A REGIONAL PRE-CONTACT CERAMIC SEQUENCE FOR THE SAINT JOHN RIVER VALLEY

by

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Dedication

I dedicate this thesis to the memory of
Richard E. LeBlanc.

ABSTRACT

In keeping with the Petersen and Sanger pre-contact ceramic sequence for the Maine/Maritimes area, this research presents a regional ceramic sequence for the Saint John River Valley of southwestern New Brunswick, an area traditionally inhabited by the Maliseet. The sequence is based on the analysis and seriation of ceramic assemblages from fourteen sites along the Saint John River. Fourteen radiocarbon dated associations from five sites provided the temporal foundation for the reconstruction of the sequence. The primary objective of the analysis is to determine whether the sequence has discernable temporal attribute trends. Comparisons with ceramic sequences from adjacent regions indicate inter-group relations within the broader Maine/Maritimes area prior to European contact.

The secondary objective of this research focuses on the cultural dichotomy documented in early historical accounts between the Maliseet people of the Saint John River basin and the Mi'kmaq people inhabiting eastern New Brunswick and Nova Scotia. By examining spatial variations in ceramic manufacture and design motifs in the Maine/Maritimes area, the study shows that it is possible to trace interaction patterns that project this cultural distinction back in time into the Pre-contact Period.

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Chapter 1

Introduction

> "Of all the Indian routes of travel in what is now the Province of New Brunswick, the most important by far was the River St. John" (Ganong 1899:239).

Primary Objective

The pre-contact ceramic sequence established by James B. Petersen and David Sanger for the Maine/Maritimes area sparked new interest in Pre-contact ceramic analysis as well as opening up new avenues of ceramic research. The focus and scope of Petersen and Sanger's research encompasses a broad portion of the Northeast through a time span of nearly 3000 years. The resulting model is preliminary and tentative, meant in part to encourage further research at a more localized scale to supplement the existing body of knowledge (Petersen and Sanger 1991).

The purpose of this thesis is the construction of a regional ceramic sequence based on assemblages from sites in the Saint John River Basin (Figure 1), an area traditionally associated with the Maliseet (Wolastoqiyik). This research follows the analytical format of the Petersen and Sanger model and is intended to enhance the understanding of ceramic production and social interaction within the Maine/Maritimes area. The majority of primary data for this study originates from the analysis and seriation of 122 ceramic vessels from 14 sites located along the Saint John River between Edmunston in the north and Saint John in the south. The chronology of the sequence is based on 14 indirectly and directly associated radiocarbon dates from five sites, some of which were used in the broader sequence

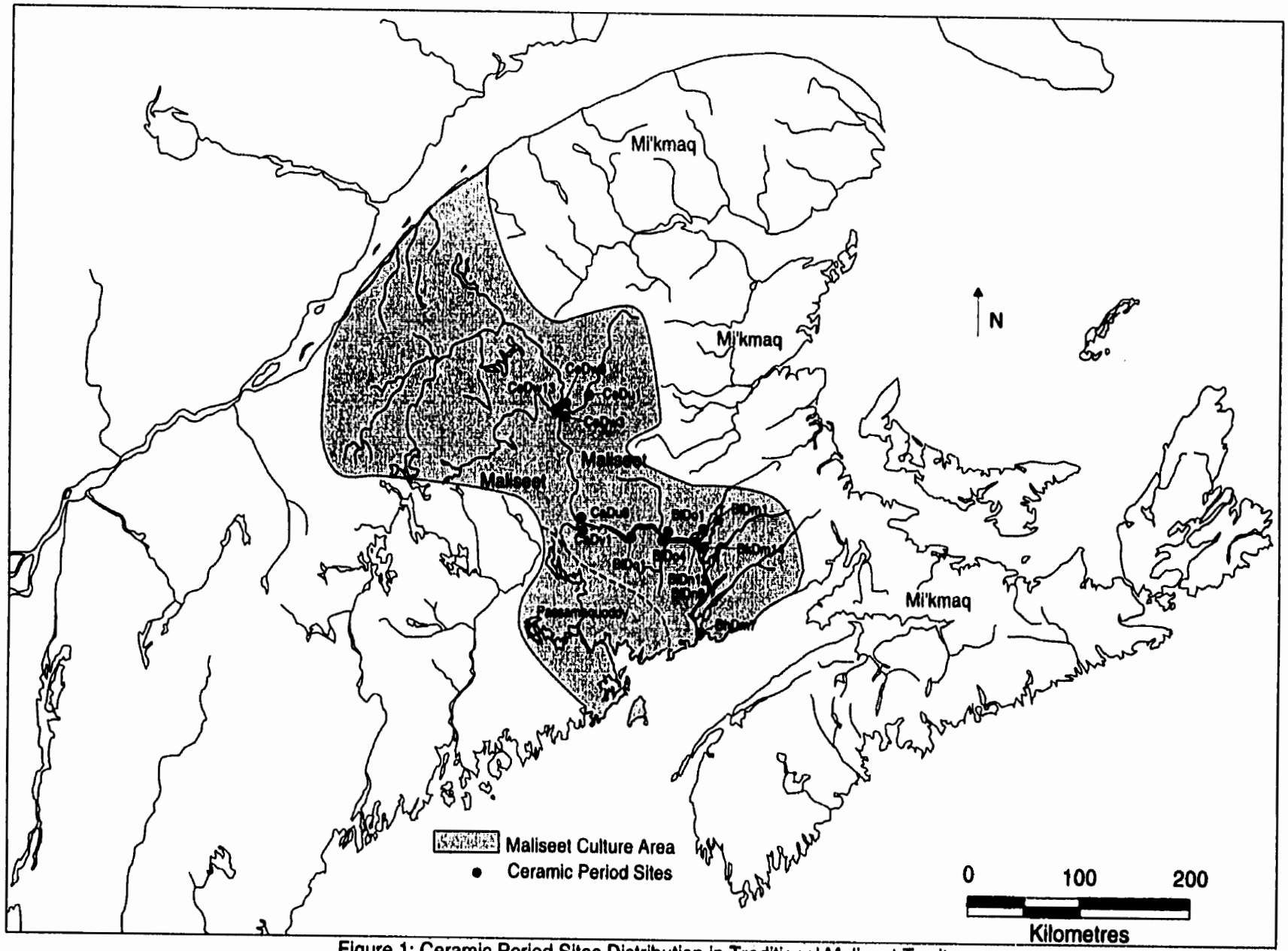


Figure 1: Ceramic Period Sites Distribution in Traditional Maliseet Territory

(Petersen and Sanger 1991:157). Since the publication of the Petersen and Sanger article, additional ceramic specimens and contextual data have been recovered in the Maritimes. These new data provide an opportunity to both test and refine the Petersen and Sanger study.

Although widespread uniformity in ceramic stylistic and technological developments seems to be the case in the Northeast, in general, regional variation is typical and can be detected when sufficient information is available. Regional ceramic sequences can, thus, provide a chronological framework which help to define cultural patterning and changes through time.

Key attributes such as decorative motifs, tool types and applications, vessel morphology and manufacture, considered either independently or in combination, provide crucial spatial and temporal information that is not available from other classes of material culture. An established regional ceramic sequence can be used as a tool for the purpose of cross-dating site assemblages or components, where radiocarbon associations are not available.

Secondary Objective

Given the cultural diversity and mobility of aboriginal groups in the post-contact period, one of the most challenging problems facing archaeology is the identification of ethnicity in pre-contact archaeological assemblages. Comparative studies focusing on regional manifestations have been undertaken with some success in the past (Finlayson 1977; Keenlyside 1978; Kristmanson 1992; MacNeish 1952; Ritchie and MacNeish

1949; Ritchie 1980; Wright 1967). In most cases, comparative studies focus on gradual changes in ceramic manufacture and decorative elements. The reliance on ceramics as sensitive indicators of cultural change is based on the notion that through detailed contextual and spatial analysis of variable attribute associations, ceramics can measure the level of interaction between specific cultural groups (Shepard 1971; Rice 1987).

A secondary objective of this thesis is to demonstrate the potential for equating regional stylistic variation in ceramics with the degree or level of interaction between pre-contact Maliseet groups of the Saint John River, and the Mi'kmaq of eastern coastal New Brunswick and Nova Scotia during the Ceramic Period. Comparison of the Saint John River sequence with established sequences from areas traditionally inhabited by Mi'kmaq groups permits the identification of attribute similarities and differences. Other ceramic sequences from regions outside the Maritime Provinces are also examined in order to evaluate potential long distance interaction patterns in the Northeast.

Archaeological and glottochronological research suggest an initial wave or expansion of early or proto-Algonquian peoples that moved eastward during the early Ceramic Period (ca. 3000-2200 BP) from a "homeland" centered on the southern Ontario-Great Lakes area (Fiedel 1990:216). The general uniformity of specific ceramic horizons identified throughout the Northeast, including the Maritimes, supports this interpretation (Petersen and Sanger 1991:125). Glottochronological studies suggest a second major eastward expansion of Algonquian speaking populations during the Middle Ceramic Period (ca. 2200-1300 BP), equated

with the Eastern/Central Algonquian language divergence (Fiedel 1990:218). These studies, in conjunction with ethnographic and archaeological information, have led researchers to suggest the possibility that populations inhabiting peripheral areas of the Northeast, for example Mi'kmaq groups, became relatively isolated from neighboring Eastern Algonquian groups after the initial expansion. Dean Snow suggests that "...the relatively deep linguistic split between the Micmac [Mi'kmaq] and other Eastern Algonquians to the southwest suggest that the Micmac [Mi'kmaq] prehistoric sequence will show significant independence from other Eastern Algonquian sequences" (1978:69).

Chapter 2

Methodology and Theory

Methodology

In order to trace the development of ceramic technology along the Saint John River, it is necessary to seriate or categorize ceramic assemblages chronologically. This analysis includes ceramic assemblages from 14 sites along the Saint John River system which are examined according to attribute correlations and radiocarbon dates. The Fulton Island site (BlDn12) with six radiocarbon dated associations and Jemseg site (BkDm14) with five, provide primary control samples for dating the sequence. The Bull Frog (BlDo4), Savage Island (BlDq1), and Cronkite (CaDu8) sites serve as secondary dated samples that support and add to the construction of the sequence with one radiocarbon determination each. The Saint John River radiocarbon dates are, however, restricted to a time range between ca. 2500 BP and 1250 BP. The undated ceramic assemblages which can be indirectly assigned to a specific part of the Ceramic Period based on stylistic comparison with the dated assemblages can only fall within this time range. Ceramic assemblages from the Saint John River that may date to the later portion of the Ceramic Period for which there are no associated dates, are inferred by comparison with the Petersen and Sanger model.

The descriptive and analytical model used in the study is based on the identification and description of individual vessel lots. Vessel lots are inferred on the basis of detailed attribute analysis. Attributes in this context

represent "...the basic analytical unit of analysis possessed by a single vessel" (Wright 1980:22). Attributes such as vessel form and thickness, decorative tool, motifs and application, temper type, and surface finish are among the more identifiable and temporally sensitive units of analysis. This type of analysis provides an accurate and representative description of ceramic assemblages necessary to measure stylistic variability both within a regional and a broader context (Keenlyside 1978; Kristmanson 1992; Petersen 1980, 1985).

The description and analysis of ceramic attributes relies on the use of standardized terminology so that the results can be compared with similar previous and future research. Attribute descriptions in this study are in accordance with recent usage in the Maine/Maritimes area (Foulkes 1981; Keenlyside 1978; Kristmanson 1992; Petersen 1980, 1985) and the terms used are defined in the Glossary of Terms (Appendix A).

A Claris File Maker Pro database was used to facilitate the management of the recorded data and identify attribute frequencies. Attributes diagnostic of specific time frames have been tabulated and included in Appendix B. These data were compared with ceramic sequences from adjacent areas in order to isolate potentially diagnostic attribute trends or variations.

Theoretical Approach

The secondary goal of this thesis is based on a long tradition of Pre-contact ceramic studies in which stylistic patterns and distinctive attribute trends are recognized as having chronological and cultural significance.

While the chronological potential of ceramics is well-recognized, cultural affiliations are more problematical. Pre-contact ceramic sequences or seriations rely greatly on the assumption that people have strong traditions and norms that will be reflected through considerable uniformity of style in their material culture (Shepard 1971:335). Cultural areas associated with specific pre-contact groups and the interaction between them are often thought to be identifiable through systematic comparison of the spatial variability in ceramic production and decoration. While gradual changes in ceramic manufacture, styles, and techniques can be measured spatially and temporally, similarities in types and styles may be interpreted in terms of cultural relationships and contemporaneity (Shepard 1971). Ceramic analysis can therefore extend beyond the use of ceramics as mere time markers for cross-dating site assemblages. The concept referred to as the "interaction hypothesis" or "social interaction theory", first developed by James Deetz (1965) and William Longacre (1968), suggests that similarities in frequencies of certain styles or design motifs among culturally distinct groups is proportional to the amount of inter-group interaction (Rice 1987:252).

There are limitations to the application of this concept. Some researchers have illustrated the pitfalls of equating material culture with cultural identities. Hetty Jo Brumbach (1975:28), when comparing Iroquoian and Algonquian ceramics, concluded that "..using ceramics alone to locate tribal boundaries is a chancy procedure despite the accepted belief that ceramics are the most sensitive indicators of time and space differences; supplementary data on other aspects of material culture and settlement-

subsistence patterns are necessary". Certain ethnographic examples also demonstrate that interaction or cultural relationships are not necessarily reflected in ceramics or other technological assemblages (Hodder 1982). Nevertheless, bearing in mind these arguments, material culture (ceramics, in particular) is "...the stuff of archaeological research and can be treated as a legitimate body of sociocultural data for the reconstruction of culture history with the explicit recognition of the tentative nature of most...resultant models" (Petersen 1980:32).

It has also been shown that style can be used as a marker of group affiliation only in situations where groups are in conflict (Hodder 1979). Conversely, it may be argued, that in some cases, variation in or distinctiveness of ceramic styles between culture groups may have been an unconscious rather than a conscious manifestation. Through detailed attribute analysis, including less visible aspects of vessel design and manufacture, it is possible to identify particular patterns or norms in ceramic manufacture and decorative elements which probably reflect discrete populations or perhaps the presence or absence of interaction between groups, in this case Maliseet and Mi'kmaq.

In the context of this research, the suggested regional ceramic sequence for the Saint John River valley traces the development of ceramic technology in order to characterize certain attributes that appear to define cultural affinities or differences with other areas of the Northeast. This study examines the onset and course of cultural dichotomy between Maliseet groups on the Saint John River and Mi'kmaq groups occupying eastern coastal New Brunswick and Nova Scotia.

Chapter 3

Natural and Cultural History of the Study Area

To supplement and contextualize the primary and secondary objectives of this thesis, this chapter describes the natural and cultural setting of the study area. The description of the physical geography of the study area illustrates the environmental setting associated with the cultural development of the Maliseet people. The cultural history of the area is based on both early historical accounts of northeastern Native groups and previous archaeological work involving pre-contact ceramic research and analysis in the Northeast.

Physical Geography of the Saint John River Basin

The Saint John River is the largest watershed located between the Gulf of Mexico and the Gulf of St. Lawrence, draining an area of approximately 55,000 km^2 (Pearce and Folster 1994). The river flows 673 km from its head waters at the southern Quebec-northwestern Maine border, down the southwestern portion of New Brunswick into the Bay of Fundy (McCalla 1988:12).

The Saint John River flows through six physiographic divisions: the Notre Dame Mountains, the Chaleurs Uplands, the New Brunswick Lowlands, and the New Brunswick, Saint Croix, and Caledonia Highlands (Saint John River Basin Board 1973; Rampton et. al. 1984). These divisions are characterized by specific topographic features, and will be further discussed in the context of the site descriptions as they apply.

The farthest reaches of tide are at the Keswick Islands some 15 km upriver from Fredericton while salt water penetrates the river only as far as Gagetown. The first 130 kilometers of this shallow tidal estuary is characterized by islands and marshlands (Foulkes 1981:8; Gillis 1974). Water levels may increase up to eight meters during major flood episodes but variations average four meters (Gillis 1974). During these episodes much of the surrounding wetlands are inundated. The Saint John's major tributaries in New Brunswick include: the Madawaska, Aroostook, Tobique, Eel, Keswick, Nashwaak, and Oromocto rivers. The series of connected bodies of water that make up the Grand Lake system also feed into the river system via the Jemseg River near the village of Gagetown.

The geography of the river is characterized by numerous ancient and contemporary valleys. The postglacial valleys of the basin have since been filled in with overburden and many of the larger existing valleys are characterized by terraces, deltas and glacial outwash plains. Silt deposits were also formed where glacial lakes had been created (Saint John River Basin Board 1973:14). The Maine portion of the Saint John River is characterized as a wilderness river "...coursing through great tracts of forest broken only by lakes, tributaries and logged areas..." (Pearce and Folster 1994). From the New Brunswick panhandle north of Grand Falls, the river bank landscape is characterized by rolling hills._

Cultural Significance of the Study Area

Historically, the Saint John River was one of the most significant transportation routes in the Northeast. With the exception of Grand Falls and

the Reversing Falls, the river is slow flowing and relatively free of rapid waters, providing excellent travel conditions. The many tributaries and lake systems not only permit easy access to other river systems in the province and neighboring regions but also provide ample subsistence potential. The junction of these major tributaries are typically characterized by low terrace flats providing ideal encampment locations for both travelers and more permanent settlers.

As with many language groups in the coastal Northeast, Pre-contact social and ethnic boundaries tend to follow natural divisions among river drainages (Snow 1978: 58). Early historical accounts refer to the Saint John River, including a portion of the southern shores of the St. Lawrence River, as Maliseet territory (Erickson 1978). Mi'kmaq groups, on the other hand, were inhabiting the eastern coast of New Brunswick, Nova Scotia and Prince Edward Island. Areas west of the St. Croix River were inhabited by Eastern Abenaki or Penobscot (Snow 1978). These groups, like other Eastern Algonquian speaking groups along the Atlantic coast as far south as North Carolina, reflect the cultural dynamism and ethnic diversity that existed during the contact period (Goddard 1978:70).

The earliest historical accounts of European contact with Native people on the Saint John River date from the early 17th century. An account written in AD 1603 by Samuel de Champlain describes a group of warriors he encountered at a French trading post at Tadoussac whom he referred to as the "Etchemins" (Champlain 1922-1936; Erickson 1978:123). Champlain used the same term to describe other Native groups along the Saint John drainage and coastal southern New Brunswick and Maine (Erickson 1978).

Later accounts refer to Saint John River groups as Maliseet (Malecite) and the Passamaquoddy for those occupying the southwestern coast of New Brunswick and southeastern Maine. In addition to the geographic preference and subsistence patterns, these two groups have similar cultural characteristics. Linguistically, they both "..speak mutually intelligible dialects of the same language" (Erickson 1978:123). Although these two groups are considered a single ethno-cultural group, for the purpose of this study, they are treated separately. Furthermore, the Maliseet-Passamaquoddy language has more in common with Eastern Abenaki (Penobscot) to the west, than the Mi'kmaq language of neighboring groups to the east and north (Black 1992:25; Goddard 1978:76; Snow 1978:69). This dichotomy is further reflected in early historical accounts of the animosity between Mi'kmaq and Maliseet groups (Black 1992:25; Snow 1978). The watersheds between the Saint John River drainage and river systems to the east are considered to be the boundary that separated these two groups during the proto-historic period and probably during the pre-contact period.

