Ontario. Sites to the east of Arbor Ridge (such as Crystal Rock: 37, Beckstead: 21/11, Glenbrook: 16, Grays Creek: 10, Salem: 8) have a generally low level of correlation, suggesting that Arbor Ridge has little in common with these sites. The degree of correlation drops off noticeably as one proceeds north-east down the St. Lawrence River Valley. Typological data from the Jefferson County sites was not available.

The next stage in the analysis process was the production of a cluster diagram graph (Figure 23) using the minimum or single linkage method described in detail by Engelbrecht In this method,

> *'units are admitted into a cluster by gradually lowering the criterion for admission. A single linkage at a particular level with any member of a cluster causes the unit to join the cluster.'* (Engelbrecht 1974:62).

Since a whole suite of ceramic attribute characteristics were employed, this method had the advantage of graphically displaying the complexity of the connectedness between the various sites.

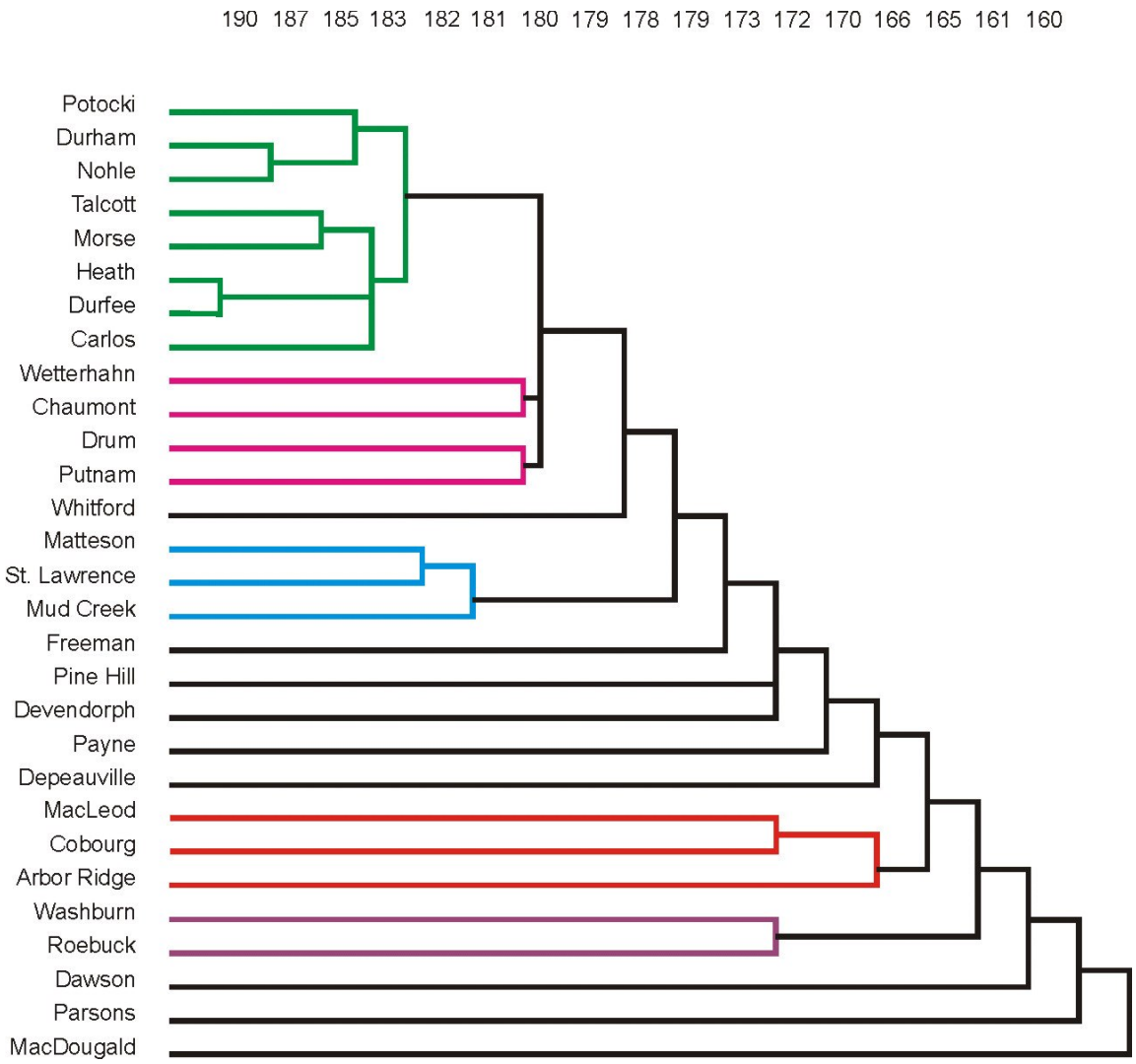


Figure 23: Cluster diagram showing site connectedness. The numbers along the top indicate the coefficient of similarity based on ceramic attributes. The colours have been added to enhance the most obvious groupings.

Figure 23 clearly shows the strong internal relationships which existed between many of the Jefferson County St. Lawrence Iroquois sites. It also shows that while Payne is the most closely connected site from the Ontario side of the border, the level of connectedness is less than all but two of the internal Jefferson County site relationships.

As one would expect, Arbor Ridge, Cobourg and McLeod all relate to one another more readily than they do to the Jefferson County sites.

The Washburn results provide an opportunity for some interesting speculation. Washburn's closest correlations lie not with other sites of the Black Lake Cluster, but with Roebuck - a site lying inland from the St. Lawrence River on the Ontario side. These data tend to support the widely held opinion that some of the Jefferson County people moved across the St. Lawrence River to coalesce with, or form the Prescott Cluster (see page 65). Neither Roebuck or Washburn have any significant similarity to Arbor Ridge.