Origin and Development of Ceramics in the Northeast

The use of ceramics by Native populations in the Northeast is considered to be the most archaeologically significant technological development of the last three millennia. The earliest type of clay vessel in the Northeast is believed to originate in the Mid-Atlantic region dating to ca. 3200-3000 BP and was made to emulate the earlier, or possibly contemporaneous, steatite vessels of the Susquehanna tradition (Ayers 1972:107, Petersen and Hamilton 1984:414). Unfortunately, the contexts in

which this type of early ceramic have been found are uncertain and dates are often estimated in relative terms. These early vessels were used for cooking and storage purposes and are considered to have been developed because of "...increased sedentism, population growth, and intensified use of resources such as nuts, seeds and anadromous fish" (Custer 1987:99). It has been suggested that this change in subsistence pattern quickly diffused northward and that ceramic technology as well as certain stylistic trends also followed the same pattern (Fitting 1978:70).

The early Mid-Atlantic ceramics are believed to have been the predecessors of the earliest reliably dated ceramics in the far Northeast (ca. 3000 -2200 BP) known as "Vinette I" (Petersen and Sanger 1991:118, Ritchie 1980). This grit-tempered ceramic is undecorated, interior and exterior fabric impressed, and conoidal in form. The "Vinette I" type ceramic represents a wide ranging ceramic horizon style identified over a considerable portion of the Northeast from as far south as Pennsylvania to as far north as Ontario, Quebec and the Maritime Provinces (Petersen and Hamilton 1984: 415-416). This general uniformity in style within a wide region of the Northeast suggests a widespread interaction through trade patterns or other types of cultural relationships during the Early Ceramic Period.

The Middle Ceramic Period (ca. 2200-1200 BP) is characterized by a peak in ceramic manufacture. Special attention was given to technological proficiency and decorative elements, giving rise to several regional "styles" or "traditions" in the Northeast, such as the Laurel tradition of the Upper Great Lakes (Wright 1967), the Hopewell tradition south of the Great Lakes

(Fitting 1978), the Saugeen tradition of central Ontario (Finlayson 1977), and the Point Peninsula tradition of New York (Ritchie 1980). Although regional variability characterizes Middle Ceramic Period ceramics, "..widespread general uniformities seem to be apparent in roughly contemporaneous assemblages from sites in the wide region" (Petersen 1980: 9-10). Several types of stamping tools were used and applied in various ways to decorate the surfaces of pots, but vessel shapes, sizes and methods of manufacture remained relatively consistent. Again, much like earlier ceramic evidence, Middle Ceramic Period vessels reflect long distance interaction throughout the greater part of the Northeast.

Although some continuity in ceramic trends is apparent in areas south of the Saint Lawrence drainage during the transition from Middle to Late Ceramic Period (ca. 1200 BP), regional variability increases especially between interior and coastal sites. Variations in decorative tools and changes in manufacturing techniques distinguish the interior and coastal ceramic assemblages of this time. Cord-wrapped stick becomes the preferred decorating tool and crushed shell or other organic matter is used with, or instead of, grit for tempering in certain parts of the Northeast, especially in the Maritime Peninsula. Subsequent to the Middle-Late Ceramic Period transition, the Saint Lawrence drainage and areas to the north were distinguished by an Iroquoian cultural development that set them apart from the rest of the Northeast.

The Ceramic Period in the Northeast

Before discussing the Ceramic Period in the Maine/Maritimes area, it is essential to address a current debate in the archaeology of the area concerning the use of the term "Ceramic Period" instead of the term "Woodland tradition" (or Maritime Woodland tradition) in reference to the period between ca. 3000 BP and 500 BP (Black 1992; Bourque 1995; Leonard 1995; Sanger 1987). The term "Woodland" as a cultural complex or tradition is often equated with horticulture practicing peoples before European contact. Since there is no pre-contact archaeological evidence of horticulture in the Maritimes and adjacent areas, many researchers prefer the use of "Ceramic Period" in reference to the time frame when ceramics were manufactured (ca. 3000 - 500 BP). Counter-arguments are that some regions of the Northeast adopted ceramic technology well before others, making it difficult to pinpoint an accurate time frame. Furthermore, the fact that ceramics only represent one aspect of material culture of this period have led some researchers to dismiss the term Ceramic Period. For the purpose of this thesis, the term "Ceramic Period" is used in order to remain consistent with recent ceramic studies in the region employing the refined version of the Northeast ceramic sequence (Ceramic Period 1-7) (Petersen and Sanger 1991; Kristmanson 1992).

The beginning of the Ceramic Period is associated with proto-Algonquian peoples occupying the greater part of northeastern North America including the Mid-Atlantic region, the New England states, the Maritime Provinces and the Great Lakes area (Fitting 1978:56, Fiedel 1990:17). The uniformity of material culture associated with Early Ceramic

Period (Meadowood and Adena) sites throughout the region suggests relative stability and widespread interaction. During the transition from Early to Middle Ceramic Period this stability gave way to a new dynamic manifestation which has been referred to as the Hopewellian interaction sphere (Fitting 1978:45). Although this manifestation developed and was centered mostly south of the Great Lakes in the Ohio Valley, evidence of contemporary and related "complexes" (Point Peninsula, Laurel, Saugeen, etc.) can be observed over a wider region and to a greater degree than during the preceding Early Ceramic Period cultural development (Fitting 1978, Petersen and Sanger 1991).

Linguistic evidence suggests that during the Middle Ceramic Period, regional cultural developments resulted in a linguistic split from a common Proto-Algonquian language group into Western and Eastern Algonquian groups (Fiedel 1990). Subsequent Algonquian expansions or population movements have also been suggested during the course of Middle and Late Ceramic Periods, which eventually resulted in the regional tribal divisions of the contact period (Snow 1978, Fiedel 1990). These tribal divisions were often delineated by major river systems.

The Petersen and Sanger Model

The broad distribution of ceramics across the Northeast during the period between ca. 3050-500 BP has led researchers to designate the material culture of this era into various Ceramic Periods (Petersen and Sanger 1991; Ritchie and MacNeish 1949). In 1991, James B. Petersen and David Sanger presented a chronological model of the Ceramic Period (3050

BP-200 BP) for Maine and the Maritime Provinces based on dated ceramic assemblages from throughout the region, including seven dated contexts from the Saint John River Valley. Through detailed and systematic analysis, the traditional three-part Ceramic Period (Early, Middle and Late) was refined into a more precise seven-part sequence (Ceramic Periods 1-7) to more accurately reflect the technological development of ceramics in the Northeast. This model was also intended to stimulate further research on a smaller, intra-regional level. The following discussion summarizes the seven-part sequence including diagnostic attributes associated with each period as described by Petersen and Sanger (1991).

Ceramic Period 1 (CP 1)

Ceramics of CP 1 date between ca. 3050-2150 BP and represent the earliest form of pottery in the Northeast. Fabric-paddled exterior and interior are the characteristic form of surface finish. Some examples may display partial smoothing. Rims are simple (parallel) with rounded lips. Grit is the sole form of tempering.

Ceramic Period 2 (CP 2)

CP 2 vessels date between ca. 2150-1650 BP and are usually either simple or rocker stamped with a pseudo-scallop shell or dentate tool applied to exterior surfaces. Vessel lips and bodies are thin and smoothed. Incising and punctates of various forms with a pointed or rounded stylus are typical secondary motifs. The presence of castellated rims is also characteristic of CP 2 ceramics in certain areas of the Northeast, especially the Maritime Provinces. Grit remains the sole form of tempering.

Ceramic Period 3 (CP 3)

Ceramics dating between ca. 1650 and 1350 BP are designated CP 3. Vessel rims and walls are generally thicker with a greater emphasis on simple- and rocker-dentate stamps as a decoration. Pseudo-scallop shell decoration decreases in frequency and eventually disappears. Various forms of punctate decoration continue to be used during this period. Grit temper remains characteristic.

Ceramic Period 4 (CP 4)

Rocker-dentate stamping disappears during the CP 4 period (ca. 1350-950 BP) with simple-dentate stamping also decreasing by the end. Cord-wrapped stick makes its first appearance and becomes the dominant form of decoration. Cylindrical punctates become more systematically placed below the rim where most of the design motifs are concentrated. The remaining surface of the vessel body is left undecorated with smooth or fabric-paddled exterior finish. Grit temper is still characteristic although later CP 4 vessels sometimes show the introduction of shell and organic temper.

Ceramic Period 5 (CP 5)

Cord-wrapped stick impressions combined with circular punctates remain the dominant form of decoration during the CP 5 period (ca. 950-650 BP). The impressions or stamps are typically applied vertically. Organic temper becomes more common with the beginning of CP 5. Vessels become more globular in shape towards the end of CP 5.

Ceramic Period 6 (CP 6)

Cord-wrapped stick stamping continues throughout the CP 6 period (ca. 650-400 BP) with less emphasis on circular punctates. Typically there is

an increase in fabric-paddling on exterior surfaces. Vessel walls become thinner and globular vessel forms replace the conoidal forms. The use of extrusive collars become popular in certain areas of the Northeast, possibly suggesting Iroquoian influence. Incision and simple stamped dentate decoration are also characteristic of this period.

Ceramic Period 7 (CP 7)

Grit becomes the more common temper again during CP 7 (ca. 400-200 BP) and vessel walls remain thin. Fabric-paddled exteriors become the favoured surface finish with incision and/or cord-wrapped stick decoration and smoothed interiors. Some vessels also display collared rims.

Since this sequence is based on one aspect of material culture and is representative of a large geographic area, the authors stressed that these periods are not meant to be equated with cultural phases. The sequence is meant rather as a model to be continually tested with accumulating ceramic and other cultural information (Petersen and Sanger 1991:114). The body of new ceramic data that has become available from the Saint John River Valley since Petersen and Sanger's research provides an opportunity to test and refine the model at a more local level.

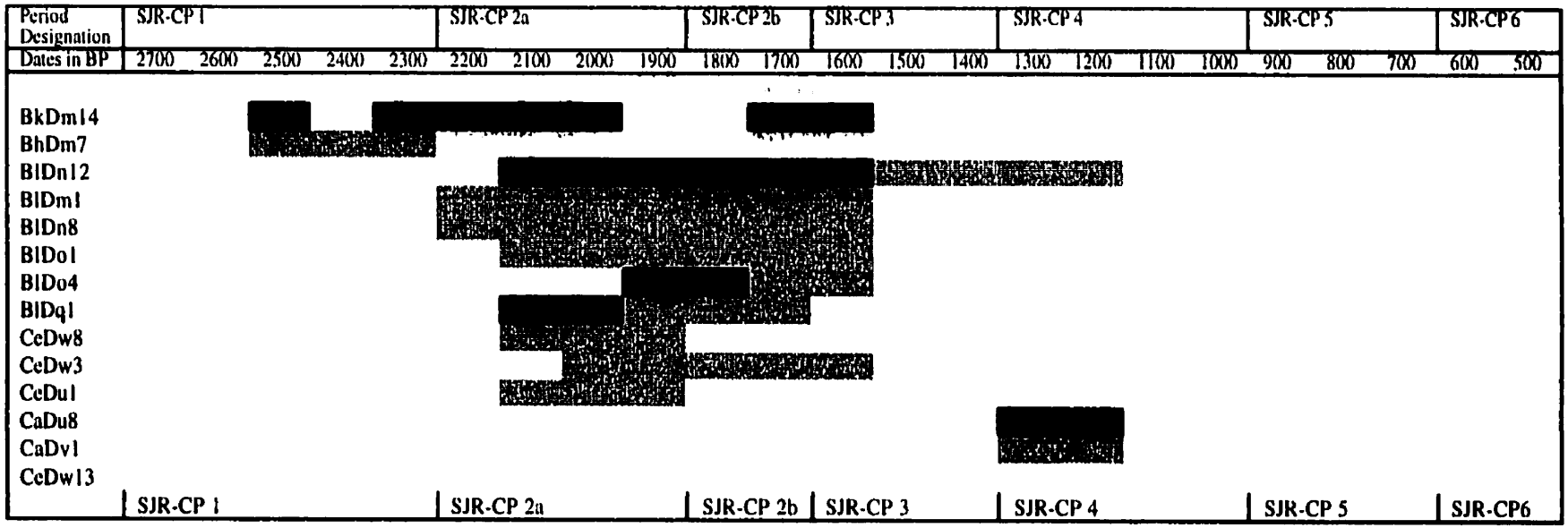
Chapter 4

Saint John River Ceramic Period Sites

This chapter describes fourteen Ceramic Period sites located on the Saint John River system (Figure 1). The sites are organized into groups according to specific sub-regions within the major physiographic divisions of New Brunswick. A general description of the ceramic assemblages from each site is given along with any relevant temporal associations such as radiocarbon dates or diagnostic artifacts. However, site information is limited to the available published and archival reports. Since only five of the fourteen sites were excavated on a large scale, little can be said about seasonality and/or site function for the remaining sites on the river.

Except for the ceramics from Meductic Flats, Cronkite, Murray, and a portion the Bull Frog site, all assemblages are part of the Archaeological Services of New Brunswick collections in Fredericton. The Meductic Flats and Cronkite site ceramic collections were borrowed from the Canadian Museum of Civilization in Hull, Quebec. The Murray collection and a vessel from Bull Frog site are in the hands of private collectors.

Of the fourteen ceramic assemblages chosen for this study, five have one or more associated radiocarbon dates, three of which were used in the construction of the Petersen and Sanger model (Fulton Island, Bullfrog and Meductic). The remaining ten assemblages are incorporated into the sequence through relative or cross-dating methods (Table 1). Of these ten site assemblages, five are inferred to be contemporaneous with the dated assemblages in the study region. The last five assemblages are compared



Absolute Dates

Relative Dates (Comparisons within study area)

Relative Dates (Comparisons outside study area)

Table 1: Saint John River Ceramic Period Sites Chronology

to samples from sites outside the study area both within the province and in adjacent areas in Maine and Nova Scotia. The comparative sample will be described in more detail in Chapter 6.

Site Characteristics and Assemblage Descriptions

Lower Saint John River

Portland Point site (BhDm7)

Portland Point is located at the mouth of the Saint John River on a point of land overlooking the harbor. The site has a long history of repeated occupation from 4000 years ago until the recent historic period. Unfortunately the only archaeological study of the prehistoric components was J. Russell Harper's five week excavation in 1955. Although Harper's efforts were centered mainly on the 17th century Fort LaTour component of the site, artifacts recovered from his excavation are representative of Late Archaic, Susquehanna, and Ceramic period components as well (Harper 1956). The main excavation consisted of approximately one fourth of the estimated site size, while the remaining three fourths were partially tested (Barka 1964:1). During the 1960's, Norman Barka continued excavation of the remains of Fort LaTour under contract to Parks Canada. No pre-contact artifacts were mentioned in Barka's final report.

The only pre-contact ceramics recovered from Harper's excavations were three sherds from the same ceramic vessel, recovered from test pit O9, 37 inches below the surface, in what he refers to as an "ash layer". Harper's notes and catalogue suggest that no historic artifacts were found below this

level. Some late pre-contact artifacts were found above the "ash layer" in a disturbed context mixed with historic artifacts. This information suggests that the pre-contact artifacts found below 36 inches, within the "ash layer", were from an undisturbed pre-contact context (Jason Jeandron 1996, pers. comm.).

The single pre-contact vessel lot consists of two rim sherds and one body sherd that mend together. The temper material consists of large chunks of grit averaging 3 mm in size (the maximum being 5 mm). Some temper fragments were identified as feldspar, mica and quartz. No attempt was made to conceal the temper on interior and exterior surfaces; in many instances the temper extends beyond the vessel surface. This attribute is characteristic of Early Ceramic or CP 1 ceramics (Turnbull 1986:13). Vessel wall thickness and lip form are also consistent with a CP 1, or CP 2 age.

Grand Lake Basin

The Grand Lake Basin region is considered a subdivision of the New Brunswick Lowlands physiographic division (Rampton et al. 1984). It encompasses the areas sloping towards Grand Lake and the Oromocto River, and is characterized by the broad, flat and swampy valleys of both the Oromocto and Saint John rivers. "The upland surface is flat to gently sloping with the flat areas being poorly drained" (Rampton et al. 1984:76). The Saint John River transects the basin region, draining it towards the south. There are six recorded Ceramic Period sites located within this physiographic division.

Keyhole site (BlDm1)

The Keyhole site is located north of Princess Park on the western shore of Grand Lake. The site is situated on the inside of a sand bar which confines a small lake known as Keyhole Lake with an opening at the southern end. This narrow opening or "Keyhole" is well-suited for harvesting runs of anadromous fish and may have been the reason for repeated site use during the Middle Ceramic Period.

The ceramic assemblage is one of the most extensive collections in New Brunswick in terms of numbers of vessels and variations in vessel type. More than 2000 ceramic sherds were collected during the first decade of this century by members of the Natural History Society of New Brunswick. The bulk of the assemblage was collected during summer camps in 1908 and 1909 led by society member and Natural History Museum director William McIntosh (Kain 1902, McIntosh 1909). The collections were donated to the Natural History Museum and later became part of the New Brunswick Museum (NBM) collections (All archaeological assemblages which had been part of the NBM collections are currently curated by Archaeological Services of New Brunswick, Fredericton).

In 1961, Richard Pearson surveyed several areas in the province under contract to the National Museum of Canada in an attempt to relocate and accurately record previously reported sites. A small quantity of ceramics was recovered during limited testing at the Keyhole site (Pearson 1968). There is no description of the sherds and the location of the collection is not known.

The Archaeological Services Branch of New Brunswick Historical Resources Administration (now Economic Development, Tourism and Culture) conducted a survey of the Grand Lake system during the summer of 1971. The research goals were to locate new sites as well as test documented sites in the area. Excavation of four test units on the outer reaches of the Keyhole site produced a small quantity of ceramics, lithics and charcoal samples (S. Turnbull 1971:2). The loose unconsolidated sands of the bar did not provide stratigraphic separation of discrete occupational deposits (C. Turnbull 1975:12). The site dimension was estimated at ca. 133 meters along the length of the ridge. Although the collection could not be located for this study, the preliminary site report provides a description of the assemblage:

> Sherds are too small to identify actual vessels. Consequently, description is limited to discussion of decoration. Temper in all specimens is grit, with some specimens exhibiting massive amounts. Body specimens with plain surfaces-11; dentate stamp-3; linear stamp-1. Rims: dentate stamp-1; cord wrapped stick-1; trailing on rim with pinched lip edge-1 (C. Turnbull 1975: 12).

Judging from this description, the 1971 collection is comparable to the McIntosh collection which is described in the 1975 report as being "...decorated with dentate stamp or trailed design. Amongst the latter are some designs and castellated rim sherds, which suggest a much later period in the Northeast...than does the dentate technique" (C. Turnbull 1975:18). (Subsequent research at Fulton Island indicated an earlier date for castellation in New Brunswick [Foulkes 1981]).

The present analysis of the New Brunswick Museum ceramic assemblage from the Keyhole site also reveals a greater variety of decorative styles and application techniques than previously described. Both simple- and rocker-pseudo-scallop shell stamps are present on some vessels. Thirty-six individual vessels were identified from the assemblage. Compared to the Fulton Island ceramics and other multi-component sites outside the study area, the Keyhole assemblage seems to be characteristic of CP 2, CP 3 and possibly CP 4 type ceramics.

Ring Island site (BlDn8)

Duncan London, a school teacher from Lakeville Corner, Queens County, was one of the most active artifact collectors in the Natural History Society of New Brunswick. His collection originates from Maquapit Lake, primarily the Ring Island site, where in 1904 he found an almost complete ceramic vessel embedded in the mud flats. Numerous fragments from other vessels where found in the same general area and donated to the Society. Mr. London combed the shores of Maquapit Lake during the fall seasons between 1899 and 1904. It has also been suggested that he accepted artifacts "...from friends and pupils, without seeing the location of their origins" (Pearson 1968:1).

The pieces found during the fall of 1904 are catalogued with the number '5183'. Several pieces were mended and drawings of some restored ceramic vessels have been published (Matthew and Kain 1904, McIntosh 1909). These authors also speculated as to the function of conical bases, " ...this conical shape would have an advantage, where the bottom of the pot was set in the ashes of the fire; it would raise the body of the pot

higher than if the body was round, and so bring its sides more completely under the action of the fire" (Matthew and Kain 1904:347). This description is included in an article devoted to Vessel 1 found in 1904. Also featured in the article is a copy of a letter sent by Mr. London to the museum with the collection. The following excerpt from the letter describes the location where the ceramics were found:

> On Monday August 8th, 1904, I was prospecting for Indian relics at Ring Island, S.W. side of Maquapit Lake, and soon discovered on the point of the ridge, about two or three rods [ca. 10-15m] from the bank of the thoroughfare, a large lump of mud of a little lighter colour than the mud flat, and as I found two other objects like it this year, and two last year in the same place, I knew that I would find pottery fragments under it, and I secured what was left of the largest and thickest pot I have ever seen, and have just sent you the same. All the other fragments I got there this year and last I did not keep separate... The pot I sent you had been about one foot under ground. Of the four, one was at the surface of the ridge. The depth of the rest under ground had been six, twenty four, and thirty inches respectively... Those pots were from ten to twenty five feet apart..." (Matthew and Kain 1905:353).

The ceramic fragments found prior to these and attributed to London were catalogued with the numbers '605' and '606'. These, however, do not specify the provenience more specifically than "Maquapit Lake" and so these may be the collections referred to by Pearson as being of dubious provenience. There is nothing to indicate that these are from Ring Island and, thus, they will not be included in this study.

In total, eight vessels are reliably attributed to the Ring Island site. The predominant form of decoration is rocker- and simple-dentate stamping with some rocker- and simple-pseudo-scallop shell stamping. This suggests a CP 2-3 age for the site.

Fulton Island site (BlDn12)

Fulton Island is situated at the southwestern end of Maquapit Lake. The site was discovered on the western bank of the island along the thoroughfare that connects French Lake and Maquapit Lake during the 1971 survey of Grand Lake (S. Turnbull 1971). Large scale excavation of the site was directed by Elizabeth Snow and the results reported by Ellen Foulkes (1981). Artifact assemblages, together with the number and size of the hearth features, suggest a series of short term occupations by relatively small groups (Foulkes 1981:248).

The Fulton Island collection is considered central to the Saint John River ceramic sequence primarily because it is from a multi-component, stratified site that provides excellent temporal control through eight associated radiocarbon dates. Ceramic Period components at the site date between ca. 3000 and 1600 BP, although the earliest radiocarbon date in direct association with ceramics is 2075 $\pm$ 45 BP. Earlier components do not include ceramics and are therefore not considered in this study. The earliest ceramic component of the site is associated with an intensification of occupation which is demonstrated by the number and size of features and artifact yield (Foulkes 1981:249). The ceramics associated with the 2075 $\pm$ 45 BP date consist of thin-walled castellated vessels obliquely stamped with a dentate tool (Foulkes 1981:62).

Two earlier dates were also obtained from materials from lower levels. A radiocarbon date of 2655 $\pm$ 85 BP was obtained at a depth of one meter and associated with Adena-like stemmed projectile points, but no pottery was found in close association (Foulkes 1981:62). The earliest date

of 2970 ± 120 BP was obtained from charcoal at a depth of 175-185 cm below the surface, but no cultural material was associated (Foulkes 1981:63).

A total of 24 vessels were subjected to attribute analyses. The predominant ceramic decorating technique, tool type and tool application at the Fulton Island site are simple- and rocker-dentate stamping. The radiocarbon dates and ceramic characteristics place the assemblage in the CP 2-4 range (Table 2).

Table 2: Fulton Island Radiocarbon Dates and Ceramic Associations, (Foulkes 1981; all C14 dates submitted by D. Keenlyside).

C14 dates in BP (uncorrected and uncalibrated)	Units and depth below surface	Primary decorative attributes
1605 ± 55 (S-1825)	4H1 37-66 cm	Cord-wrapped stick
1680 ± 70 (S-1638)	4F1 52 cm	Simple-and rocker-dentate, trailing
1780 ± 40 (S-1637)	4G1 45 cm	Simple-dentate and punctates
1820 ± 120 (S-147)	TC-A 50-57 cm	Simple-dentate
1955 ± 65 (S-1824)	4F1 65 cm	Simple-dentate
2075 ± 45 (S-1639)	4H2 93 cm	Castellation, rocker-dentate and pseudo-scallop shell
2655 ± 85 (S-1826)	TC-13 100 cm	No ceramic associations
2970 ± 120 (S-148)	TC-C 175-185cm	No ceramic associations

Jemseg site (BkDm14)

The Jemseg site is a multi-component habitation site located on the banks of the Jemseg River which connects the Grand Lake system to the Saint John River. The site is situated on the east side of the river. The bank rises gradually in a series of low terraces consisting of beach, pasture and field areas. A portion of the site was excavated during the fall and winter of 1996-1997 as part of mitigative measures for the construction of the new Trans-Canada Highway bridge (Blair 1998). The focus of the excavation

was in the areas of proposed pier placements. Middle and Late Archaic, Ceramic and Historic period components were identified. Nine radiocarbon dates ranging between ca. 3000 BP and 1600 BP were recovered from the site, seven of which were found in association with ceramics (Table 3).

Table 3: Jemseg Site Radiocarbon Dates and Ceramic Associations (Blair 1998).

Vessel #	Vessel provenience	Radiocarbon date	Radiocarbon association	Primary decorative attribute
V. 2	A-40	2520 ± 70	general	plain (corded)
V. 1	C-42	2140 ± 60	direct	plain (fabric)
V. 10	C-42	2140 ± 60	direct	plain (fabric)
V. 7	J-37	2230 ± 50	general	plain (smooth)
V. 6	TE8	2060 ± 40	direct	plain (burnished)
V. 3	I-39	1650 ± 40, 1600 ± 40	direct	rocker-dentate

The site appears to have been continuously occupied throughout the Early and Middle Ceramic periods. However, only a relatively small sample of 132 analyzable ceramic sherds representing 10 inferred vessels, was recovered. This could be attributed partially to plow zone disturbance of upper levels of the site, as all sherds were found in deep undisturbed contexts.

Five of the 10 vessels are fabric- or cord-paddled on both exterior and interior surfaces. The remaining five vessels are thin-walled, with smoothed or burnished, dentate stamped or undecorated surfaces. A small surface collection of pseudo-scallop shell decorated sherds is of undetermined association and therefore were not included within the analytical sample.

Bull Frog site (BlDo4)

The Bull Frog site is located at the mouth of the Oromocto River and extends 400 meters along the north bank from the Saint John River. The site was discovered and tested in 1974 by Patricia Allen. Ceramics were found in association with a charcoal sample dated to 1855±70 BP (S-1544) (Allen 1975). The site was revisited in 1989 by Scott Buchanan for the purpose of determining its extent. The testing yielded numerous artifacts including ceramics (Buchanan 1989). The site was also surface collected in the early 1990's by Tim MacAfee, a resident of Oromocto and a member of the New Brunswick Archaeology Society.

Two vessels were recovered from the 1974 testing, one from the 1989 testing, and one from the private collection. The dominant tool types and applications at the Bull Frog site are simple- and rocker- dentate and pseudo-scallop shell stamping.

Harrison Farm site (BlDo1)

The Harrison Farm site is located on the north bank of the Saint John River at Maugerville about 20 km east of Fredericton and diagonally across the river from the Bull Frog site. The site extends approximately 150 meters north of the river and occupies a cultivated field then owned by the late Maynard Harrison. The property owner collected extensively on the site for some thirty years before any archaeological testing was done. In 1973 extensive flooding removed a thick layer of topsoil on the property exposing numerous pre-contact artifacts. Mr. Harrison brought these artifacts to the attention of the provincial archaeologist. Testing of the site in 1974 produced a small quantity of lithics, bone, ceramics, charcoal (Buchanan

1989). In 1978, the University of New Brunswick conducted a weekend field school under the direction of Frances Stewart, but no intact pre-contact cultural deposits were found in the tested areas at that time because of a thick layer of alluvial sands and silts (Stewart 1996: pers. comm.).

In 1989, the site was revisited in an attempt to locate subsurface cultural deposits and to re-examine the eastern and western boundaries of the site (Buchanan 1989). Limited testing yielded a small quantity of pre-contact artifacts consisting of flakes and small ceramic sherds in a disturbed context. Most of the vessels examined for this study come from the 1974 testing. Five vessels were identified, consisting of simple- and rocker-dentate, pseudo-scallop shell, and punctate decorated ceramics. Given the similarities in the ceramic assemblage from the Harrison Farm site to those of the Bull Frog site (1855 $\pm$ 70 BP), the two components are considered roughly contemporaneous.

Keswick River Basin

Savage Island site (BlDq1)

Savage Island is located at the head of tide, approximately 10 km up-river from Fredericton, at the junction of the Keswick River and the Saint John River. This location is renowned for its abundance of striped bass and salmon. Oral histories describe the island as being a ceremonial meeting place for Maliseet groups since the early historic period and possibly during the pre-contact period as well (Michael Nicholas 1996: pers. comm.). Its

proximity to the historic Native village of Aukpaque (Maliseet for 'head of tide') on the south banks of the river also adds to the cultural significance of the area.

The Savage Island site is located on a small terrace at the southwestern tip of the island. The first documented testing of the site was by members of the Natural History Society who excavated a portion of it during the first decade of this century (McIntosh 1911). They identified "...a fine plummet, a stone ax, arrow heads, pottery and quantities of chips giving evidence of an Indian encampment having been situated here in former times" (McIntosh 1911:363). The site was revisited in 1982 by Albert Ferguson as part of a survey of several locations on the Saint John River, and was tested to determine its precise location, condition and size. More ceramics were obtained, as well as "...flakes, a crude water worn ax, a chopper and a hammerstone" (Ferguson 1982:4). The site was also surface collected and tested in 1994 by a crew led by Michael Nicholas with Archaeological Services of New Brunswick in conjunction with Kingsclear First Nation. Cord-wrapped stick and circular punctated ceramic sherds were recovered from the eroding bank (Michael Nicholas 1995: pers. comm.).

The ceramics described in the 1911 article are thick, grit tempered, cord-wrapped stick impressed vessels. The sherds from the 1982 survey were described as being "pseudo-scallop and dentate" stamped (Ferguson 1982:4). A closer examination of the sherds determined the stamps to be a series of oblique "slash" punctates, circular punctates and straight edge notching. Rim profiles are thick, everted and braced at the lip. Rim exteriors

also display slight collaring. Three vessels lots from the 1994 fieldwork are thick walled, simple stamped with incipient collars below the lip, suggesting a possible St. Lawrence Iroquoian influence. One of the 1911 cord-wrapped stick vessels also displays slight collaring.

The last surface collection of the site was during a field trip by David Keenlyside, Karen Perley and Gilbert Sewell in July 1996. Several clusters of large ceramic fragments were recovered from the shoreline below the eroding embankment. The four vessel lots display characteristics of CP 2 and 4/5/6. The CP 2 vessels include two thin-walled simple- and rocker-pseudo-scallop shell stamped vessels. A third CP 2 vessel has an everted and expanding rim, with simple-pseudo-scallop shell stamped decoration and a row of interior punctates with exterior bossing below the rim. The fourth vessel is thick and parallel walled, with a rounded lip and simple-cord-wrapped stick impressions characteristic of CP 4-5.

Based on the ceramic evidence, the Savage Island site represents a multi-component site ranging from CP 2 to CP 5, and perhaps even to CP 6. An AMS radiocarbon date of 2130 + 60 BP was obtained from a sample of residue from the interior surface of a rocker-pseudo-scallop shell decorated vessel (Keenlyside 1997: pers. comm.).

Eel River Basin

Meductic Flats site (CaDv1)

Meductic Flats site is located on the west bank of the upper Saint John River, downstream from Woodstock. The site occupies "... an expanse of gently undulating land located at the southern end of a large interval

generally known as Meductic Flats" (Sanger 1967:1). The first archaeological testing was done in the early part of this century by members of the Peabody Foundation in Andover, Mass. They apparently had a local farmer plough the area to locate artifacts (Sanger 1971). G.F. Clarke also collected in the area for many years (Clarke 1968; Sanger 1971).

The first professional work done on the site was in 1960 by Richard Pearson (1968) under contract to the National Museum of Man. Although artifacts were recovered, no ceramics were found. It was not until the 1967 salvage excavation, under the direction of David Sanger (1967), that a ceramic assemblage was recovered. It consists of eight vessels, most having cord-wrapped stick and circular punctates. Five vessels show evidence of organic tempering of some sort and are decorated with cord-wrapped stick impressions. The remaining three vessels are grit tempered with cord-wrapped stick decoration. All vessel walls tend to be relatively thick with some displaying evidence of a collar on the exterior rim.

The occurrence of both grit and organic temper, plus similarities in stamping tool and application, suggest contemporaneity with the CP 4 vessels from the Cronkite site (CaDu8) located across the river and discussed below.

Cronkite site (CaDu8)

The Cronkite site is one of the many sites tested by Sanger during the 1967 salvage project by the National Museum of Man. Prior to Sanger's fieldwork, local collector G.F. Clarke had recovered artifacts from a series of terraces opposite the mouth of the Eel River. The Cronkite site is located on the lowest of these terraces. Two charcoal samples from Sanger's

excavation returned dates of 1260 ± 90 BP (GaK-1868) and 2350 ± 100 BP (GaK-1869). Sanger believes that the first date, although early, is acceptable; however the last was dismissed because of the absence of diagnostic Early Ceramic Period artifacts (Wilmeth 1978:153-154). For this reason the 1260 ± 90 BP date will be used in this study and not the 2350 ± 100 BP.

Three vessels were inferred from the 112 ceramic fragments. All three vessels display cord-wrapped stick impressions with a row of circular punctates characteristic of CP 4. Vessels 1 and 3 are grit tempered while vessel 2 displays both grit and organic temper. Much like the Meductic Flats assemblage, the Cronkite vessels are thick walled with slightly collared rims.

Tobique Basin

The Tobique Basin is considered a subdivision of the Chaleur Uplands physiographic division (Rampton et.al. 1984). It is characterized by ..."a flat to gently sloping surface with little relief except near its western edge, where it is gently rolling, and where bedrock-controlled mesa and cuesta scarps between 60 and 150 m high are present" (Rampton et. al. 1984:70). Four ceramic period sites have been identified in this area and are described below.

Bernard site (CeDw8)

The Bernard site is situated on a terrace on the northern bank of the Tobique River below the present dam, near its junction with the Saint John River. The site was first recorded by G. F. Clarke in 1968, when he collected some stone tools on the plateau after it had been ploughed by the property

owner, M. George Bernard. Clarke did not report finding any ceramics during his visits (1968). Based on his stone tool descriptions and the fact that no ceramics were found, the site was attributed to the Late Archaic Tobique Complex, first described by Sanger (1971; Turnbull 1990:8) and based on the Deadman's Pool site assemblage located further up the river. Further collecting on the Bernard site by Darryl Nicholas and Andrea Bear-Nicholas produced more stone tools that supported the Tobique Complex affiliation (Turnbull 1990).

In 1993, plans to develop the terrace into a sewage lagoon prompted further excavation of the site by Keenlyside, in conjunction with the Tobique Reserve. The excavation produced an abundance of material, including a large ceramic assemblage consisting of thin-walled pseudo-scallop shell decorated vessels. The site is interpreted as a Middle Ceramic Period (CP 2) seasonal camp site (D. Keenlyside 1996: pers. comm.). The plans for the sewage lagoon were subsequently changed due to the archaeological potential and the significance of the site as a traditional sacred place.

Unfortunately, the fragmentary condition of the sherds restricts analysis to decorative elements and vessel thickness. Attributes such as vessel shape and manufacture could not be determined. Thin-walled, pseudo-scallop shell and tiny circular punctate decorated vessels with castellations suggest an early CP 2 designation. Similarities to the earliest ceramics from Fulton Island place the Bernard site ceramics at ca. 2000 BP.

Hazel site (CeDw3)

The Hazel site is situated on the east banks of the Saint John River at the mouth of the Tobique River. The site was identified during a 1982 survey

of the Saint John River (Ferguson 1982). Initially named the "Mouth of Tobique site", the name was later changed to the "Hazel site" in reference to the property owner. The site is believed to extend 150 meters along the beach adjacent to the bank (Ferguson 1982:15). Five vessel lots were recovered during the 1982 survey. A private collection belonging to Andrea Bear-Nicholas also has four sherds representing two vessels from the site.

Two types of pottery representative of two separate components are present at the Hazel site. Vessels 1 and 2 are thick-walled and decorated with cord-wrapped stick and circular punctates on the exterior surface. Vessel 2 is grit- and organic- or shell-tempered. The remaining five vessels are thin-walled, grit-tempered, rocker-dentate, simple-dentate and pseudo-scallop shell stamped. These characteristics suggest occupations of the site during the CP 2 (possibly CP 3) and CP 4 periods.

Murray site (CeDw13)

The Murray site is located on the west bank of the Saint John River about 1.5 km below the mouth of the Aroostook River. Numerous artifacts were found eroding out of the bank by local collectors Darryl Nicholas and Andrea Bear-Nicholas, including eleven ceramic sherds representing a single vessel lot. The thick-walled vessel is undecorated apart from notching on the lip edge with a straight edge or large dentate tool. The everted rim profile is constricted with apparent multiple castellations. Although basal fragments are absent, body sherds suggest a globular shape curving to a rounded base. These are considered a late characteristics suggesting a CP 5 or CP 6 time frame (Petersen and Sanger 1991: 136).

Odell Flats site (CeDu1)

The Odell Flats site is situated on the west bank of the Tobique River opposite the mouth of the Odell River. The area consists of a low flood-plain terrace which is partially submerged during the spring freshets. Extensive cultivation of the site has produced a heavily disturbed plough zone. Despite the large scale agricultural disturbance and erosion, isolated features containing diagnostic artifacts remain *in situ.*

The site was first recorded during Sanger's 1968 survey. Following extensive erosion caused by an ice dam on the river in the early 1990's, local collector Darren Giberson identified a new portion of the site exposed within the plough zone. Giberson recovered an extensive collection of lithic artifacts including a side-notched Meadowood point, scrapers, and flakes.

Keenlyside's 1993 walking survey of Odell flats located a possibly undisturbed hearth feature which had been exposed by flooding. Excavation of the hearth revealed a heavy concentration of charcoal in direct association with flakes and ceramic sherds. The sherds are similar to the Bernard site vessels and almost identical to Vessel 13 from the Keyhole site, characterized by a thin-walled body with a row of tiny circular punctates below the lip edge, and incipient castellations. Although the charcoal sample was too small to return a reliable date, the vessel attributes suggest an early CP 2 age.

Chapter 5

Saint John River Ceramic Sequence

The following discussion documents the results from the ceramic analysis of 110 vessel lots from fourteen sites in the Saint John River Valley. Each vessel is categorized into chronological periods based on diagnostic attribute clusters. The delineation of these periods is based on radiocarbon dated associations following the Petersen and Sanger (1991) general model for a Northeastern ceramic sequence. The temporal subdivisions are referred to as Saint John River Ceramic Period (SJR-CP) 1, 2a, 2b, 3, and 4. A general designation of SJR-CP 4/5/6, is applied to the relatively recent, but undated ceramics from the study area. This general classification is based on similar assemblages from outside the study area. The specification of these time periods and sub-divisions provides an objective format to evaluate the integrity of the study sample, and facilitate intra-regional comparative research.

Analytical groupings of primary decorative attributes combine decorative tool type and mode of application on exterior vessel surface. Less visible attributes (i.e., rim profile, wall thickness, and interior modification) are cross-correlated within and between these groupings. A summary of primary decorative attribute is provided in Table 4 to demonstrate the frequency of decorative tool types and mode of application.

Table 4: Correlation of Primary Decorating Tools and Techniques Used on Saint John River Ceramics.