The position of Arbor Ridge

In order to visually present the data from both attribute and typological sources, I have combined the data on the graph below, and arranged the sites from west to east (Figure 24).

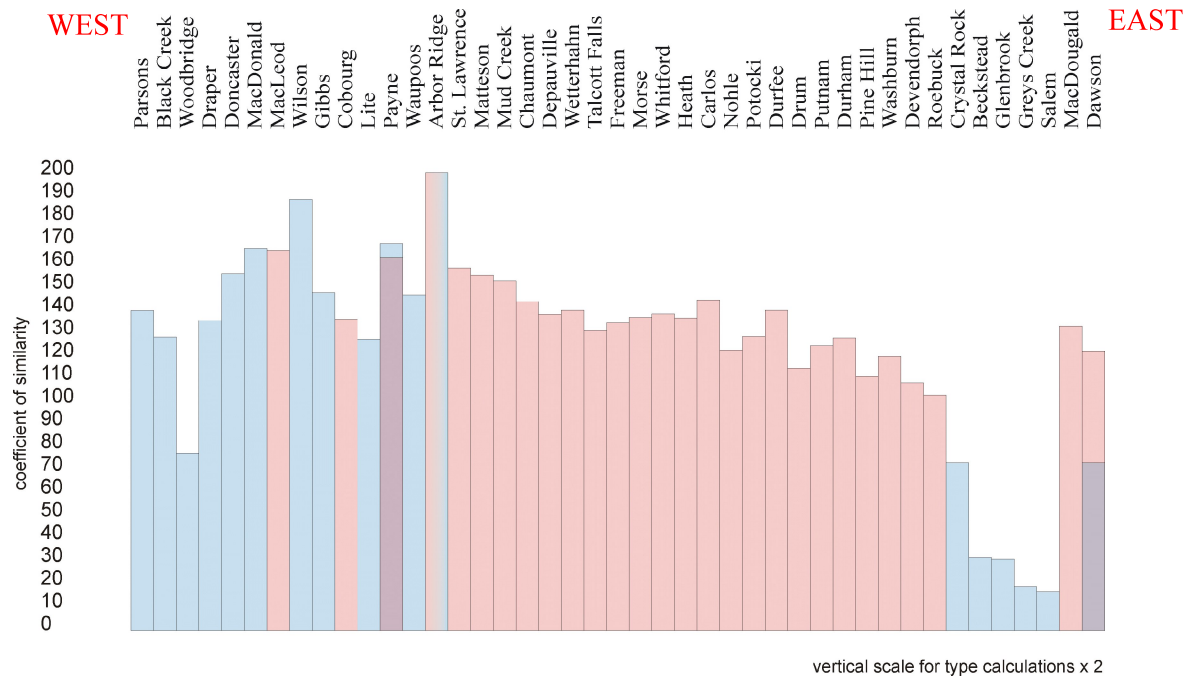


Figure 24: Coefficients of similarity by type and attribute. Archaeological sites are arranged from west to east (as far as possible). The vertical scale of the type series has been doubled. Only relationships with Arbor Ridge have been shown.

However, to compensate for the possible data skewing I have magnified the values of the type series by doubling the numerical result for each site. While this may not be mathematically acceptable, for these purposes it has the desired effect of bringing the type data in general alignment with that derived from attribute analysis in such a way that the general trends and relationships can be visually understood. As can clearly be seen from the graph, with a few exceptions the general trend is the closer they are to Arbor Ridge the

closer the correlation. This is particularly apparent for the attribute derived data for the Jefferson County St. Lawrence Iroquois sites, where the correlations drop off steadily the further east one progresses. Furthermore, despite the artificial doubling of the coefficient of similarity scores based on type analysis, Arbor Ridge clearly has virtually nothing in common with the Ontario St. Lawrence Iroquois sites situated to the east of the Frontenac Axis.

If good chronological data were available it might be possible to understand the results from the typological and attribute analysis in terms of the relative ages of the sites. Numerous radio-carbon dates exist for St. Lawrence Iroquois sites (cf. Morlan 2003), unfortunately, in almost all cases the margins of error exceed the probable duration of occupancy of the site and are thus of marginal use (Pendergast 1996: 5). Furthermore, St. Lawrence Iroquois scholars have been unable to reach an agreement about the basic chronology of key ceramic trends (Jamieson 1990: 401), casting doubt on relative age sequences.

Sites with a close correlation of similarity to Arbor Ridge have a wide range of reported ages. The Wilson Site - the closest correlation based on types - is reported to date to the early fifteenth century (Sutton 1990), while the St. Lawrence Site - the closest Jefferson County site based on attributes - reportedly dates to the early sixteenth century. Other close matches, such as Payne, Matheson and Mud Creek all date to the last half of the fifteenth century.

Chapter 5

Discussion and Conclusions

Relationships

In his 1985 summary of Huron - St. Lawrence Iroquois relations, James Pendergast detailed the pervasive presence of Huron pottery or 'miscegenated' Huron-St. Lawrence Iroquois vessels on twelve Jefferson County sites (Pendergast 1985: 27, Table 1)(Table 6). According to Pendergast's analysis, various percentages of the pottery, ranging from as high as 32% at the Swarthout site, to as low as 2.4% at Putnam, could be considered Huron on the basis of typological characteristics.