Tool	Rocker stamp	Simple stamp	Rocker/ simple stamp	Dragged stamp	Trailed	total # of vessels
Pseudo-scallop shell	7	12	5	4		28
Dentate	28	8	8	1		45
Cord-wrapped stick		19				19
Plain						13
Stylus		4			6	10
Pseudo-scallop shell & Dentate	1	1	3			5
Straight-edge	1	1				2
total	37	45	16	5	6	122

General temporal trends including both primary and secondary attribute clusters are provided in Table 5. Decorative and metric attribute frequencies are described and tabulated for each designated component or period in Appendix B. Implications of stylistic variation are discussed in Chapter 6, within a broader regional context.

SJR-Ceramic Period 1 (ca. 2500-2150 BP)

The earliest reliably dated ceramics from the Saint John River are from the Jemseg site (BkDm14). A feature associated with a typical "Vinette I" type undecorated interior and exterior cord-impressed vessel (V.2) produced a radiocarbon date of 2520 ± 70 BP. This is a medium-sized vessel with a direct rim form and parallel to slightly constricting rim shape and rounded lip (Plate Ia). The temper consists of medium to coarse grit and is abundant. The vessel wall thickness is 7-10 mm.

A later date of 2140 ± 60 BP from a different feature at Jemseg is associated with two thinner (6-7 mm) interior and exterior fabric-impressed

vessels (Plate Ib). The decrease in vessel wall thickness and use of finer fiber, suggests a technical refinement from thick walled cord-impressed ceramics to thinner fabric-impressed vessels during SJR-CP 1 and could reflect a transitional stage from CP 1 to CP 2 ceramics.

The Portland Point vessel can also be associated with SJR-CP 1. Faint traces of fabric-paddling on both the interior and exterior surfaces are partially obscured by smoothing and a faint diagonal row of vertical, elongated punctates or stamps below the rim. Coarse grit temper often protrudes beyond the surface of the vessel. Although not typical of "Vinette I" type pottery, these attributes are generally associated with Early Ceramic Period or CP 1 dates. The stratigraphic context of this vessel lot is consistent with the Early Ceramic Period occupation of the site (Jeandron 1996:13).

SJR-Ceramic Periods 2a and 2b (ca. 2150-1650 BP)

A dramatic change in ceramic style and frequency appears in the Northeast after ca. 2150 BP, marking the shift from Early Ceramic Period to Middle Ceramic Period. This is evident in New Brunswick, and in the broader Northeast, as a regional peak in ceramic manufacture (Petersen and Sanger 1991:124). Nine of the fourteen radiocarbon dates from the study area fall within this period, and ca. 75% (84 vessels) are attributed to this period, representing a localized intensification in ceramic production. The Petersen and Sanger model broadly defines CP 2 to incorporate ceramics dating between 2150 BP and 1650 BP.

Analysis of the Saint John River sample indicates the presence of two temporally distinct attribute clusters within the parameters of CP 2. These

are tentatively interpreted as two distinct, but culturally related manifestations or complexes. Petersen and Sanger's Ceramic Period 2 is therefore separated into two sub-periods (SJR-CP 2a and SJR-CP 2b). This distinction is particular to the Saint John River Valley study area and has not been observed in any other regional sequence.

SJR-CP 2a (ca. 2100-1850 BP)

A total of 27 vessels are associated with this sub-period. Two ceramic contexts at the Jemseg site date generally within it, but unfortunately, the absence of rim sherds and poor condition of the fragmentary body sherds limited the analysis of these vessel lots. However, despite the poor preservation of the sherds, sufficient attribute information was present to permit stylistic classification.

Vessel 7 consists of thin walled, smoothed and undecorated body sherds taken from unit J-37. A radiocarbon date of 2230 $\pm$ 50 BP was returned from a feature at the same level in adjacent unit J-38. The early date could reflect a transition or contemporaneity with earlier SJR-CP1 ceramics. Vessel 7 is placed in the SJR-CP2a sub-period because of its smoothed undecorated surfaces, diagnostic of CP 2 attributes (Petersen and Sanger 1991) and comparisons with two similarly undecorated, smoothed and/or burnished body sherds (vessel 6) found in direct association with a 2060 $\pm$ 40 date in test excavation 8 at Jemseg. The overlapping dated association of vessels 1 and 10 with that of vessel 7 from Jemseg is suggestive of a sequential development from SJR-CP 1 (Vinette 1) type ceramics to a more SJR-CP 2a diagnostic type ceramic.

The lowest level associated with ceramics at Fulton Island contained charcoal radiocarbon dated to 2075 ± 45 BP. Vessels (V.8 and V.9) from this stratum are thin-walled with castellated rims and tightly spaced rocker-dentate and/or pseudo-scallop shell stamps on the exterior rim, neck and upper-body (Plate II). A row of tiny circular punctates occurs below and parallel to the lip on rim exteriors. The lip and interior rim are primarily smoothed and undecorated. Three other vessels from Fulton Island (V. 5, 11, 19) share similar attributes, one of which was located stratigraphically below charcoal radiocarbon dated to 1780 ± 40 BP (Plate III).

A date of 2030 ± 60 BP was returned from residue on the interior surface of Vessel 8 from the Savage Island site. The vessel is comprised of thin walled rocker-pseudo-scallop shell stamped sherds. Vessel 9 from this site was found in a same context and displays identical attributes.

Eight similar undated, yet probably contemporaneous specimens are also present in the Hazel (V. 4), Bernard (V.1, 2 and 3), Odell (V. 1), Harrison Farm (V. 2), and Keyhole (V. 13 and 18) site collections. The rocker-stamping technique appears to be the preferred method of application associated with SJR-CP 2a, and may represent the earliest form of decorative application used along the Saint John River. This is consistent with the dating of characteristic attributes in the early part of Petersen and Sanger's CP 2.

SJR-CP 2b (ca. 1850-1650 BP)

Many of the 57 vessel lots attributed to the SJR-CP 2b sub-period (57 vessels) have attributes in common with SJR-CP 2a . The SJR-CP 2b grouping is defined by specific attribute combinations which, based on

absolute and relative dates, are restricted to ca. 1850-1650 BP. These attributes have not been identified in other ceramic sequences from the Maine/Maritimes region and are therefore considered characteristic of the Saint John River sequence. Several of these attributes appear to be the result of stylistic diffusion through interaction with contemporaneous groups to the southwest (Great Lakes) where these characteristics are more common. The implications of this phenomenon are discussed in Chapter 6.

The following discusses the relevant attributes which occur in this sub-period. These may occur in combination with each other or with attributes carried over from the previous sub-period.

- *Collared Rims*

Vessel 16 (Plate IVb) from Fulton Island was located in the same unit and stratigraphically above vessels 8 and 9 which are directly dated to 2075 ± 45 BP. In addition to the simple- and dentate-stamped attributes of SJR-CP 2a, this vessel displays an additive collar. Vessel 13 (Plate V) from Fulton Island has a similar additive collar, and is associated with a date of 1680 ± 70 BP (Foulkes 1981:194). Additive collars occur on other vessels from Fulton Island (V. 1 and 17) (Plate IVa) as well as on some from Keyhole (V. 3, 7, 22, 23, and 24), and Harrison Farm (V. 4). This type of collar is referred to as "appliqué" where a "flattened coil or fillet of clay [is] laid along the exterior lip edge..." (Foulkes 1981:172). Collared rims occur typically with simple- and rocker-dentate stamped decoration.

- *Trailing*

The trailing technique exhibited on vessel 13 also appears to have become popular during SJR-CP 2b, independent of appliqué collars. This

technique is apparent on six vessels from Keyhole (V. 2, 5, 7, 9, 11, and 14) and two other from Fulton Island (V. 14 and 21). The two Fulton Island vessels were located below a feature dated to 1780 ± 40 BP. The most common motif associated with this technique is a series of parallel lines, usually oblique, on the rim exterior. These lines occasionally criss-cross each other or are arranged in chevron patterns.

- *Interior Stamping*

Interior stamping appears to be contemporaneous with trailing on SJR-CP 2b ceramics. These two design elements occasionally occur together on the same vessel. Two vessels from Fulton Island (V. 10 and 15) have stamped interiors. Vessel 10 is rocker-stamped with a dentate tool on both interior and exterior surfaces and vessel 15 is simple-stamped on both surfaces. The interior stamps on both vessels are restricted to a 2-3 cm zone below the lip. Vessel 15 is indirectly associated with a date of 1680 ± 40 BP. Two examples from the Bull Frog site (V. 1 and 2) firmly date this attribute to SJR-CP 2b with an associated radiocarbon date of 1855 ± 70 BP.

Interior stamping is a common attribute at the Keyhole and Ring Island sites. Six vessels from Keyhole (V. 1, 3, 4, 9, 14, and 16) and eight vessels from Ring Island (V. 1- 6, 8, and 9) are rocker-stamped on the interior with either a dentate or pseudo-scallop shell tool (Plate IXa and b).

- *Channelling*

Channelling occurs on the interior surfaces of a small number of the SJR-CP 2b vessels and is considered a surface finish rather than a decorative element. Interior channelling is nonetheless an important attribute of spatial and temporal significance. The occurrence of this

finishing technique is unique within the region and is not found on Saint John River ceramics predating ca. 1850 BP. Channelling occurs on eight SJR-CP 2b vessels, frequently in combination with interior stamping (Plate VIII a and b). Of these, vessel 21 from Fulton Island is associated with a date of 1780 ± 40 BP and vessel 1 from Bull Frog dates to 1855 ±70 BP.

- *Exterior Bossing*

Another form of interior modification diagnostic of SJR-CP 2b is the application of interior punctates, causing exterior bossing on vessel rims and necks. This attribute is present on vessel 6 from Fulton Island, recovered beneath a feature dated to 1780 ± 40 BP (Plate VI). Interior punctates with exterior bossing occurs on vessels from Savage Island (V. 7) Hazel (V. 3) and Ring Island (V. 9) sites (Plate VII). These vessels display other CP 2 characteristics such as dentate and pseudo-scallop shell stamps and are therefore considered contemporaneous with vessel 6 from Fulton Island.

- *Increase in Vessel Thickness*

Vessel thickness increases slightly during SJR-CP 2b relative to earlier vessels from the deeper levels of Fulton Island. Vessels 3, 6 and 14 from unit 4G1 were excavated from the same relative depth beneath a feature dated to 1780 ± 40 BP. Vessel thickness increased 142-250% with an average of 10 mm. Rim profiles are everted with varied forms of stamped lips, whereas earlier examples typically had straight to slightly everted rim shapes with undecorated lips.

SJR-Ceramic Period 3 (ca. 1650-1350 BP)

SJR-CP 3 vessels share several attributes with SJR-CP 2 specimens. Two factors distinguish SJR-CP 3 from earlier vessels in the sequence: stratigraphic contexts consistently date later than SJR-CP 2a and 2b, and, the vessels exhibit additional attributes more consistent with Petersen and Sanger's CP 3 vessel characteristics.

The vessels from unit 4F1 at Fulton Island were located stratigraphically above a feature dated to 1680 ± 70 BP and conform well with CP 3 characteristics. Vessel 17 was located 7-21 cm above the dated feature (Foulkes 1981:195). The rim is contracting with an incipient collar. The thickness of the neck and body portion of the vessel average 11 mm. Decoration consists of simple-dentate stamping on the rim and neck and rocker-dentate stamping below the shoulder (Plate Xb).

Vessel 15 from the same unit is probably slightly earlier (Plate Xa). Indirectly associated with features 35 and 36 (1680 ± 70 BP) and stratigraphically lower than vessel 17, this simple and rocker dentate stamped vessel is considered to be contemporary or slightly earlier than vessel 17 (Foulkes 1981:194). However, vessel rim thickness is less than vessel 17, averaging between 5 and 7 mm.

Two charcoal samples dated to 1650 ± 40 BP and 1600 ±60 BP at the Jemseg site were in direct association with vessel 3. The vessel is grit tempered with exterior rocker-dentate stamping and a smooth interior. Metric attributes are inconclusive given the absence of rim sherds, although, the body thickness measures 6 mm.

Vessels 3, 6, 16, 31, 32, and 33 from Keyhole site and Vessel 9 from Ring Island are considered contemporaneous to the later SJR-CP 3 Fulton Island vessels based on vessel thickness and other associated attributes. Simple- and/or rocker-dentate stamping on these vessels along with a typically everted contracting rim and average thickness greater than 9 mm below the lip, are characteristic trends of CP 3 beginning at ca. 1680 BP and possibly continuing as late as ca. 1350 BP.

SJR-Ceramic Period 4 (ca. 1350-950 BP)

The major attribute that characterizes ceramics that date between ca. 1350 and 950 BP on the Saint John River is the use of a cord-wrapped stick stamping tool. Although possibly occurring on a minority of CP 3 vessels, cord-wrapped stick became the dominant decorative tool used on pottery on many of the Saint John River sites that date after ca. 1350 BP. The only cord-wrapped stick decorated pottery from Fulton Island which has an association with a radiocarbon date is V. 12. This vessel was located between a feature dating to 1605 $\pm$ 55 BP and a early historic period feature (Foulkes 1981:178). The features are separated by only a few centimeters, and stratigraphic evidence suggests a period of about 1000 years within a 13 cm layer of alluvial deposits. Given its location within a millennia of soil accumulation, the antiquity of V. 12 can only be approximated. However, based on this stratigraphic evidence and Petersen and Sanger's CP 4 characteristics, V. 12 can be attributed to SJR-CP 4 (ca. 1350-950 BP).

Vessel 2 from Fulton Island, also cord-wrapped stick stamped, was a surface find with no associations. The vessel is grit tempered and thick-

walled and suggests contemporaneity with vessel 12. Vessel 23, is also cord-wrapped stick stamped and was found scattered between 45 and 71 cm below the surface in unit 4G1. The depth at which these pieces were scattered is indicative of disturbance, therefore the indirectly associated radiocarbon date of 1780 ± 40 BP, should be treated as unreliable.

Two notable trends of SJR-CP 4, which appear to represent a general stylistic continuity from SJR-CP 3, are the increase in vessel wall thickness and interior bossing. As suggested by cord-wrapped stick decorated vessels from Fulton Island, the average lip thickness of 7-9 mm is consistent with SJR-CP 3 vessels. Rim thickness, however, averages 10-12 mm, an increase of 1-3 mm from the previous period. The second trend is a horizontal row of circular punctates stamped on the exterior, leaving slight interior bossing. This is seen on two (V.2 and V.12) of the three cord-wrapped stick decorated vessels from Fulton Island. Earlier evidence of interior bossing is seen on a rocker-dentate stamped SJR-CP 3 vessel (V. 3) from the same site.

SJR-CP 4 attributes are also observed on vessels from other Saint John River site assemblages associated with Late Ceramic Period components (CP 4, 5 and 6). The Cronkite site produced a radiocarbon date of 1260 ± 90 BP in association with cord-wrapped stick and circular punctate stamped ceramics (Plate XIa and b). Records of associations are unclear but suggest a relatively close relationship between these ceramics and the radiocarbon date (Wilmeth 1978). All ceramics from the Cronkite site display varied forms of cord-wrapped stick impressions, most notably short stamps (7-10 mm) with thick and tightly wound cordage. Similar stamping is evident

on ceramics from Meductic (Plate XII). This type of cord-wrapped impression is similar to vessel 23 from Fulton Island as well, supporting the idea of localized intra-regional interaction.

A horizontal row of circular punctates occurs on the exterior of all SJR-CP 4 vessels either with and without interior bossing. This attribute first appears on a SJR-CP 3 vessel with dentate stamps, and could reflect continuity between the two sub-periods. Furthermore, the earlier SJR-CP 2b vessels with interior punctate/exterior bossing possibly reflect an even earlier expression of this attribute.

SJR-Ceramic Periods 4/5/6 (ca. 1350-400 BP)

The term "post-Ceramic Period (ca. 1000-500 BP)" for the Saint John River region was introduced by Foulkes (1981) to describe the lack of Late Ceramic Period vessels in the more recent deposits at the Fulton Island site and surrounding sites. Undated later components at the site consisted solely of lithic artifacts, suggesting the abandonment of ceramic manufacture by ancestral Maliseet groups well before the Contact Period (Foulkes 1981:155). However, examination of a broad cross-section of ceramic assemblages on the Saint John River indicates that ceramic manufacture seems to have been in decline during the Late Ceramic Period, rather than totally abandoned. Evidence of Late Ceramic Period vessels from other sites along the river support this hypothesis. Although these vessels lack chronometric dated associations, sufficient attribute information is present to order them by external and general comparisons.

In the following discussion, the remaining ceramic assemblages [three components from three sites (Hazel site-component 2, Savage Island site-component 2, and the Murray site)] are provisionally ordered within the Saint John River sequence. Attribute comparison with the Petersen and Sanger model suggest a temporal range of ca. 1000- 500 BP, here referred to as SJR-CP 4/5/6.

Hazel site

There are two distinct components at the Hazel site. The earlier component is represented by thin-walled, pseudo-scallop shell stamped vessels with exterior bossing and rocker-dentate stamped ceramics that correspond well with the SJR-CP 2b period.

The later component produced two cord-wrapped stick decorated vessels (Plate XIV). Vessel 1 is grit tempered and V. 2 is organic tempered. These specimens are distinguished from late SJR-CP 4 cord-wrapped stick vessels at the Cronkite site primarily on the basis of vessel thickness and the size of the cordage used on the stamps. The Hazel site vessel walls are noticeably thinner than the Cronkite vessels. The dimensions of individual cord-stamps on the Hazel vessels are also thinner (2-3 mm) and have more space between each individual cord-stamp than those of the Cronkite vessels. The thinner cord fiber used on the Hazel vessels may represent a single ply as opposed to the thicker two ply cordage of the Cronkite and Meductic vessels. The overall size of stamps and decoration motifs also varies considerably between the two assemblages. The Hazel site vessels have longer stamps with multiple stamped zones forming cross-hatched, horizontal, oblique, and triangular patterns, characteristic of CP 5 (ca. 950-

650 BP) in the Petersen and Sanger model. The Cronkite and Meductic vessels have short vertically, horizontally and obliquely applied cord-wrapped stick stamps.

Savage Island site

The later component of the Savage Island site includes seven grit tempered vessels with various forms of simple stamping (Plate XIII). Four vessels are stamped with cord-wrapped stick impressions, one with a dentate tool and two with irregular punctates. Five vessels have circular punctates below extrusive or incipient collars. Two specimens without collars (V. 3 and V. 10) are cord-wrapped stick impressed with circular punctates. Vessel 5 displays linear punctates in a zigzag or chevron pattern and vessel 1 has similar punctates stamped obliquely, both of which are restricted to the collar area. The combination of these attributes is consistent with a CP 5-6 age of ca. 950-400 BP in the Petersen and Sanger model.

Murray site

The single vessel from the Murray site consists of a few rim and body sherds. Both the exterior and interior surfaces are smoothed with no decoration. Linear stamps or notches are present on the lip surface. Vessel form includes a heavily everted rim with tiny castellations. The body shape appears to be globular instead of the typical conoidal or conical shape of vessels from the area. These are a characteristic attributes of CP 6 vessels dated to ca. 650-400 BP in the Petersen and Sanger model.

Summary of Identifiable Trends

The key trends identified in this study highlight specific attribute combinations which are believed to be temporally and spatially significant within the study area. These patterns should not be equated with types *per se*. Variation in the use of specific design elements within and between attribute clusters precludes typological classification.

Table 5 outlines the various key attribute combinations characteristic of divisions within the Saint John River ceramic sequence. Main decorative attributes are listed with percentages based on the number of vessels within each period. Key design attributes are quantified by the percentages of principle motifs used during each period. Average vessel thickness of lip, rim and body elements is summarized for each period. As more than one attribute can appear on a single vessel, attribute percentages relate to the total number of vessels in each period. These percentage values show the frequency of a particular attribute in each period in relation to vessel numbers and not in relation to the total number of attributes.