Table 6: Percentages of Huron pottery on Jefferson County St. Lawrence Iroquois sites (after Pendergast b1985:27, Table 1)

Site	Total Rims	Total Huron Rims	% Huron Pottery
St. Lawrence	98	28	29%
Swarthout	78	25	32%
Chaumont	94	17	18%
Mud Creek	48	3	6.3%
Durfee	236	13	5.5%
Morse	104	7	7%
Putnam	123	3	2.4%
Heath	90	3	3.3%

Perhaps not surprisingly most of the sites containing Huron pottery also have a high coefficient of similarity with archaeological sites in eastern Ontario either identified as Huron, or assumed to have more in common with Huron than St. Lawrence Iroquois sites. In a later article, Pendergast also documented the extensive presence of St. Lawrence Iroquois pottery on Huron sites extending from Prince Edward County in the east, to Huronia (Simcoe County) in the west (Pendergast 1993:26), pointing out that there was a significant increase in the percentage of St. Lawrence Iroquois pottery on Huron sites between A.D. 1420 and A.D. 1650. The relative percentages are approximately the same - in general, somewhere between 5% and 10% of the pottery on sixteenth and early 17th century Huron

sites can be considered typologically St. Lawrence Iroquois (Warrick 2000: 457). Logically, the question arises as to whether the 'foreign' pottery represents the actual presence of 'foreigners' at these sites as has often been assumed in the past. A number of possible scenarios may explain this phenomenon:

- the foreign pots, presumably with some desirable contents, could have been acquired through trade;
- they could represent female captives, either adopted into the community or maintained as slaves;
- they could represent the presence of foreign women who have married in to the community bringing their ceramic traditions with them;
- they could suggest that the relationships between neighbouring groups were fluid and the boundaries were less firm and more porous than has previously been assumed,
- they could indicate the presence of immigrant / refugee populations

Trade Vessels?

Trace element analysis of over 600 St. Lawrence Iroquois pottery sherds from Huron sites indicated that the clay used was chemically indistinguishable to that used to make 'Huron' pots (Trigger et. al. 1980). These results strongly suggest that the pottery recognised as St. Lawrence Iroquois on Huron sites was made at those sites, and not imported - perhaps as an incidental bi-product of trade in some undetermined commodity. While no similar studies have been undertaken on the chemical constituents of the clays of Huron pots on Jefferson County sites, the large numbers of alien vessel designs on these sites would tend to suggest that they were not imports, but rather made on site in the Huron style.

Captive / Adopted Potters?

If these 'foreign' pots were locally made, they must either represent the out-put of foreign people resident in the villages, or are designs admired and replicated by the local population. James Pendergast (1993: 22) has strongly championed the former interpretation. He believed the St. Lawrence Iroquois pots on Huron sites could best be interpreted as the products of female captive/adoptees absorbed into Huron villages as a

result of condolence or 'mourning wars'. "Mourning wars' were used by Iroquoian societies as a way of maintaining stable population and harmonious community spiritual power (Ibid: 22). Dead villagers were revived by expunging the original identity of a captive and replacing it with the name, social role and duties of the deceased.

> "*Vacant positions in Iroquois families and villages were thus both literally and symbolically filled, and the continuity of Iroquois society was confirmed, while survivors were assured that the social role and spiritual strength embodied in the departed's name had not been lost*." (Pendergast 1993: 22, quoting Richter 1983).

The absence of smoking pipes - artifacts traditionally associated with men - and the presence of human skeletal fragments in village middens, has usually been interpreted as evidence that men were executed, and women (sometimes) spared. The logical flaw with this argument has been clearly pointed out by Bruce Jamieson,

> "*the presence of St. Lawrence Iroquoian pottery on Huron sites would not have been the product of captive women, whom having been spared the agonies of torture or death would hardly continue to signal their ethnic affiliations to their adoptive families.*" (Jamieson 1990: 403).

Furthermore, it is disconcerting to note that Pendergast had no difficulty viewing Huron and 'miscegenated' Huron-St. Lawrence Iroquois pottery on Jefferson County St. Lawrence Iroquois sites as evidence of the result of neighbourly intercourse, yet St. Lawrence Iroquois pots on Huron sites bespeak warfare, capture and adoption (Pendergast 1993: 25). Perhaps recognising this discrepancy in logic, Pendergast did explain that,

> "*....it would be folly to attempt to demonstrate that each and every encounter between these people was hostile. It would be fallacious to suggest that the endemic Iroquoian hostility so widely indicated by the archaeological data was continuously pitched at the highest intensity without quiescent periods during which something less than peak animosity prevailed*." (Pendergast 1993: 24).

One might expect a greater percentage of what Pendergast has called 'miscegenated' wares if local potters were simply replicating pottery forms they admired. However, there is little in the archaeological literature to suggest that such a blending of elements was common. Whoever was making the vessels not only understood all the artistic 'rules' regarding the manufacture of the distinctive vessels, but felt empowered to use them. This is in contrast to Five Nations sites where blending of elements appears to have been more common (Bradley 1987: 87).

Exogamy?

Exogamy - marriage outside the tribe or group, as a way of cementing social and economic relations - has often been used as a way of explaining foreign pottery on pre-contact Iroquoian sites (Ramsden 1990: 380). It seems plausible that under these circumstances a new community resident would feel comfortable to produce ceramic vessels in her customary style without constraint. However, given the large numbers of foreign vessels encountered on some sites such as Swathout and St. Lawrence (Pendergast 1985) in the period before the disappearance of the St. Lawrence Iroquois from Jefferson County, either a very large number of Huron brides had been acquired, or some other explanation must be sought.

Fluid Boundaries

The archaeological evidence from Jefferson County St. Lawrence Iroquois sites suggests that prior to their abandonment of the eastern end of Lake Ontario, these people were on comfortable terms with their Ontario neighbours. The St. Lawrence site, estimated to be one of the latest sites in the Jefferson County sequence (Tim Abel, Personal Communication) has a high percentage of Huron style pottery (29%). It is difficult to imagine that such large percentages of foreign pottery could be accounted for through the mechanisms of captive/adoption or trade. It seems far more plausible that in the decades prior to the abandonment of Jefferson County, significant numbers of Huron were living among them in their villages. Contrary to what Pendergast proposed, I would suggest that the presence of foreign pottery on these sites bespeaks a bi-directional comfort level within which social discourse, trade, bride exchange and even co-residency was occurring.