Table 5: Key Ceramic Attribute Trends

Time Period	Key Decorative Attributes	Key Design Attributes	Vessel Thickness
SJR-CP 1 6 vessels	• undecorated=83% • fabric-paddled interior/ exterior=100%		• lip<6mm • rim<6mm • body=7-9mm
SJR-CP 2a 27 vessels	• simple-pseudo-scallop shell=37% • rocker-pseudo-scallop shell=26% • rocker- and simple-dentate= 26% • tiny circular punctates= 22% • smoothed interior/exterior= 100% • castellation=22%	• horizontals=44% • verticals=22% • left obliques=15% • right obliques=19% • horizontal row of punctates=22%	• lip<6mm • rim<6mm • body=7-9mm
SJR-CP 2b 57 vessels	• rocker-dentate=49% • simple- and rocker-pseudo-scallop shell=32% • trailing=25% • exterior bossing=7% • collared rims=18% • interior decoration= 39% • castellation= 23%	• horizontals=68% • verticals=47% • right obliques=35%	• lip<6mm • rim=7-9mm • body=7-9mm
SJR-CP 3 8 vessels	• rocker-dentate=100% • circular punctates=25% • trailing=13%	• horizontals=50% • verticals=63% • left obliques=25%	• lip=7-9mm • rim=7-9mm • body>10mm
SJR-CP 4 14 vessels	• cord-wrapped stick (undetermined twist)=57% • cord-wrapped stick (z-twist)=15% • cord-wrapped stick (s-twist)=15% • circular punctates=79% • collared rims=29% • smoothed interior=100%	• horizontals=57% • verticals=36% • horizontal row of punctates=64%	• lip=7-9mm • rim>10mm • body>10mm
SJR-CP 4/5/6 10 vessels	• cord-wrapped stick (undetermined twist)=60% • circular punctates=80% • simple dentate=10% • straight edge tool=10% • smoothed interiors=100%	• horizontals=60% • verticals=30% • triangles=20% • obliques=50% • horizontal row of punctates=80%	• lip=7-9mm • rim=7-9mm • body=7-9mm

Chapter 6

External Correlations and Interpretations

This chapter looks at contemporaneous assemblages in a broader geographic setting focusing primarily on collections from Nova Scotia and eastern New Brunswick, and in a more general way, with relevant collections from Maine, Quebec and Ontario. The ceramic assemblages from outside the Maritime Provinces (Mi'kmaq-Maliseet traditional territories) are examined in light of potential external relationships. This facilitates a more critical understanding of pre-contact ceramic development in the Northeast. Comparative assemblages originate from adjacent areas associated with various Eastern Algonquian groups which, according to early ethnographic accounts, were culturally and linguistically distinctive. This comparative discussion illustrates the similarities and differences between the ceramic sequences of adjacent areas and suggests provisional boundaries of distinct cultural groups prior to European contact.

The time periods discussed in this section correspond to the Petersen and Sanger model, occupying a time frame between ca. 3050 and 500 BP. Ceramic assemblages used in the construction of the Saint John River sequence are supplemented with data from other regional and site specific studies.

The fourteen radiocarbon dates used in the formulation of the Saint John River sequence are limited to a ca. 1300 year time frame of the Ceramic Period (2500-1260 BP). Cross-dating with other well dated sites from adjacent regions is needed to evaluate the integrity of certain Saint

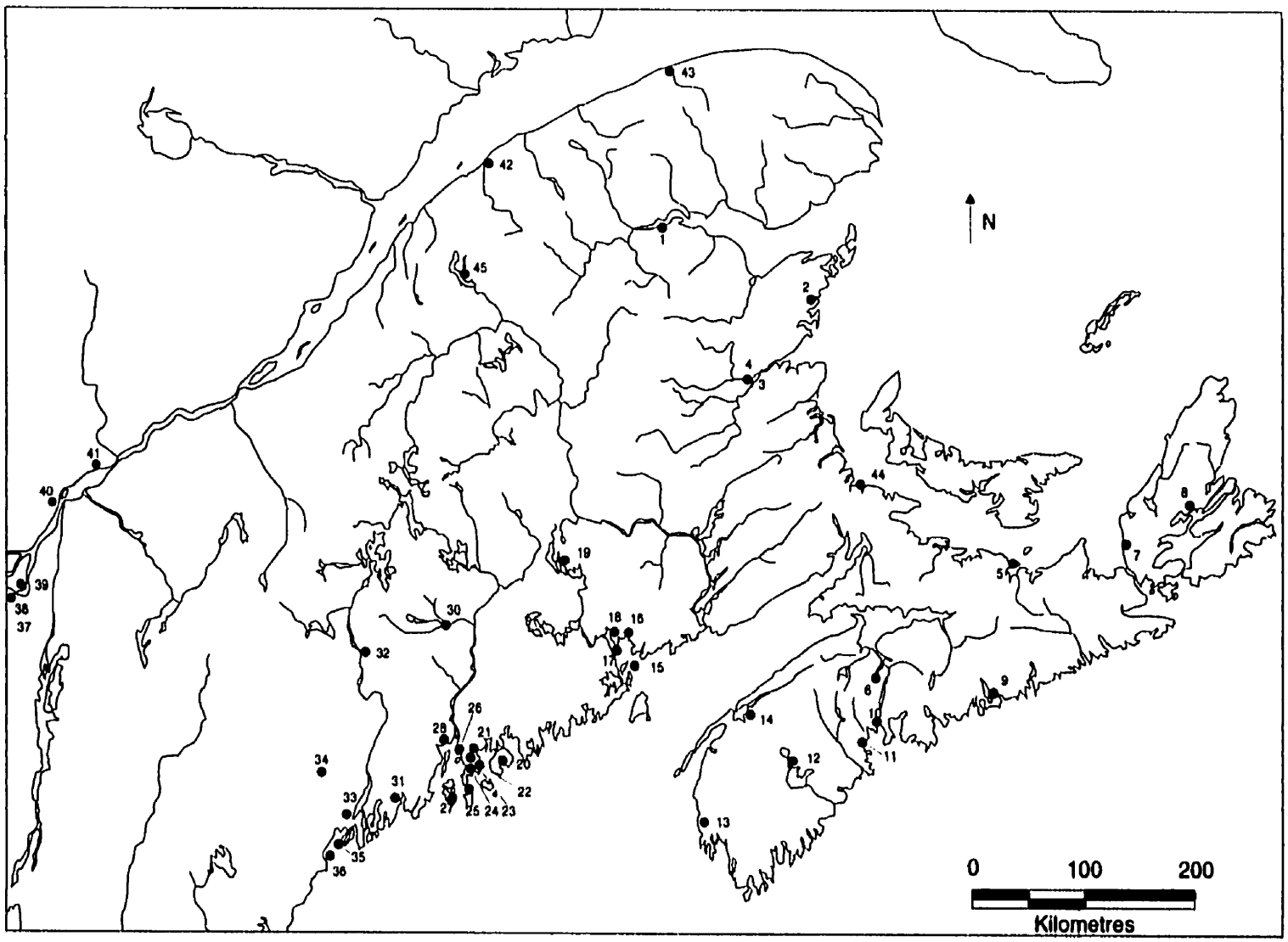
John River divisions lacking direct radiocarbon associations. This is especially pertinent to the later sub-periods of the Ceramic Period.

The majority of this comparative data originates from an ongoing regional ceramic study by Petersen and Sanger (1991). Other regional studies used in this section, either for their assemblages and/or methodologies, are those of Allen (1981), Black (1992), Keenlyside (1978), and Kristmanson (1992). For the most part, these ceramic assemblages represent areas associated with specific language or cultural groups within the Maritime Peninsula. This scope of comparison is central to the question of whether ethnicity or other social boundaries are reflected in ceramic design elements. If so, to what degree are Saint John River ceramics different from those of eastern coastal New Brunswick and Nova Scotia?

Comparative assemblages are discussed in chronological order according to the Petersen and Sanger model (CP 1-CP 7) and evaluated against the Saint John River sequence. The locations of comparative sites discussed in the text are plotted in Figure 2.

Ceramic Period 1

Aboriginal peoples inhabiting the Northeast during this time period (ca. 3000-2150 BP) are often equated with Adena, Middlesex or Meadowood complexes or traditions as defined in New York State by Ritchie (1980). Ceramics associated with these traditions are referred to as "Vinette I", named after a ceramic sequence defined by Ritchie from the Vinette site. These are typically undecorated, grit tempered, beaker- shaped vessels with some form of perishable fiber impressions paddled on interior and exterior



1.Old Mission Point
2.Tommy's Point
3.Augustine Mound
4.Oxbow
5.Cox/Swanson
6.St. Croix
7.Indian Point
8.Ben Francis
9.Brown
10.Wyaacht Cove
11.Eisenhauer
12.Eel Weir
13.Bain
14.Bear River
15.Weir/Partridge Isalnd
16.Teacher's Cove
17.Minister's Island
18.Sandy Point
19.Mud Lake Stream
20.Fernald Point
21.Grindle
22.Goddard
23.Hunneman
24.Eaton/Weisenthal
25.Knox
26.Pentagoet
27.Turner Farm
28.Kidder Point
29.Ayer's Rapids
30.Sharrow
31.Todd
32.Evergreens
33.Pejopscot
34.Quartz Scraper
35.Great Moshier Island
36. Great Diamond Island
37.Berry
38.Point-du-Buisson
39.Dawson
40.Laronale
41.Monique
42.Cap a l'Orignal
43.Cap Chat
44. Skull Island
45.Davidson

Figure 2: Regional Distribution of Ceramic Period Sites

surfaces, sometimes partially obscured by smoothing. The earliest known dated example of a "Vinette I-like" ceramic in the Maine/Maritimes area comes from the Knox site in Penobscot Bay, Maine (Petersen and Sanger 1991). Two radiocarbon dates of 2720±90 BP and 2270±70 BP are directly associated with fabric paddled ceramics (Belcher 1989). Other sites in Maine which produced early "Vinette I" or CP 1 ceramics are the Great Diamond Island and Great Moshier sites, both in Casco Bay. Early ceramics from these sites are associated with radiocarbon dates of 2315 ± 130 BP and 2210 ± 320 BP respectively (Hamilton 1985, Hamilton and Yesner 1985, Petersen and Sanger 1991).

The St. Croix site (BfDa1) in Nova Scotia produced interior and exterior fabric-impressed ceramics associated with a hearth feature dating to 2500 ± 120 BP (Kristmanson 1992:52). The Rafter Lake site (BeCx3) yielded a single Vinette-I like sherd associated with a Meadowood style projectile point (Kristmanson 1992:58).

Sites in New Brunswick outside the Saint John River system have also produced similar ceramics. Seven interior and exterior fabric-impressed sherds from the Mud Lake Stream site on the St. Croix River drainage were in direct association with a radiocarbon date of 2470 ± 110 BP (Deal 1985). These examples are comparable to the early Jemseg vessels both in terms of date and type.

A CP 1 ceramic vessel was found at the Augustine Mound site on the Miramichi River dating to 2330 ± 110 BP. The sherds were located in the fill of the mound. The interior of the vessel exhibits typical Vinette I fabric impressions. The exterior surface is smoothed and stamped with a series of

linear punctates on the surface. This is one of only a few recorded examples of fabric-impressed ceramics with exterior stamping. A vessel from the McKinlay site on the Miramichi River displays a trailing technique with a filled in triangular motif. Although there are no direct dates for the site, associated Middlesex artifacts suggest a general CP 1 date.

A CP 1 occupational component at the Oxbow site introduces a variation from the norm in the Maine/Maritimes area. Ceramics associated with features dated to CP 1 display typical CP 2 attributes (Allen 1981). Four dates (2980 ± 80 BP, 2640 ± 50 BP, 2600 ± 60 BP, and 2480 ± 105 BP) are associated with thin-walled, rocker-dentate, rocker-pseudo-scallop shell and undecorated ceramics. Similar occurrences, although unusual, are documented elsewhere in the Maine/Maritimes area. In Maine, the Kidder Point site (2600 ± 220 BP) and the Turner Farm site (2275 ± 130 BP) in Penobscot Bay, the Todd site (2225 ± 65 BP) in Muscongus Bay, and the Evergreens site (2360 + 60 BP) on the Kennebec River, all display some form of stamped decoration on ceramics associated with CP 1 dates (Petersen and Sanger 1991). It has therefore been suggested that in certain areas of the Maine/Maritimes area, stamp decorated ceramics occurred simultaneously with undecorated fabric- or cord-paddled ceramics during the last centuries of the Early Ceramic Period or CP 1 between ca. 2600 and 2150 BP (Allen 1981). This pattern is not apparent in the Saint John River sequence.

Ceramic Period 2

The apparent increase in ceramic technological proficiency observed in the Saint John River CP 2 sample is also apparent in other regions of the Maine/Maritimes area. The CP 2 division (SJR-CP 2a and SJR-CP 2b) as suggested by the results of the Saint John River ceramic analysis reflects significant observable changes in attribute combinations that occurred in association with the radiocarbon dates from the Fulton Island and Bull Frog sites. This distinction has not been observed in other regional ceramic sequences within the Maritime Provinces or elsewhere in the far Northeast. The CP 2 comparative sample is therefore treated as one period.

The predominant type of ceramic manufacture and decoration throughout the Maine/Maritimes area during the first half of CP 2 (ca. 2150-1850 BP) consists of thin-walled rocker-dentate and/or pseudo-scallop shell stamped ceramics. It has been suggested that the distribution of these styles reflects a more linear pattern than the preceding CP 1 ceramic style (Petersen and Sanger 1991:136).

In Maine, the Todd and Blackman's Stream sites both produced thin-walled rocker-dentate stamped ceramics associated with 2120 $\pm$ 70 BP and 2110 $\pm$ 70 BP dates respectively (Belcher and Kellogg 1987; Petersen and Sanger 1991; Skinas 1987). The Bear River site, in Nova Scotia, had both rocker-dentate and rocker-pseudo-scallop shell stamped ceramics of a similar type that dated to 2125$\pm$65 BP (Connolly 1977; Petersen and Sanger 1991). In northeastern New Brunswick, the Oxbow site produced four radiocarbon dates (2145$\pm$65 BP; 2120$\pm$65 BP; 2075$\pm$55 BP; and 2070$\pm$60 BP) associated with thin-walled, rocker- and/or simple-dentate stamped,

rocker-pseudo-scallop shell stamped and smoothed undecorated ceramics (Allen 1985; Petersen and Sanger 1991). The early CP 2 component at Old Mission Point in northern New Brunswick provided both rocker-dentate and rocker-pseudo-scallop shell sherds from a context dated to 2030±120 BP (C. Turnbull 1974).

Pseudo-scallop shell stamped ceramics are broadly distributed from Manitoba through the Great Lakes/Saint Lawrence drainage to the Maritimes. Saugeen ceramics from southwestern Ontario display both rocker- and simple-pseudo-scallop shell stamped ceramics which is characteristic of the early phase of this localized manifestation between ca. 2650 BP and 1850 BP (Finlayson 1977).

In contrast, dentate stamping, is more commonly encountered south and east of the Great Lakes area (Hopewellian, Point Peninsula, etc.) and is believed to be a slightly later phenomenon than pseudo-scallop shell decoration (Petersen and Sanger 1991). In the Maritime Provinces, dentate stamp decoration appears to be contemporaneous with pseudo-scallop shell stamping by ca. 2100 BP and possibly even earlier (Foulkes 1981:182; Allen 1981).

During CP 2, the occurrence of particular stylistic attributes in certain areas appear to be localized developments with limited geographic distribution. CP 2 ceramics in New Brunswick and Nova Scotia characteristically display varied forms of castellation on the rim of the vessels, which is uncommon elsewhere in the Northeast during this period. This suggests a regional complex that might reflect close cultural affinities among populations inhabiting the eastern part of the Maritime Peninsula

during this time period. The overall similarities between ceramics from Saint John River and ceramics from the rest of the Maritime Provinces during CP 1 and the first half of CP 2 (ca. 2500-1850 BP) is significant, in that it demonstrates a commonality in this aspect of material culture that could suggest the absence of the "social boundary" between Maliseet and Mi'kmaq groups observed in the early historic period.

The analysis of the Saint John River ceramics revealed certain stylistic horizons or localized trends that became more evident during the later portion of CP 2 (ca. 1850-1650 BP). Saint John River ceramics during the early portion of CP 2 (ca. 2150-1850 BP) were remarkably similar throughout most of the Maine/Maritimes area, while the second half saw the introduction of new attributes that seem to reflect external relationships with various groups. For instance, it is thought that a much higher degree of stamping on the upper interior of the rim surface "...is notable in the St. Lawrence River drainage of southern Canada and Vermont at sites such as Pointe-du-Buisson and Winooski, providing tentative evidence along with other attributes of a distinctive regional complex when contrasted with Maine and the Maritimes" (Petersen and Sanger 1991:132). The analysis of the Saint John River ceramics revealed a relatively frequent occurrence of this attribute during the second half of CP 2. Twenty of the 57 vessels (35%), dating between ca. 1850 BP and 1650 BP, displayed either pseudo-scallop shell or dentate stamp decoration on the interior rim surface. This attribute is relatively uncommon during this period at the Oxbow site (Allen 1981:123), and is not reported at all in Nova Scotia (Kristmanson 1992). Interior

surfaces of vessels from these sites are generally smoothed and undecorated throughout CP 2 and 3.

It is also believed that, " ...while interior and exterior smoothing are the characteristic type of surface finish, channeling or scraping with a toothed implement is variably present on the interior surface of some CP 2 vessels" (Petersen and Sanger 1991:132). This combination of attributes is reported west and south-west of the study area including Vermont and New York. Variations on this theme occur in Ontario and Quebec during CP 2. This trait was thought to be absent or rare during CP 2 in Maine and the Maritime Provinces (Petersen and Sanger 1991:133). However, over 12% of vessels from the Saint John River sample which date to the later half of CP 2 (ca. 1850-1650 BP) display varied forms of channeling on the interior surface of the upper rim. Of particular interest is the fact that this attribute occurs to a much lesser degree on CP 2 ceramics from the Oxbow site in northeastern New Brunswick, and only occurs much later in Nova Scotia (CP 4-7) in association with cord-wrapped stick decorated vessels (Kristmanson 1992:77).

A second diagnostic trait of SJR-CP2b is the application of interior circular punctates with intentional exterior bossing. This dual attribute occurs on three vessels from the SJR-CP 2b time frame (ca. 1850-1650 BP) and one from SJR-CP 3 (ca. 1650-1350 BP), in conjunction with either pseudo-scallop shell or dentate stamping. This attribute is also present on vessels attributed to the Laurel Tradition north of Lake Superior, and from sites along the St. Lawrence drainage (Wright 1967).

The presence of low additive collars associated with dentate stamping on Saint John River vessels is also a diagnostic attribute of SJR-CP 2b. Ten of the 57 SJR-CP 2b vessels (18%) display varied forms of collar on the exterior of the rim, five of which have dated associations that place them between ca. 1850 and 1650 BP. Petersen and Sanger (1991:129) suggest this attribute is a slightly later phenomenon, diagnostic of CP 3 ceramics dating between 1650 and 1350 BP. Collared ceramics from CP 3 are known to occur in areas north of the Great Lakes (i.e., the Laurel Tradition), Vermont, and the Saint Lawrence drainage (Wright 1967; Petersen 1980). This attribute also occurs on contemporary vessels from the Teacher's Cove site and at the Mud Lake Stream site in southwestern New Brunswick (Davis 1978:28; Deal 1985), suggesting close affinities between Passamaquoddy groups and Saint John River Maliseet groups during the later half of the CP 2 period (ca. 1850-1650 BP).