Although the Arbor Ridge site sample did not contain much evidence to suggest direct interaction with the St. Lawrence Iroquois, some elements of the site setting provide clues to their perceptions of their neighbours. While many 15th and 16th century Iroquoian settlements were clearly situated for defence and were encircled by multiple palisades, there was no evidence of such concerns at Arbor Ridge. The site is located on the east facing side of a valley, a mere handful of miles from areas intensively occupied by St. Lawrence Iroquois of Jefferson County. The site setting offers little defensive advantage. Because of the presence of at least one large longhouse close to the valley edge, the settlement would have been visible from a considerable distance. While the slope below the site could be interpreted as offering some slight defensive advantage, it is not sufficiently steep to significantly impede an attack. To the rear and side, the site is surrounded by flat clay plain lands with no advantageous topographical features. No evidence of a palisade was recovered during the excavations.

The presence of numerous pottery vessels, smoking pipes, hunting equipment and children's pots suggests that the community consisted of people of all ages and genders. There is nothing to suggest that the settlement was a militaristic frontier camp, indeed, from the faunal remains one is left with the impression of a small community, the main focus of which was the harvest of the abundant fish, birds reptiles and small mammals of the extensive Little Cataraqui River wetlands.

Immigrants / Refugees?

St. Lawrence Iroquois pottery accounts for between 1.5% and 8.2% of the ceramics at the Coulter site (Damkjar 1990:50), and about 1.5% at the Kirche site (Ramsden 1989). Both sites are located in the Trent River valley, approximately half way between Prince Edward County and the historic Huron homeland in Simcoe County. Coulter is dated to about A.D. 1550 while Kirche is estimated to date between A.D. 1500 and A.D. 1550. They are considered part of a general pattern of migration into the area by former occupants of the north shore of Lake Ontario (Damkjar 1990: 49). The Coulter site is of particular importance since careful excavation revealed a pattern of village expansion consisting of five phases (Damkjar 1990: 36). Significantly, the percentages of St. Lawrence Iroquoian pottery increased within each successive expansion area, strongly suggesting that the expansions were being created, at least in part, to accommodate an influx of outsiders.

The same pattern of expansion has been noted on the large Draper village north of Toronto (Finlayson 1985)(Figure 25).

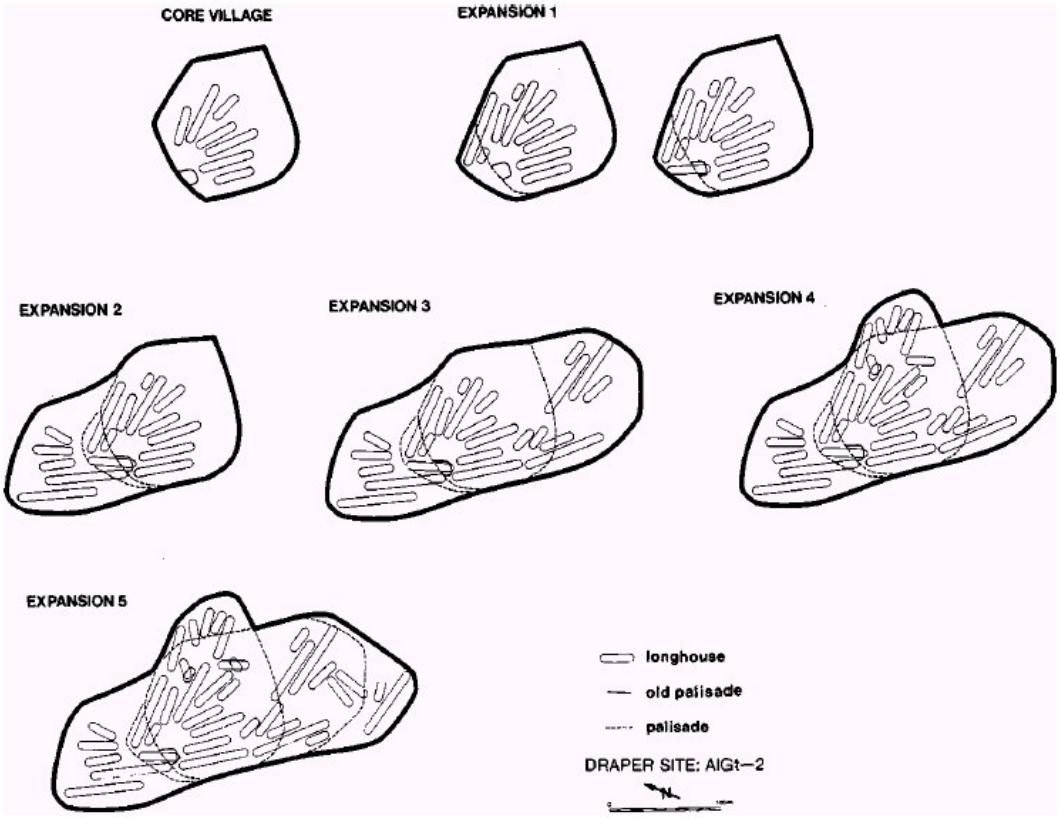


Figure 25: Expansions of the Draper Site, near Toronto While the main impetus for expansion was probably population increase through natural cause, part of the expansion may have been to accommodate immigrant St. Lawrence Iroquois (source: Warrick 2000, Figure 13).

It is hard to reconcile these massive village reconstructions with the capture and adoption of St. Lawrence Iroquois women. Such large scale efforts seem much more understandable in the context of the absorption of immigrant/refugee populations.

Population movements

Three factors provide some evidence for understanding population movements at the eastern end of Lake Ontario during the sixteenth century. Firstly, significant quantities of Huron pottery on St. Lawrence Iroquois sites suggest that relations between the two groups were largely cordial. Secondly, increasingly large quantities of St. Lawrence Iroquois pottery are found on Ontario Huron sites dating from the late sixteenth and early seventeenth century. Thirdly, relatively small quantities of St. Lawrence Iroquois pottery found on Five Nations Iroquois sites to the south and east of Lake Ontario. Bradley (1987: 87) has argued that St. Lawrence Iroquois pottery traits on Onondaga sites are,

> *".....fragmented, less cohesive, and more hybridized with dominant Onondaga cultural traits. This suggest that the Jefferson County Iroquois absorbed by the Onondaga came in smaller, less organized groups than those assimilated by the Huron."* (Ibid.).

Bradley furthermore speculated that the ceramic evidence on Onondaga sites indicates that a different mechanism for the adoption/absorption of St. Lawrence Iroquois into the Onondaga settlements was at work (Ibid.). It is tempting to speculate that this was because the St. Lawrence Iroquois were in the Onondaga settlements as captives, prisoners-of-war, or 'condolence adoptees' (Richter 1983), but at this stage, the archaeological data doesn't provide that level of clarity. Suffice it to say that the patterns so noticeable between the Jefferson County St. Lawrence Iroquois and the Huron are not in evidence on Five Nations sites.

Figures 26 and 27 illustrate the relationships between sites on either side of the St. Lawrence River. Internal relations between the various clusters have not been plotted as the picture would become too confusing. The attribute coefficients of similarity clearly demonstrate that some degree of correlation existed between sites in Ontario and those in New York State. This is particularly true when a correspondence of 150 or greater is used. However, if a figure of 160 is used, the basic patterns still remain, albeit markedly reduced.

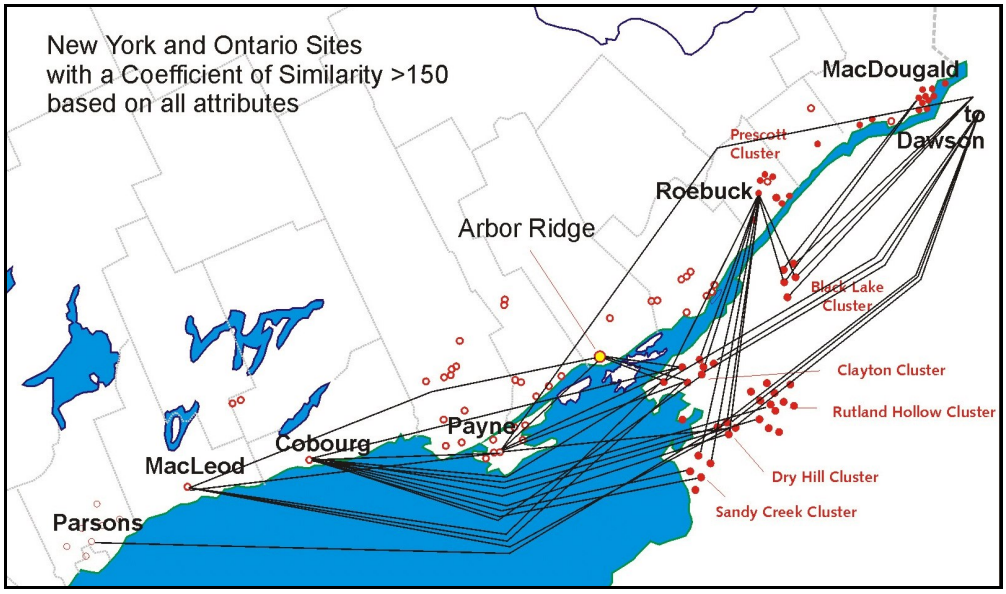


Figure 26: Connections between New York State and Ontario sites based on attribute coefficients of similarity > 150

That correlations exist is not surprising given the relative geographical proximity of the two areas. What is intriguing, however, is that in many instances the similarity between geographically distant sites exceeds that of sites separated from one another by a few kilometres. Furthermore, relative temporal similarities do not appear to be an overriding factor. Chronologically similar sites which are distant to one another may have a high, or a less impressive degree of correlation. Perhaps most significantly, the connections

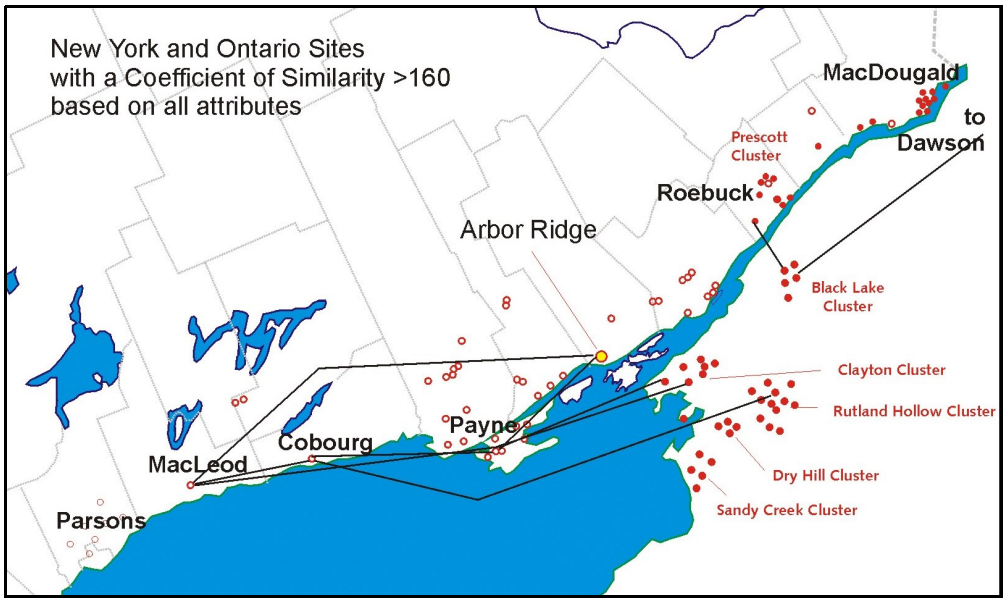


Figure 27: Connections between New York State and Ontario Iroquoian sites based on attribute coefficients of similarity >160.

between the Jefferson County sites and the sites in the Prescott Cluster, while noticeable at the >150 level, disappear at the >160 level while the eastern connections remain. The following paragraphs briefly discuss observations which can be drawn from the attribute data (Appendix 2).