Examination of CP 2 and CP 3 ceramics from the Oxbow identified a significantly smaller percentage of collared or thickened rims. Collars are not documented on CP 2 or CP 3 ceramics from Nova Scotia (Kristmanson 1992). This may be attributed to use of different terminology. Kristmanson (1990: 114) mentions the presence of "expanding rims" in the Melanson site collection. Illustrated vessels with "expanding rims" in the Melanson site report are equivalent to collared or thickened rims in this study. However collared rims from the Melanson site vessels are associated with cord-wrapped stick decoration which is typically a later (ca. 1350-500 BP) trait. In Kristmanson' s thesis on ceramics from Nova Scotia (1992), collared rims are again strictly associated with cord-wrapped stick decoration.

It would seem, therefore, that certain southwestern influences (collared rims, interior stamping, exterior bossing, and interior channeling) are observable on Saint John River ceramics during the later portion of CP 2 (ca. 1850-1650 BP). These attributes were not incorporated into the ceramic technology of groups inhabiting coastal New Brunswick and Nova Scotia during this time.

Ceramic Period 3

Ceramics characteristic of CP 3 (ca. 1650-1350 BP) are typically thicker than CP 2 vessels. The average rim thickness of the eight vessels attributed to SJR-CP 3 is 7-9 mm; all of these display rocker-dentate stamping on the exterior rim surface. The use of a dentate tool is carried over from the earlier SJR-CP 2 a & b period while the pseudo-scallop shell tool is abandoned. One of the SJR-CP 3 vessels also displays interior punctates producing exterior bossing, another attribute carried over from SJR-CP 2b.

Similar ceramics are documented from CP 3 sites in Maine. The Knox site in Penobscot Bay yielded a date of 1610 $\pm$ 70 BP in association with rocker- and simple-dentate stamped sherds with circular and linear punctates, and incised motifs (Belcher 1989: 40). The Great Diamond Island site in Casco Bay produced two dates of 1600 $\pm$ 95 and 1520 $\pm$ 55 BP associated with simple- and rocker-dentate stamped vessels (Hamilton and Yesner 1985: 45).

At Teacher's Cove in Passamaquoddy Bay, ceramics associated with a 1635$\pm$60 BP date display both dentate and cord-wrapped stick decoration

(Davis 1978). Both tools were stamped on the exterior surface of three vessels, possibly reflecting a transitional stage in ceramic design from dentate to cord-wrapped stick.

Both the simple- and rocker-dentate stamping technique become more prevalent at the Oxbow site during CP 3 (Allen 1981:120). These attributes were initially introduced at the Oxbow site prior to 2100 BP but dropped in popularity during CP 2 only to increase again during CP 3 (Allen 1981).

The use of a dentate tool became more prevalent in Nova Scotia during CP 3. This development is accompanied by a noticeable increase in vessel thickness (Kristmanson 1992: 66). The Ben Francis site in Indian Bay, Cape Breton, produced two dates of 1465 $\pm$ 80 BP and 1345 $\pm$ 85 BP in association with grit-tempered, rocker-dentate stamped ceramics (Sheldon 1988: 137).

Both simple- and rocker-dentate stamping on ceramic vessels is thought to be of Hopewellian origin (Wright 1967: 122; Allen 1981:144). Despite these similarities in decorative tool and technique, the apparent Hopewellian influence felt in the Northeast during the Middle Ceramic Period should be treated in terms of discrete localized manifestations rather than a full blown cultural horizon (Fitting 1978: 45). Nonetheless, it is apparent that certain Hopewellian ceramic traits were introduced in the Maritime Provinces to some degree during late CP 2 and developed independently during CP 3.

Ceramic Period 4

Several dramatic changes in ceramic decoration and manufacture occur during this period (ca. 1350-950 BP). While vessel shape and size remain relatively constant, cord-wrapped stick as a decorative tool ultimately replaced the dentate tool during CP 4. Generally, the use of organic temper began after 1350 BP but it was perhaps used earlier in some areas (Allen 1981).

Another characteristic of CP 4 ceramics is the standardized application of circular punctates on the exterior rim surface frequently in combination with cord-wrapped stick decoration. Circular punctates are typically applied below a low collar or thickened rim. This decorative pattern is a continuation from CP 3 in which dentate stamping is replaced by cord-wrapped stick.

According to Petersen and Sanger 1991:129), low collars on vessel rims is a CP 3 and CP 4 characteristic in the Northeast. While low collars are present on several of the Saint John River vessels that date to the latter half of CP 2 (ca. 1850-1650 BP), they are absent from CP 3 vessels (ca. 1650-1350 BP). This could be attributed to the poor representation of CP 3 dated vessels in the Saint John River sequence. Low collars do, however, become standard on Saint John River ceramics after ca. 1350 BP in combination with cord-wrapped stick decoration.

Cord-wrapped stick decoration combined with standardized circular punctates is regarded as a relatively late innovation in ceramic decoration in the Northeast, potentially indicative of a broad-scale ceramic horizon style (Petersen and Sanger 1991:134). The earliest known radiocarbon dated

ceramics of this type are from the Oxbow site. Organically tempered plain and cord-wrapped stick impressed ceramics were found in general association with wood charcoal dating to 1675 ± 50 BP (Allen 1981:228). Early (1570 ± 150 BP) cord-wrapped stick ceramics also come from the Davidson site in Lake Temiscouata, Quebec (Chalifoux and Burke 1995: 256; Foulkes 1981). Similar ceramics associated with CP 3 dates occur in Maine (Petersen and Sanger 1991). Aside from these isolated cases, components with cord-wrapped stick impressed ceramics typically date from ca. 1350 BP to the contact period.

A 1025 ± 120 BP date is associated with cord-wrapped stick ceramics at the Pointe-à-Tom site at the mouth of the Tracadie River (Keenlyside and Keenlyside 1976:29). These are relatively thin walled ceramics with organic temper, very similar to vessels from the Oxbow site.

In the Saint John River sequence, all reliably dated cord-wrapped stick ceramics occur after ca. 1350 BP. Cord-wrapped stick vessels from Fulton Island are stratigraphically later than a 1605 ± 55 BP date. Similar ceramics are directly associated with a date of 1260 ± 90 BP at the Cronkite site. Fourteen of the twenty-four Late Ceramic Period Saint John River vessels are reliably dated between ca. 1350 and 950 BP. The remaining ten vessels are contemporaneous or later based on the Petersen and Sanger classification.

Another localized trend in CP 4 ceramics from the Saint John River lies within vessel manufacture. The average vessel thickness for Saint John River CP 4 vessels is between 7 and 9 mm for the lip, and 10 mm for the rim and body (Table 5). While this conforms to ceramics from southwest of the

study area, contemporaneous ceramics from eastern coastal New Brunswick and Nova Scotia are generally thinner.

The use of organic- or shell-tempering becomes more popular during CP 4, however, grit still remains the dominant tempering material. It is not until CP 5 that there is a shift from grit temper to organic temper (Petersen and Sanger 1991:136). This is especially true of coastal sites rather than interior sites. Coastal sites generally have higher percentages of shell-tempered vessels compared to non-coastal sites during the Late Ceramic period between ca. 1350 BP and 500 BP (Petersen and Sanger 1991:139).

Along the Saint John River, organic tempering is present on 42% (6) of the fourteen reliably dated SJR-CP 4 vessels from interior sites. Of the ten SJR-CP 4/5/6 vessels, one is tempered with organic materials. This suggests a greater occurrence of the technology (29%) on inland sites during the Late Ceramic Period than previously reported.

Ceramic Period 5

The principle diagnostic attribute of CP 5 (ca. 950-650 BP) is organic- or shell-tempering (Petersen and Sanger 1991). The use of the cord-wrapped stick tool and circular punctates is carried over from the previous period. There also appears to be an increase in exterior fabric-paddling during this period (Petersen and Sanger 1991:136). The two undated cord-wrapped stick decorated vessels from the Hazel site have exterior fabric-paddling and are therefore attributed to this period. Similarly decorated ceramics are also found on contemporaneous sites adjacent to the study area: the Carson site on Passamaquoddy Bay, the Great Diamond Island

site on Casco Bay, and the Brown site in Nova Scotia (Hamilton and Yesner 1985; Sanger 1987; Sheldon 1988).

Thin-walled organic-tempered ceramics with cord-wrapped stick and circular punctate decoration were recovered at the Oxbow site, stratigraphically above CP 4 sherds dated to 1080 ± 90 BP (Allen 1981). The stratigraphic context and vessel attributes are consistent with a CP 5 ascription.

Ceramic Period 6

While organic temper continues to be dominant with cord-wrapped stick and punctate decorated ceramics, there appears to have been a movement towards thinner vessels during CP 6. At the Oxbow site, the upper-most pre-contact levels continued to produce very thin organic-tempered cord-wrapped stick ceramics (Allen 1981). The Skull Island site in Shediac Bay produced nine nearly complete vessels of this kind dated to ca. 650-500 BP (Leonard 1996). The ceremonial context of the vessels suggest a single depositional event (Leonard 1996:103). An interesting aspect of the Skull Island ceramics is the variation in size and shape in contemporaneous vessels, potentially indicative of synchronous variation in vessel form.

Another ceramic innovation generally identified with CP 6 is "...the typical use of extrusive collars on the upper rim portion of each vessel in the Owasco-Iroquois tradition in contrast with the earlier known additive rim collars found in late CP 3 and CP 4 ceramics" (Petersen and Sanger 1991:143). These CP 6 vessels commonly have geometric motifs restricted to the collared rims, often simple stamped with a cord-wrapped stick or a

dentate tool. This external influence is present on eight vessels from the later component at the Savage Island site and the Murray site. These are the only Saint John River vessels representative of CP 6 (ca. 650-400 BP). These attribute combinations give support to possible Saint Lawrence Iroquoian interaction with the Maliseet during the last centuries prior to European contact.

The presence of diagnostic Iroquoian pottery at the Davidson site on Lake Temiscouata, Quebec, provides additional support for Iroquoian influences on Saint John River ceramics during the Late Ceramic Period. The site is located along the northern periphery of the Saint John River drainage, and Lake Temiscouata is known historically as a significant portage route between the Saint Lawrence drainage and Saint John River (Chalifoux and Burke 1995). Lower strata of the Davidson site also produced grit-tempered vessels with cord-wrapped stick and circular punctate decoration comparable to CP 4 vessels from the study area (Chalifoux and Burke 1995: 257). Iroquoian influences are absent or remain undetected in ceramic assemblages from eastern New Brunswick and Nova Scotia.

Ceramic Period 7

There is no evidence of ceramic manufacture along the Saint John River or elsewhere in New Brunswick and Nova Scotia after European contact. It is generally accepted that the technology was abandoned in favour of European trade items (Petersen and Sanger 1991). The early abandonment of ceramics on the East Coast is attributed to early contact

with European traders and settlers. For example, ceremonial practices involving aboriginal ceramics at the end of the Late Ceramic Period or CP 6 in eastern New Brunswick and Nova Scotia, were modified during the Contact Period by the substitution of European copper kettles instead of ceramic vessels (Leonard 1996; Whitehead 1991).

Interpretations

Analysis of ceramics from the Saint John River and comparison with collections from adjacent areas raises critical questions regarding the culture history of the Maine/Maritime area. The material culture patterns identified in the course of this research reflect the dynamic nature of interaction between groups and populations from different parts of the peninsula during the Ceramic Period. It must however be stressed that the interpretations and conclusions presented here are based on the information and results of this regional study. Subsequent information can and will serve to supplement or clarify these conclusions.

Ceramics were introduced into the Maine/Maritimes area (ca. 3050-2150 BP) during a period of widespread social interaction among proto-Algonquian speaking groups (Fitting 1978). Similarities in certain aspects of material culture, including ceramics, within and adjacent to the study area support this notion. The relatively homogeneous "Vinette I" ceramic horizon is common on Early Ceramic Period sites across the broad Northeast (Petersen and Sanger 1991).

Interaction patterns become less wide spread and more linear after ca. 2200 BP, as evidenced by intra-regional variation in the material culture

of most areas within the Northeast. This coincides with the beginning of a significant language and/or population divergence (Fiedel 1990:218; Petersen and Sanger 1991). Ceramic evidence from most areas of the Maritimes during this period shows obvious influence from populations located south and west of the Great Lakes. By the latter part of CP 2 (ca. 1850-1600 BP), as suggested by the Saint John River ceramic sequence, regional variation becomes more apparent within and immediately adjacent to the study area. Specific attribute trends originating from south and west of the Great Lakes made their way up the Saint Lawrence drainage into the Saint John River at this time. This supports the concept of a linear distribution pattern through trade and other forms of social interaction. The absence of these attribute trends in eastern coastal areas of New Brunswick and Nova Scotia strongly suggests that after ca. 1850 BP these groups participated to a lesser degree in the Great Lakes/St. Lawrence drainage social interaction sphere than did their contemporaries along the Saint John River.

Similarities and developments in primary decorative attributes such as tool type (i.e., pseudo-scallop shell, dentate, and cord-wrapped stick), technique of application (i.e., rocker, simple, and dragged), and vessel shape remain relatively constant throughout the Northeast including the traditional Maliseet and Mi'kmaq traditional territories. These general similarities suggest a degree of interaction between these linguistic groups. Pronounced differences in the presence and absence of secondary or less visible attributes, including collared rims, interior decoration, channelling, exterior bossing and vessel thickness, are found to be significant culture-

historical indices. The spatial and temporal distributions of these stylistic markers trace the course of differential interaction patterns among pre-contact aboriginal groups inhabiting the Maine/Maritimes area.

This research strongly suggests that after ca. 1850 BP (ca. AD 100), the ancestors of the historic Maliseet maintained close relationships with groups to the west, while Mi'kmaq groups in eastern coastal New Brunswick and Nova Scotia participated less in this widespread interaction sphere. This interpretation is consistent with the language divergence hypothesis for linguistic differences among the Eastern Algonkian groups, particularly between Mi'kmaq and Maliseet speakers.

Chapter 7

Conclusions

The aboriginal ceramic sequence for the Saint John River spans two millennia between ca. 2500 BP and 500 BP. Six separate sub-periods are defined based on attribute combinations, radiocarbon dates, and Petersen and Sanger's (1991) model. Pre-contact ceramics in the Northeast exhibit widespread uniformity in the development of basic design characteristics. Detailed analyses reveals intra-regional variations within the overall sequence. This study has defined the characteristics of a distinct Saint John River ceramic sequence.

The analysis of 122 ceramic vessel lots traces the development of this technology within the Saint John River Basin. Specific attribute trends are identified that distinguish ceramic design processes within traditional Maliseet territory from those of the neighboring Mi'kmaq. These include the early use of collared rims, trailing, interior stamping, interior channelling, exterior bossing, and vessel thickness.

The Petersen and Sanger model applies, in general, to Saint John River ceramics, with two significant exceptions. Both the nature and implications of these discrepancies support the identification of a distinct ceramic sequence for the Saint John River.

The first exception to the model is that radiocarbon dated associations for key attribute trends exhibited by Saint John River ceramics suggest that Petersen and Sanger's CP 2 (ca. 2150-1650 BP) should, in this case, be subdivided into two periods: SJR-CP 2a (ca. 2150-1850 BP) and SJR-CP 2b

(ca. 1850-1650 BP). What seperates these two periods is the presence of certain attributes (i.e., exterior bossing, interior stamping, interior channelling, and collared rims) on ceramic assembles from study area after ca. 1850 BP which had not been previously observed. The significance of these attributes being introduced on Saint John River ceramics is heightened by the fact that they are not present on ceramic assemblages from eastern New Brunswick and Nova Scotia.

A second exception to Petersen and Sanger's model is that post-contact period (CP 7) ceramics are not represented at all in the Saint John River sequence. This is also true of eastern New Brunswick and Nova Scotia (Allen 1981, Kristmanson 1992).

The Saint John River sequence also suggests a refinement to Foulkes' (1981) "post Ceramic Period" which she characterized as an absence of ceramics in Late Ceramic Period components. It appears that the use of ceramics along the Saint John River continued during the last centuries of the Ceramic Period (ca. 1000-500 BP) on a smaller scale, suggesting that the technology was declining in importance rather than totally abandoned prior to European Contact.

This research identifies discrete stylistic patterns in ceramic design conditioned by changing dynamics of interaction between groups occupying historical Mi'kmaq and Maliseet territories. Comparative analysis suggests a possible discontinuity in social interaction between the study area (Saint John River) and traditional Mi'kmaq territories to the east. Early ceramics in the Maritimes (ca. 2500-1850 BP) were relatively homogeneous. However, a stylistic discontinuity beginning after ca. 1850 BP suggests the

development of a social boundary between the two linguistic groups. Once established, this boundary seems to have persisted with minor fluctuation throughout the last 1300 years of the Ceramic Period. Distribution patterns of ceramic trends demonstrate that some influences from the Great Lakes/Saint Lawrence drainage reached groups inhabiting the Saint John River, but did not extend further east into traditionally Mi'kmaq territory. The absence of these external ceramic trends in eastern New Brunswick and Nova Scotia is interpreted as evidence of a low degree of social interaction between groups occupying both areas.

This social boundary is supported by glottochronological data which identifies the origin of linguistic divergence between Mi'kmaq and Maliseet during the late Middle Ceramic Period (Fiedel 1990). Additional linguistic and ethnographic evidence demonstrates that during the early historic period, the Maliseet language has more in common with languages to the immediate southwest, than with the Mi'kmaq, their neighbors to the east (Erickson 1978; Snow 1978).

It must be noted however that this proposed Middle and Late Ceramic Period social boundary does not necessarily imply conflict or a conscious political division between the two groups. Despite ethnographic reference to animosity between the Mi'kmaq and Maliseet, the social boundary reflected in ceramic design remains a relative index of differential social interaction. The degree of similarity and/or difference in ceramic attribute trends is proportional to the intensity of social interaction and cannot, on its own, identify the operational processes. Significant stylistic distinction is identified solely on the basis of secondary attributes of ceramic design.

Primary design attributes such as decorative tool, tool application and vessel shape remain relatively consistent throughout the Maritimes. The comparative analysis indicates an historical pattern of strong western influence on ceramic design within the Saint John River watershed. The absence of these trends on ceramics from eastern coastal New Brunswick and Nova Scotia indicates participation in a different pattern of social interaction.

Like the Petersen and Sanger model, the Saint John River ceramic sequence is an interpretive framework to be tested and expanded upon by future research. Further data are required, particularly for the more recent part of the sequence, to provide a complete perspective on ceramic technology along the Saint John River. Culture-historical implications of intra-regional comparisons are limited by the geographical scope of the research. Additional studies incorporating multiple classes of material culture on the Saint John River and in other areas of the Maritime Peninsula are necessary to establish a comprehensive culture-historical model for the region.

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PLATES

Plate I

SJR-CP 1

a) Vessel 2 from Jemseg (BkDm14), with cord-paddled exterior/interior.

b) Vessel 10 from Jemseg (BkDm14), with fabric-paddled exterior/interior.

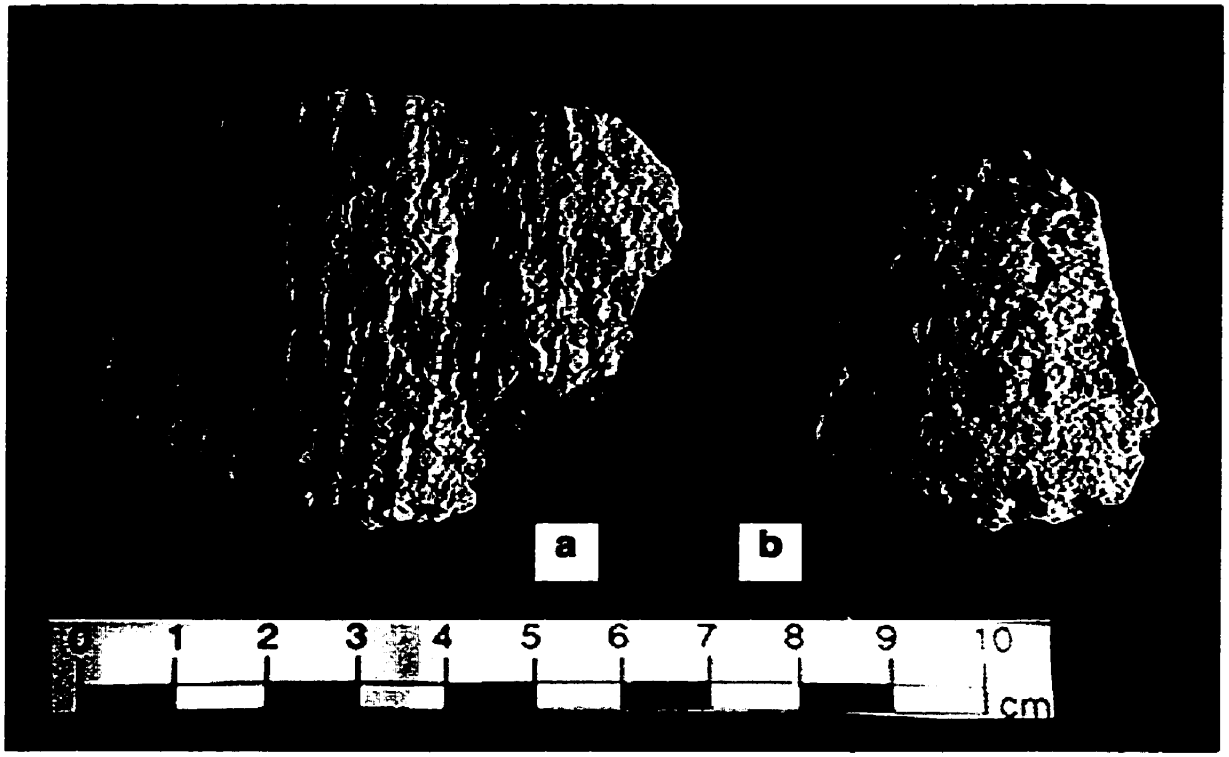

PLATE I

Plate II

SJR-CP 2a
Vessel 8 from Fulton Island (BlDn12), with thin walls and rocker-pseudo-scallop shell, tiny circular punctates and castellation.

Plate III

SJR-CP 2a
Vessel 5 from Fulton Island (BlDn12), with thin walls and smooth undecorated surface.

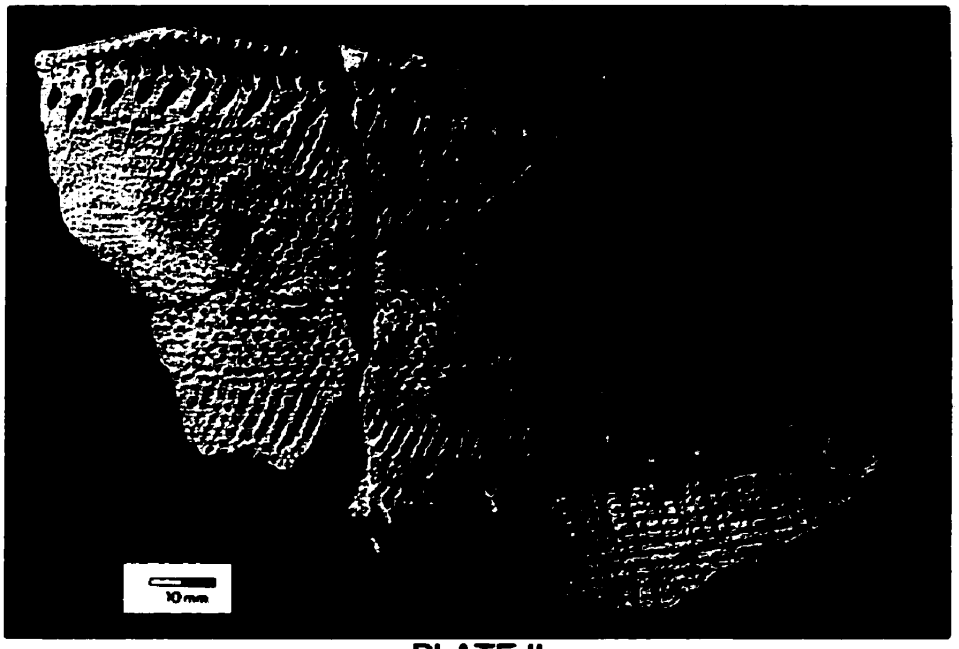

PLATE II

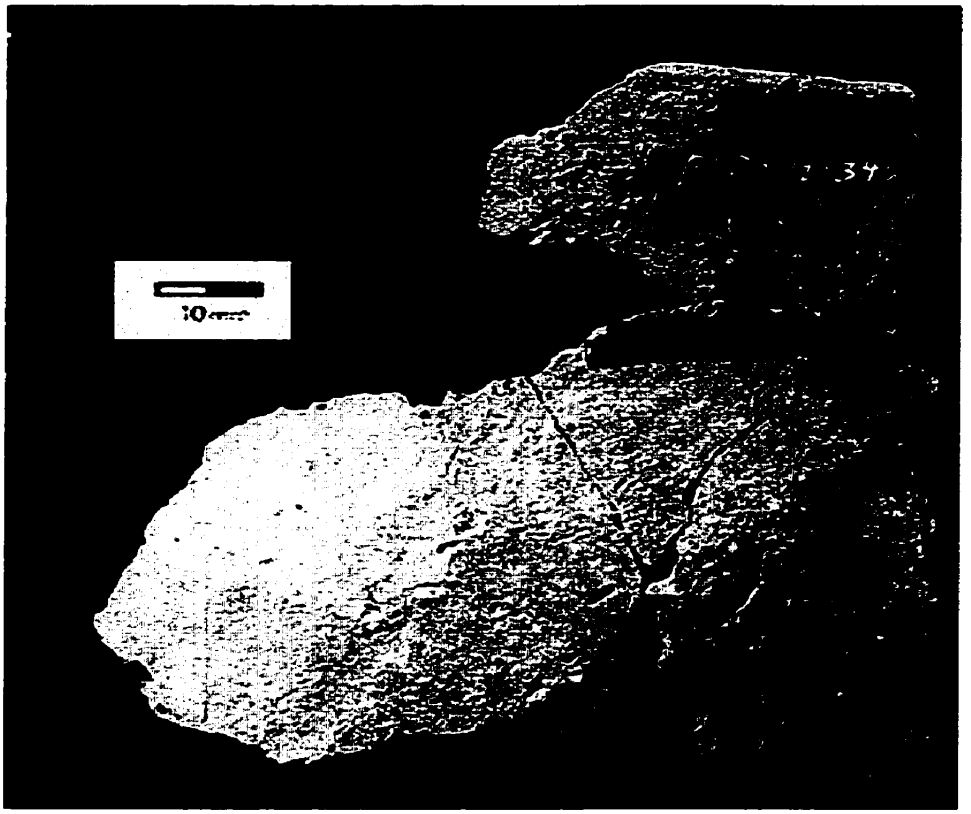

PLATE III

Plate IV

SJR-CP 2b

a) Vessel 1 from Fulton Island (BlDn12), with collar and rocker-dentate decoration.

b) Vessel 16 from Fulton Island (BlDn12), with collar and small oval punctates.

Plate V

SJR-CP 2b

Vessel 13 from Fulton Island (BlDn12), with collar, trailing and castellation.

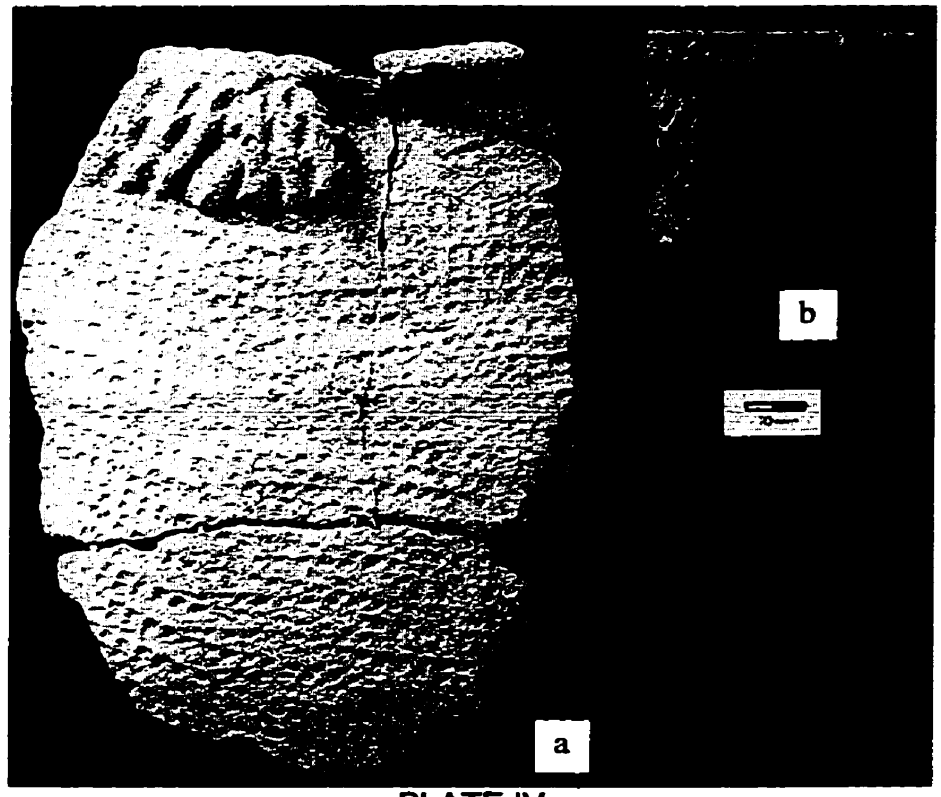

PLATE IV

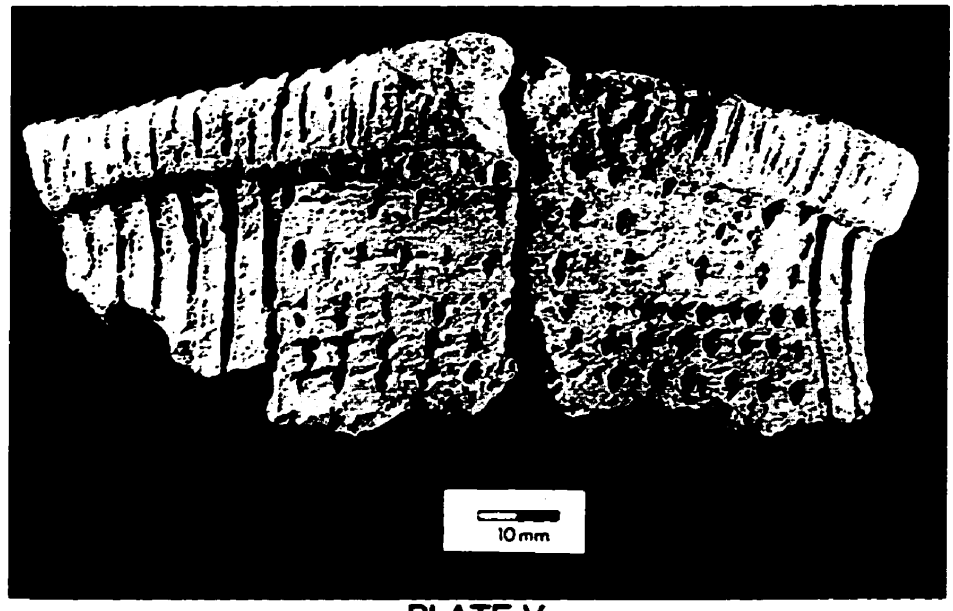

PLATE V

Plate VI

SJR-CP 2b
Vessel 6 from Fulton Island (BIDn12), with simple-dentate stamps and exterior bossing.

Plate VII

SJR-CP 2b
Vessel 7 from Savage Island (BIDq1), with simple-pseudo-scallop shell and exterior bossing.

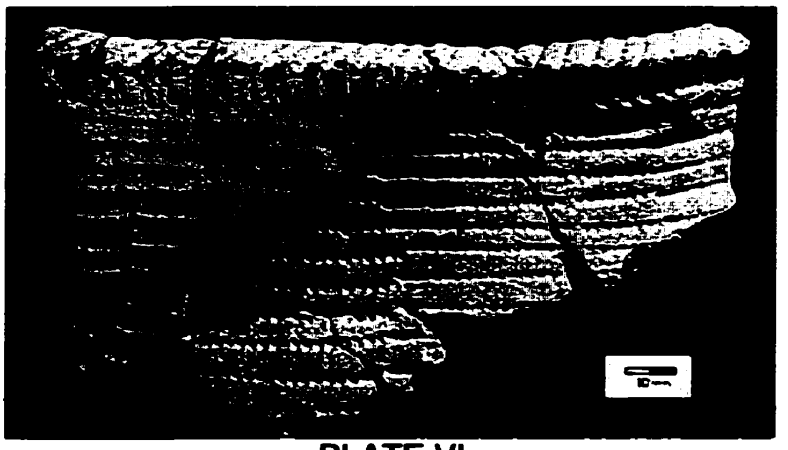

PLATE VI

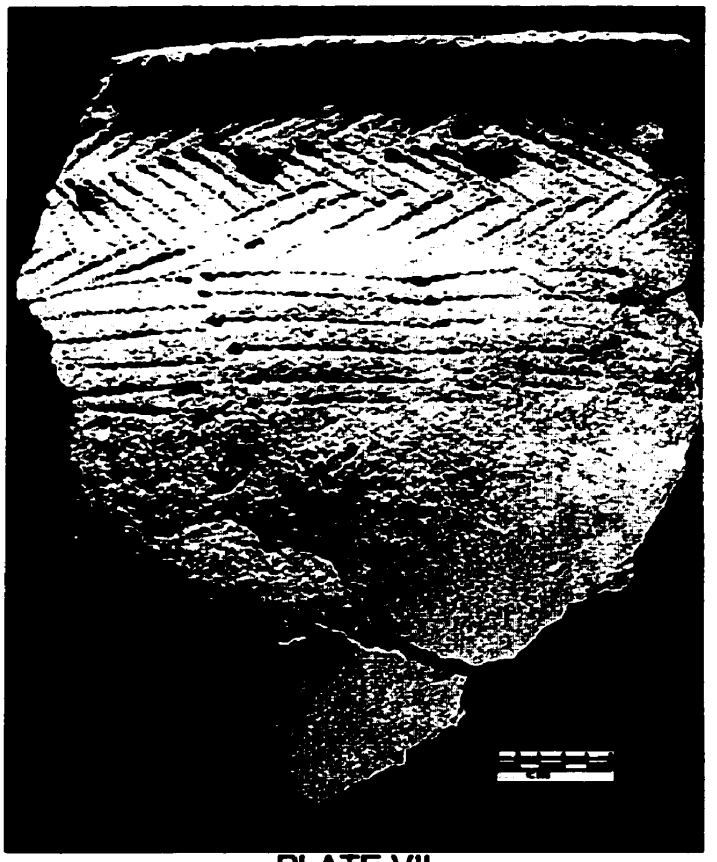

PLATE VII

Plate VIII

SJR-CP 2b

a) Interior surface of vessel 6 from Ring Island (BlDn8), with interior channelling and rocker-dentate.

b) Interior surface of vessel 7 from Ring Island (BlDn8), with interior channelling. Note the castellated rim.

Plate IX

SJR-CP 2b

a) Interior of vessel 4 from Keyhole (BlDm1), with rocker-dentate stamps along the upper interior rim .

b) Interior of vessel 9 from Keyhole (BlDm1), with vertical rocker-pseudo-scallop shell stamps. Note the row of tiny oval punctates along the upper interior rim.

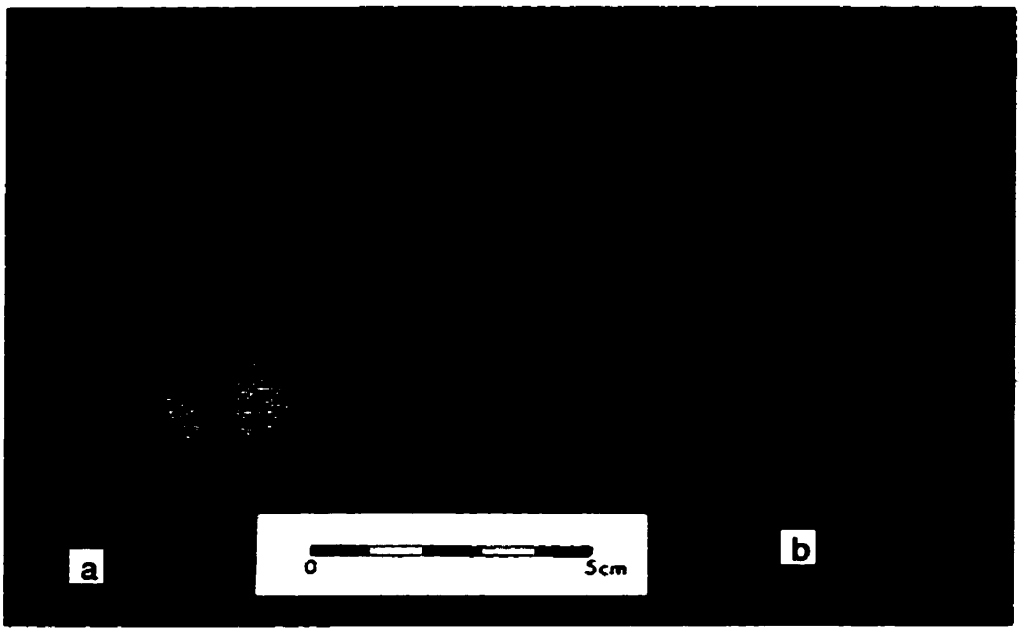

PLATE VIII

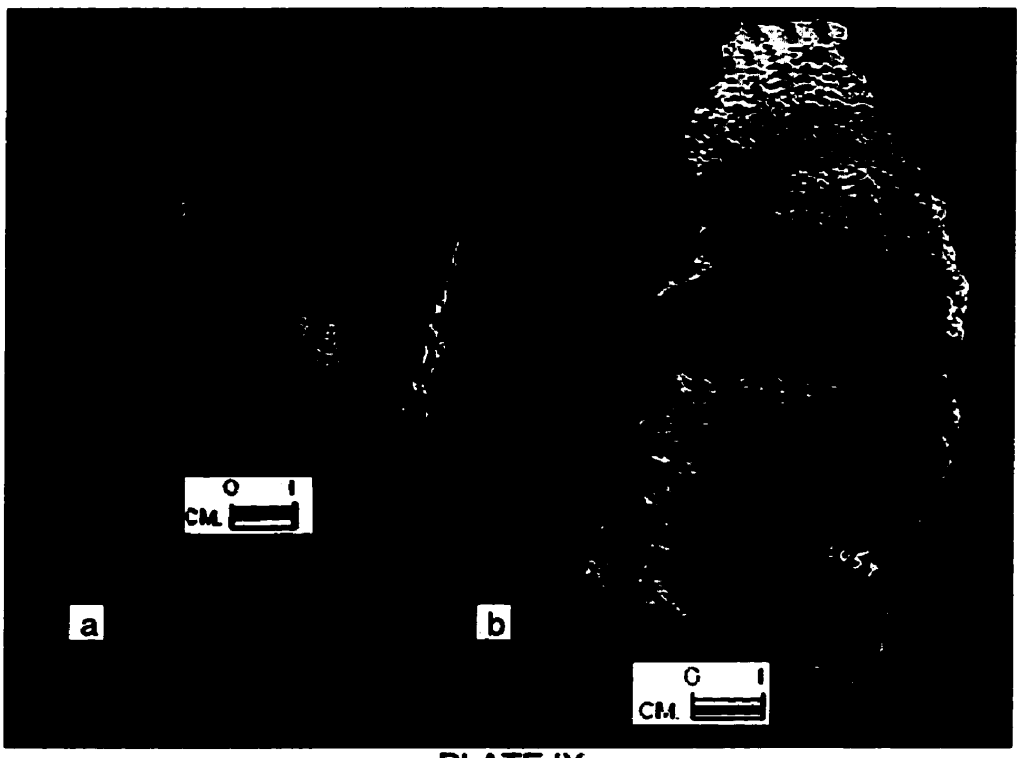

PLATE IX

Plate X

SJR-CP 3

a) Vessel 15 from Fulton Island (BlDn12), with simple- and rocker-dentate stamps.

b) Vessel 17 from Fulton Island (BlDn12), with simple- and rocker-dentate stamps. Note the wall thickness and incipient collar.