Black Lake Cluster

It has been suggested that people from the Black Lake Cluster moved north across the St. Lawrence river to establish the Prescott Cluster in Ontario (Abel and Furst 1999: 36, Abel 2001: 173). As Abel (Ibid.) has previously noted, the attribute data suggests that the Black Lake cluster has clear affinities with sites in the Prescott Cluster, as well as with St. Lawrence Iroquois sites downstream in the Montreal area. Furthermore, sites in the Black Creek cluster have little or no connection with any of the Ontario sites lying to the west of the Frontenac Axis.

> *Hypothesis* 1: The people from sites of the Black Lake cluster migrated across the St. Lawrence River to form, or converge with the people of the Prescott Cluster (Roebuck Site). Some people may have moved further downstream to the vicinity of Montreal.

Rutland Hollow Cluster

Sites within the Rutland Hollow Cluster have a strong correlation with sites along the north shore of Lake Ontario. In particular Durham, Putnam and Drum all have a relationship with the southern division Huron, Cobourg site that is comparable in strength to that which exists between Rutland Hollow sites and some other St. Lawrence Iroquois sites in Jefferson County. Correlations with sites in the Prescott area and lower down the St. Lawrence River exist at a lower level and do not appear to be significant.

> *Hypothesis* 2: By the mid fifteenth century people from Rutland Hollow had close connections with people in the central Lake Ontario region. There is no significant connection with the Prescott Cluster.

Dry Hill Cluster

The attribute coefficients of similarity for Dry Hill Cluster of sites indicates that sites in this group had connections with sites on the south central Lake Ontario shore, in the Prescott area and near Montreal. The connectedness between the Dry Hill sites and these areas is approximately equal. Lower levels of connectedness were evident with Arbor Ridge and Payne although according to Abel (2001: 119) the Dry Hill sites span the late fifteenth century and are thus roughly contemporary. No current hypothesis.

Sandy Creek Cluster

People of the Sandy Creek cluster were also closely connected to inhabitants of sites on the central Lake Ontario shore. Sandy Creek people also share ceramic similarities with the Roebuck site in the Prescott cluster. Abel (2001: 119) suggests that the earliest Sandy Creek sites date to the mid 14th century, with the latest being occupied in the mid fifteenth century. As with the Dry Hill Cluster, there is a relatively low correlation with Arbor Ridge, even though it was probably occupied at the time of the latest sites in the cluster. Some of the highest internal relationships are present between sites of this cluster and those of the Dry Hill Cluster. The highest correlations of all the sites examined lay between Durfee and Heath, and Durfee and Morse, strongly suggesting that some at least of the people of the Sandy Creek cluster moved into the Dry Hills area to establish new settlements.

> *Hypothesis* 3: The Sandy Creek, Durfee site people moved in to the Dry Hills area and established villages in that area, perhaps as a contraction away from Five Nations settlements to the south west. No connection with Arbor Ridge is evident.

Clayton Cluster

There seems little doubt that, despite the almost total absence of typologically St. Lawrence Iroquois ceramics at Arbor Ridge, that a connection existed between that site and the neighbouring sites in the Clayton Cluster. Matteson, St. Lawrence and Mud Creek all display a close relationship with Arbor Ridge. Similarly strong links with the Payne site are also indicated. That these levels of similarity are at least as strong as some of the internal connections within Jefferson County suggests that a special relationship existed between these sites, perhaps including co-residency and the sharing or at least considerable overlap of ceramic traditions.

Abel (2001: 175) has argued that the Clayton Cluster's degree of ceramic similarity with Payne suggests that cultural convergence and growing allegiance was occurring during the late 15th century between the two groups. Evidence from Arbor Ridge indicates that this convergence was developing during the mid-fifteenth century. Lower levels of similarity with such sites as Roebuck, MacDougald and Dawson suggest that by the late 15th century little contact or involvement with people in the down-river areas was occurring.

> *Hypothesis*: The Clayton Cluster people were fully involved with Huron people living between Prince Edward County and the eastern end of Lake Ontario. It is likely that this 'comfort level' induced some Clayton Cluster people to migrate west during the sixteenth century to avoid conflict with Five Nations people to the southwest.

Arbor Ridge

On the basis of typology alone, the ceramics from the Arbor Ridge site would be considered late Middleport / early Huron by most Iroquoianists. As such, its position close to the Jefferson County homeland of the St. Lawrence Iroquois could lead one to assume it was a 'frontier' settlement, perhaps in the vanguard of Huron expansion into foreign territory.

Data from comparative attribute analysis, and from the organisation and setting of the site itself appear to argue against this interpretation. The ceramic closeness with the Clayton Cluster sites suggests that the Arbor Ridge people were not only aware of the proximity of their neighbours, but frequently in direct and comfortable contact with them. Indeed, (overlooking for now the paucity of typologically St. Lawrence Iroquois traits at Arbor Ridge) the degree of similarity between the sites could lead one to the conclusion that the Arbor Ridge site could be considered part of the Clayton Cluster.

At present Arbor Ridge is the only known 15th century Huron hamlet/village east of Prince Edward County, although a few small fishing stations are known. It is unlikely that it is unique. Other villages may be present in the area, yet have so far not been detected. This is not as unlikely as it sounds. Much of the former cultivated land in the region has now reverted to scrub brush and pasture, thus even quite large village sites would not be detectable as surface distributions of artifacts. Clearly, as additional evidence (if such exists) is located, the whole picture of late pre-contact occupation in the eastern Lake Ontario region may change. For now, however, the available information appears to support the following observations:

- The Arbor Ridge site was closely connected to the Clayton Cluster of St. Lawrence Iroquois sites,
- The connectedness between eastern Huron sites and Clayton Cluster St. Lawrence Iroquois sites increased during the late 15th and early 16th centuries,
- Arbor Ridge, Payne and the sites of the Clayton Cluster have more in common with each other, than any of them have with Roebuck and other eastern St. Lawrence Iroquois sites.

Hypothesis 5: The Arbor Ridge site is but the first identified of a series of sequentially occupied settlements on the Ontario side of the eastern end of Lake Ontario. These settlements grew up in partnership with the people of the Clayton Cluster. By the mid sixteenth century all the people inhabiting this part of eastern Ontario and adjacent parts of New York State had gradually migrated west to converge with the Huron of the Trent Valley region. These movements were part of a widespread trend towards convergence and coalescence, and were neither precipitous nor rapid.

Conclusions

The examination of pottery characteristics from a broad suite of roughly contemporaneous archaeological sites in southeastern Ontario and adjacent parts of New York State provides a means to examine similarities and differences between sites, free from intuition and preconception. While typological studies, particularly as applied to Iroquoian research, tend to force an ethnic identity on to the material under examination, attribute analysis allows for a less biassed and less subjective appraisal of the material.

During the analysis of the Arbor Ridge pottery it is has become clear that a higher degree of connectedness existed between eastern Huron and western St. Lawrence Iroquois sites than was hitherto recognised. While the presence of Huron materials on Jefferson County St. Lawrence Iroquois sites (and vice versa) had been noted in the past, bespeaking some degree of contact, the true nature of those connections has not been elucidated. Attribute data, looking beyond the gross typological characteristics of collar decoration and form, provides a way to see the full extent of the shared characteristics these people expressed in the pottery.

Developing a clear picture of population movement in the eastern Lake Ontario area during the fifteenth and sixteenth centuries would require that more than pottery was evaluated. However, even such a limited examination of the pottery as this provides a good indication of some of the major social connections within the region from which population movements can be extrapolated.

Some degree of correlation between Arbor Ridge and the Jefferson County sites had been anticipated, given their geographical proximity. What was unexpected was the degree of correlation, not only with relatively close sites such as Arbor Ridge and Payne, but with sites up to 150 kilometres away along the shores of Lake Ontario. Furthermore, the degree of correlation with these distant sites often exceeded that noted for relatively local, yet contemporaneous St. Lawrence Iroquois sites. These results suggest that the most prominent visual characteristics of a vessel may not be the most valuable way to categorise it. The subtle combinations of form, decoration and application as expressed by attribute analysis provide firmer ground for comparison.

On the basis of the ceramic evidence, it seems plausible, even likely, that Jefferson County, Clayton Cluster people migrated into Ontario during the sixteenth century. This can be viewed as a logical extension of a pre-existing relationship. The picture for other Jefferson County people is less clear - although it seems likely that at least some people from the Rutland Hollow area may have been extending their relationships to the west while maintaining their relationships with people further down the St. Lawrence River. People from the Black Lake cluster of sites appear to have had little in common with their western neighbours on either side of the river. When they abandoned the area in the mid fifteenth century, some may have migrated to the Prescott area while others ventured further downstream.

The 15th and 16th trend for Iroquoian people to aggregate into large villages and more geographically circumscribed territories was a phenomenon which occurred throughout the lower Great Lakes. At the east end of Lake Ontario, the Neutral became consolidated into a cluster or large villages by the early seventeenth century, having largely abandoned their extensive former territories in southwestern Ontario. The Five Nations had also undergone a process of village consolidation and expansion although this had occurred within the context of the existing tribal territories. The confederacy they formed did not markedly affect their geographical distribution, but drew them much closer politically. By the early seventeenth century, the Huron and Petun had became focussed on lands between Lake Simcoe and Georgian Bay, and near the Niagara peninsula. Over a period of more than one hundred years, the individual tribes that comprised the Huron confederacy gradually withdrew from the north shore of Lake Ontario and the Trent Valley. In this light, the abandonment of the eastern end of Lake Ontario area can be understood as but one facet of a much larger trend - something that had been in progress for a long time.

Neal Ferris (1999: 48), has suggested, archaeology has as much to do with '*Telling tales*' as with revealing '*the way it was*'. In the past, the main story about the people who lived at the eastern end of Lake Ontario during the Late Pre-Contact period was one of danger, hostility, warfare, torture and capture.

The analysis of the pottery from Arbor Ridge and its neighbouring sites, suggests a different plot line.

In this new story, two culturally related, but distinct peoples lived side by side in relative harmony, trading, sharing a broad territory and living in one another's villages. As their southern neighbours - the Five Nations - consolidated their power and established a political union along the south shore of Lake Ontario, they began to feel vulnerable. A few villages from the eastern end of the region distanced themselves from the threat by moving their villages across the St. Lawrence River, or joined their relatives further down- stream. The majority however, chose to gradually move west to join with their Huron allies to the north of Lake Ontario and in the Trent River valley.

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Age	Prince Edward	Clayton	Sandy Creek	Dry Hill	Rutland Hollow	Black Lake	Prescott	Cornwall	Montreal	Kingston	Western Area
AD. 1550											
							McIvor by 1550	Glenbrook (Pendergast 1981)	Dawson		
	Hendry-Miller								Manderville		
		St. Lawrence		Jared Freeman							Parsons 1520-1550
A.D. 1500	Lite 1470-1500						McKeown (Stewart 1992) Crystal Rock	Sugarbush			
	Allisonville Waupoos 1470-1500	Mud Creek		Morse				Summerstown Station			Gibbs
	Payne 1460-90	Matteson		Talcott Falls			Stewart				
		Depeaville		Heath			Beckstead				Cobourg MacLeod Bark
A.D. 1450		Chaumont		Whitford	Durham		Roebuck	Salem Grays Creek			
			Durfee		Burrville					**Arbor Ridge**	
		Wetterhahn	Noble		Stewart	Washburn					
	Hillier 1420-1450		Benton-Pitcher		Sandford's Corners	Pine Hill					
			Potocki		Camp Drum	Devendorf					
A.D. 1400			Ellisburg			Houghton					Wilson
					Aaron Poor						
									Lanoraie		
A.D. 1350			Eastman		Putnam			Berry			

Sources: Abel 2000: 171; Pendergast 1972, 1975, 1993; Chapdelaine 1989; Jamieson 1990; Clermont et, al. 1983; Sutton 1990; Reed 1993 & Pers. Comm; Jackson 2001 nd. & Pers. Comm.

Appendix 1: Relative ch

	Wetterhahn	Depauville	Chaumont	Matteson	Mud Creek	St. Lawrence	Talcott Falls	Morse	Heath	Carlos	Whitford	Freeman	Nohle	Potocki	Durfee	Drum	Putnam	Durham	Devendorph	Pine Hill	Washburn	Payne	Roebuck	MacLeod (Reed 1993)	Cobourg Site (Reed 1993)	MacDougald (Pendergast 1969)	Dawson (Pendergast 1972)	Arbor Ridge
Wetterhahn		154	180	172	174	173	176	176	179	174	178	165	169	166	180	159	163	167	128	139	149	147	148	140	150	136	127	146	140
Depauville			151	152	155	165	143	146	152	150	145	138	139	139	154	124	133	136	118	125	134	137	151	129	131	123	146	152	139
Chaumont				170	177	175	171	172	175	171	171	168	169	171	180	156	164	164	135	141	154	143	150	139	149	145	140	152	144
Matteson					181	182	163	164	165	169	166	167	153	155	170	139	147	150	122	126	138	170	145	155	154	128	130	149	156
Mud Creek						181	162	167	171	171	165	163	159	159	173	144	151	154	127	136	147	161	150	152	155	136	139	152	152
St. Lawrence							162	162	166	171	168	168	152	156	168	139	148	150	125	131	146	164	148	138	150	161	137	149	158
Talcott Falls								185	182	172	178	165	172	178	179	157	168	172	130	145	153	141	156	140	160	130	134	158	132
Morse									182	179	175	162	176	179	183	162	167	177	129	142	151	141	154	145	159	137	122	141	137
Heath										180	174	158	174	174	190	158	168	170	133	147	152	143	156	135	155	140	124	151	136
Carlos											164	162	166	170	183	154	161	166	130	140	147	149	149	139	139	150	122	138	144
Whitford												173	164	168	174	149	159	163	119	134	142	145	146	152	162	143	118	154	140
Freeman													149	155	161	136	146	147	117	128	138	153	136	140	152	132	144	160	134
Nohle														182	175	175	178	187	146	155	155	129	149	137	154	114	118	137	122
Potocki															175	168	169	181	138	147	150	128	149	131	149	125	116	136	129
Durfee																160	168	172	135	147	152	144	158	139	153	133	128	144	140
Drum																	180	181	155	162	150	121	129	115	152	118	117	128	116
Putnam																		179	154	165	161	128	143	123	156	130	128	144	124
Durham																			143	155	153	129	143	129	160	127	113	128	128
Devendorph																				172	161	115	144	97	140	131	153	152	108
Pine Hill																					172	119	152	97	144	132	141	154	111
Washburn																						123	173	112	140	137	154	160	120
Payne																							117	165	163	160	132	152	162
Roebuck																								132	136	131	149	160	103
MacLeod (Reed 1993)																									173	124	107	123	166
Cobourg Site (Reed 1993)																										126	125	143	136
MacDougald (Pendergast 1969)																											148	134	133
Dawson (Pendergast 1972)																												115	121
Arbor Ridge																													200

Appendix 2: Coefficients

	Arbor Ridge	Glenbrook	Waupoos	Grays Creek	Lite	Wilson	Parsons (ASI)	Parsons (Emerson)	Payne	Salem	Gibbs	Draper	Doncaster	Dawson	Black Creek	Crystal Rock	Beckstead 77	Beckstead 66	Woodbridge
Arbor Ridge	200																		
Glenbrook	16																		
Waupoos	74	67																	
Grays Creek	10	87	58																
Lite	64	34	112	44															
Wilson	69	105	97	37	119														
Parsons (ASI)	67	31	117	39	101	84													
Parsons (Emerson)	74	32	105	25	82	86	126												
Payne	84	19	117	30	103	112	129	143											
Salem	8	126	40	127	32	8	24	29	14										
Gibbs	75	6	65	25	53	108	52	59	69	1									
Draper	68	23	122	33	132	93	119	91	108	16	58								
Doncaster	79	22	85	18	105	109	81	77	100	10	48	124							
Dawson	37	103	55	75	46	31	49	60	28	112	33	36	41						
Black Creek	64	24	115	41	151	116	114	92	116	15	62	131	115	33					
Crystal Rock	37	57	66	54	49	46	35	51	47	86	43	32	36	63	63				
Beckstead 77	21	114	31	71	23	10	24	30	6	109	15	13	12	108	14	83			
Beckstead 66	11	126	31	94	28	9	25	31	13	139	2	19	12	16	16	85	142		
Woodbridge	39	28	77	34	96	46	83	77	71	18	20	80	40	47	99	29	19	21	

Appendix 3: Coefficients of similarity - cerami