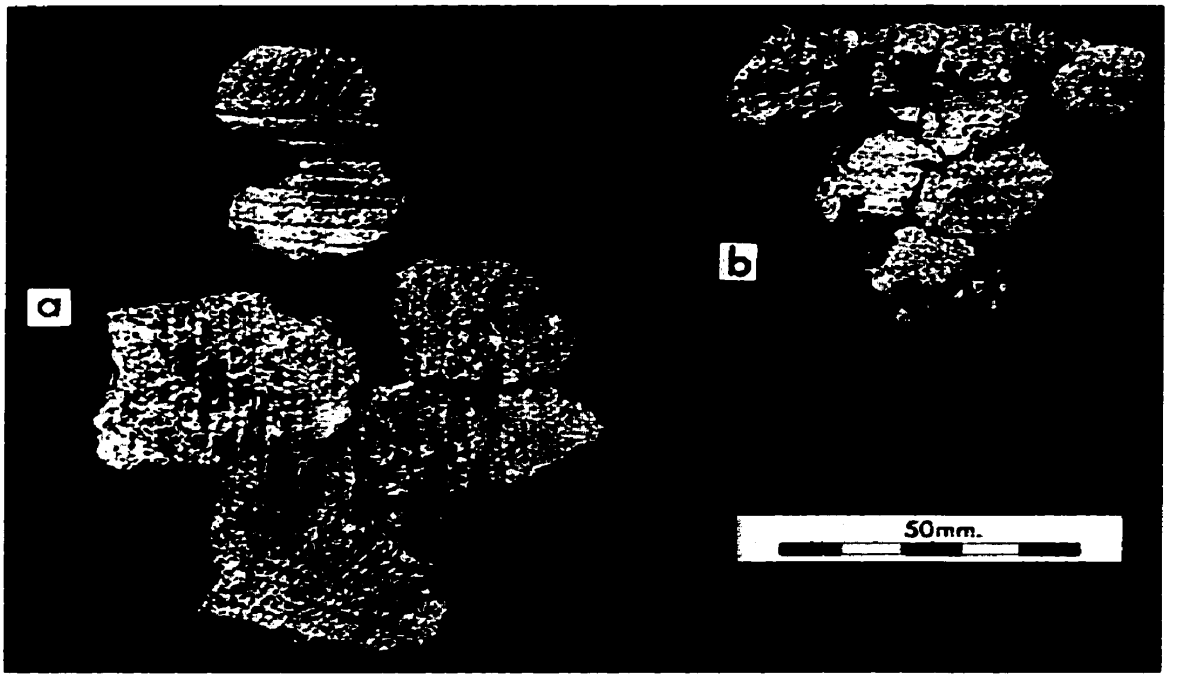

PLATE X

Plate XI

SJR-CP 4

a) Vessel 2 from Cronkite (CaDu8) showing cord-wrapped stick stamps and circular punctates. Note the cavities left from disintegrated organic temper.

b) Vessel 3 from Cronkite (CaDu8) showing thinner and longer cord-wrapped stick stamps and typical circular punctates.

Plate XII

SJR-CP 4

a) Vessel 3 body sherd from Meductic (CaDv1), showing fabric-paddled exterior.

b) Vessel 4 from Meductic (CaDv1), showing short and thick cord-wrapped stick stamps with typical circular punctates.

c) Vessel 5 from Meductic (CaDv1), showing short and thick cord-wrapped stick stamps with typical circular punctates below collar. Note the cavities left from disintegrated organic temper.

d) Vessel 8 from Meductic (CaDv1), showing cord-wrapped stick stamps in a series of chevron motifs with circular punctates below the collar.

e) Vessel 7 from Meductic (CaDv1), with short and thick vertical cord-wrapped stick stamps and circular punctates below collar.

f) Vessel 6 from Meductic (CaDv1), with short and thick horizontal cord-wrapped stick stamps.

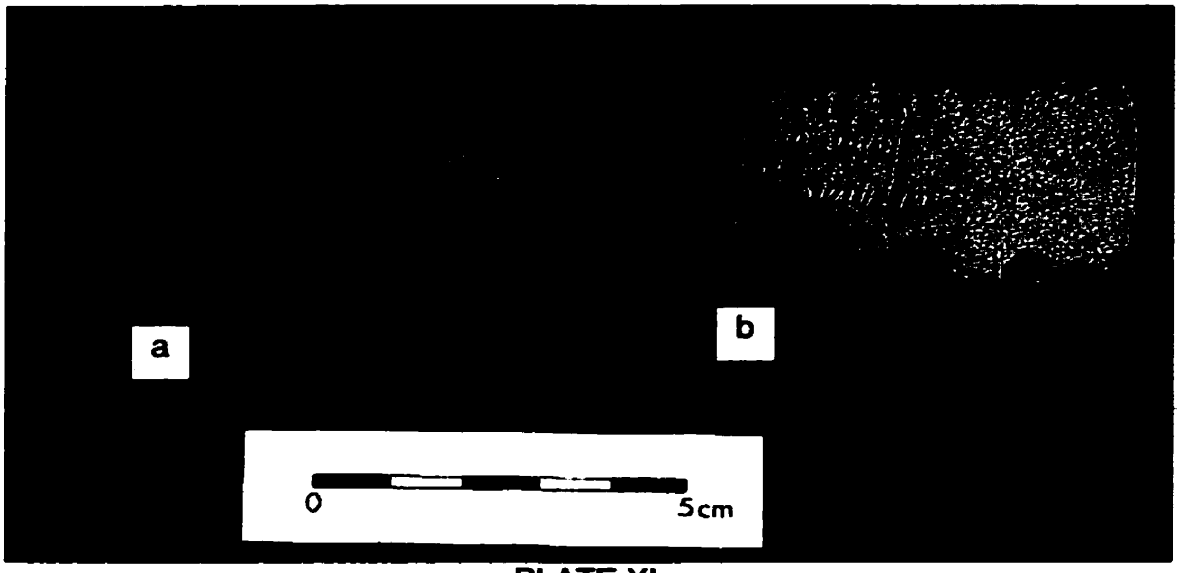

PLATE XI

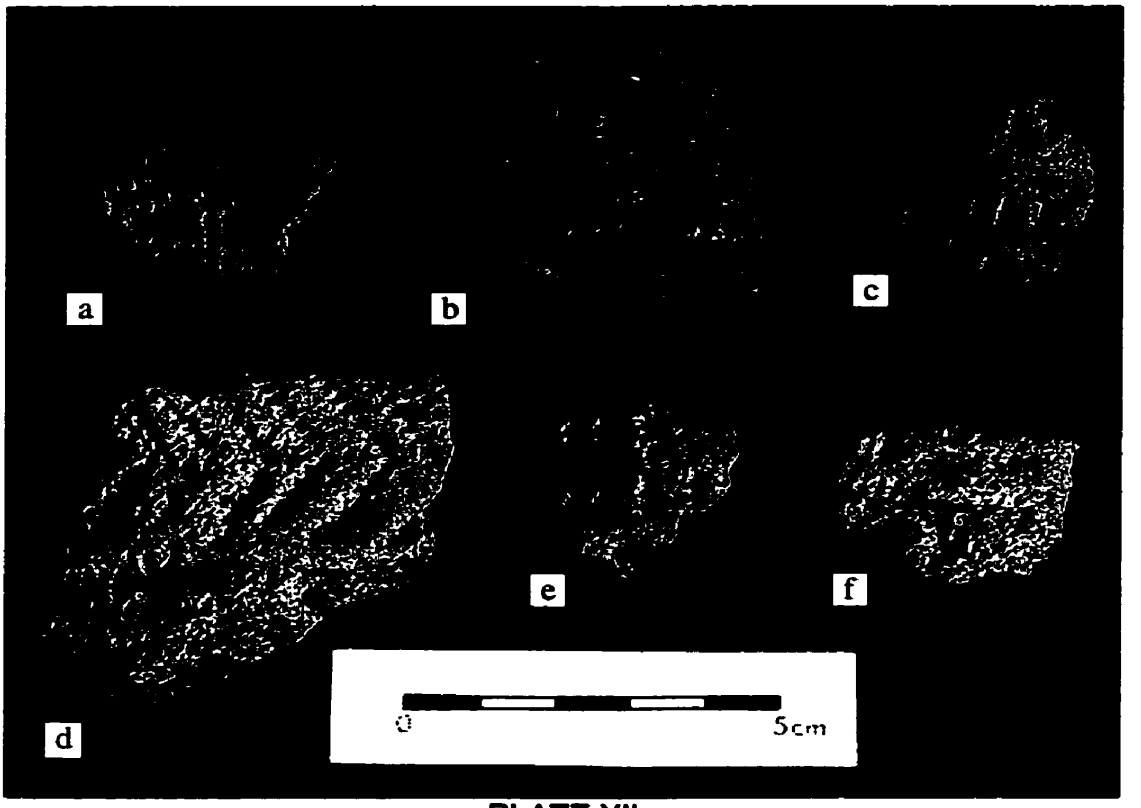

PLATE XII

Plate XIII

SJR-CP 4/5/6

a) Vessel 6 from Savage Island (BlDq1), showing vertical cord-wrapped stick decoration with circular punctates.

b) Vessel 4 from Savage Island (BlDq1), with oblique and vertical simple dentate stamps and circular punctates. Note the collared or thickened rim.

c) Vessel 1 from Savage Island (BlDq1), with oblique "slash punctates" and circular punctates. Note the collared or thickened rim.

d) Vessel 5 from Savage Island (BlDq1), with irregular stamps in a chevron pattern on the collared rim. Note the circular punctates.

Plate XIV

SJR-CP 4/5/6

Vessel 1 from Hazel (CeDw3), with various cord-wrapped stick motifs and circular punctates.

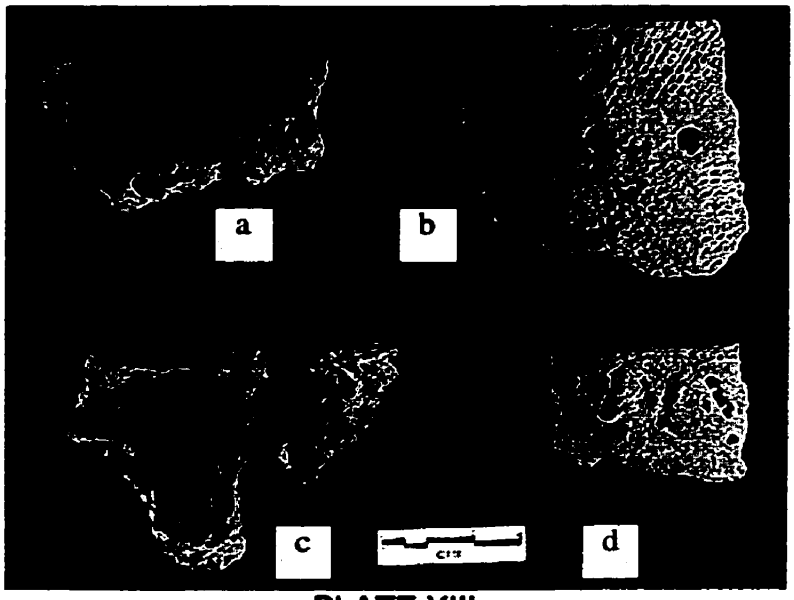

PLATE XIII

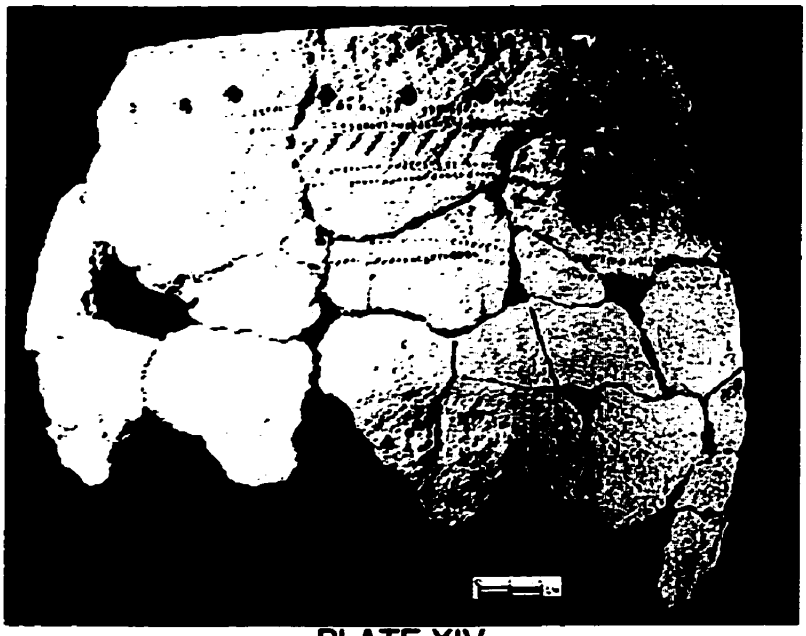

PLATE XIV

Appendix A

Glossary of Terms

Attribute	the smallest quantifiable and qualifiable unit of analysis.
Bossing	node left on the exterior or interior of a vessel as a result of a punctate from the opposite surface.
Castellation	small rounded or pointed incipient projection on vessel lip.
Channelling	striations and gouges left on vessel surface, caused by scraping with a serrated tool or comb.
Collar	small ridge or thickening of the clay around the rims where a coil or fillet of clay is added.
Cord-paddled	surface treatment where a tool or hand is wrapped with a corded or netted perishable material and then impressed on the vessel surface.
Cord-wrapped stick	tool consisting of a long, thin implement wrapped with a cord or fiber causing a series of small oblique cord impressions on the vessel surface.
Dentate	parallel notched tool that leaves a series of square or rectangular "tooth or comb-like" impressions.
Drag stamping	technique which combines stamping and drawing, where the tool is pressed into the clay, trailed a certain distance across the surface, then pressed again.
Fabric-paddled	surface treatment where a tool or hand is wrapped in a thin perishable fabric material and impressed on the vessel surface.
Motif	intentional grouping or organization of one or more decorative elements in order to achieve a design.
Pseudo-scallop shell	an alternately notched implement used as a stamping tool causing a wavy crescentic or rectangular impression resembling the edge of a scallop shell.

Punctates	a form of stamping usually achieved with the end or corner of an implement.
Rocker stamping	decorating technique where the tool is pressed, then pivoted at one end at an angle to the first impression and pressed again all in one continuous motion.
Smoothing	surface treatment with a soft material or smooth tool to obliterate irregularities and scratches on the vessel surface.
Stamping	the technique of impressing any implement or object into the clay surface, in a constant direction oriented vertically or obliquely relative to the plane of the vessel surface.
Surface treatment	method of surface preparation before decoration application.
Technique	method of tool application executed in the production of a ceramic impression.
Trailing	the technique of dragging a stylus across the wet clay causing ridges of excess clay on both sides of the shallow and broad impression.

Appendix B

Ceramic Attribute Frequency Tables

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	4	2	1	1	14	25
Exterior Surface Decoration															
Undecorated	5		3	1											
Rocker Pss					3		1		2		1				2
Simple Pss				1	1				1	4	2	1			3
Drag Pss								1							
Rocker dentate			1	2	1	1							1	10	13
Simple dentate					1	1								6	6
Drag dentate															1
Straight edge				1											1
CWS (S-Twist)															
CWS (Z-Twist)															
CWS (undetermined)															
Circular punctates					1					3		1			2
Trailing				1										1	11
Other punctates		1		1										2	1

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm 1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Exterior Surface Decoration														
Undecorated										1				1
Rocker Pss	5													
Simple Pss	6			1	1									
Drag Pss	2		2		1									
Rocker dentate		1	2		1	2	5	1						
Simple dentate	1	1					1						1	
Drag dentate														
Straight edge						1							1	
CWS (S-Twist)									1	1				
CWS (Z-Twist)										1	1			
CWS (undetermined)									2	5	1	2	4	
Circular punctates		1					1	1	3	5	3	2	6	
Trailing		2				1								
Other punctates		2											1	

Table 6: Decorative Attribute Frequencies: Exterior Surface

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	4	2	1	1	14	25
Interior Surface Decoration															
Undecorated	5	1	4	5	6	1	1	1	2	4	1	1	1	7	16
Rocker Pss															1
Simple Pss															1
Drag Pss															
Rocker dentate														2	3
Simple dentate														2	
Drag dentate															
Straight edge															1
CWS (S-Twist)															
CWS (Z-Twist)															
CWS (undetermined)															
Circular punctates														1	
Trailing															3
Other punctates															

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Interior Surface Decoration														
Undecorated	1	2			1	1	2		3	5	3	2	6	1
Rocker Pss	3													
Simple Pss	1		1											
Drag Pss			2											
Rocker dentate	2						1							
Simple dentate														
Drag dentate														
Straight edge														
CWS (S-Twist)														
CWS (Z-Twist)														
CWS (undetermined)										1				
Circular punctates				1	1			1						
Trailing						1								
Other punctates														

Table 7: Decorative Attribute Frequencies: Interior Surface

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SjR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	4	2	1	1	14	25
Lip Surface Decoration															
Undecorated	5	1		4			1		1	4	1	1			
Rocker Pss															
Simple Pss								1							1
Drag Pss															
Rocker dentate															
Simple dentate				1	2	1								9	8
Drag dentate															
Straight edge															5
CWS (S-Twist)															
CWS (Z-Twist)															
CWS (undetermined)															
Circular punctates															
Trailing														1	
Other punctates															5

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Lip Surface Decoration														
Undecorated		1							1			1	3	
Rocker Pss														
Simple Pss	7		1	1	2									
Drag Pss														
Rocker dentate														
Simple dentate		1				2	3	1					2	
Drag dentate														
Straight edge													1	1
CWS (S-Twist)									1	1				
CWS (Z-Twist)														
CWS (undetermined)									1	5	2	1	1	
Circular punctates														
Trailing														
Other punctates														

Table 8: Decorative Attribute Frequencies: Lip Surface

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	4	2	1	1	14	25
Rim Form															
Direct	5	1		1			1		2	1				5	5
Everted			1	3	4	1		1		3	1	1		5	19
Inverted															1
Rim Shape															
Parallel				3	3	1				2	1	1		4	4
Contrating	5	1	1	1	1		1	1	2	2				1	12
Expanding														1	5
Collared														4	4
Braced															
Castellation				1	1				1	2	1			2	6
Lip Form															
Flat				5	3				1	1	1	1		5	4
Rounded	5	1	1		1	1	1	1	1	3				5	11
Beveled in															
Beveled out															1
Flanged															9
T-shaped															

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Rim Form														
Direct	1	1	1			1			1	6	1	1	1	
Everted	5	1		1	2	1	3	1	1			1	6	1
Inverted	1								1					
Rim Shape														
Parallel	3					1	2		2	1				
Contracting	3	1	1									1	1	1
Expanding	1			1	2		1	1		1	1	2	1	
Collared		1								4			5	
Braced									1		1			
Castellation	5							1						
Lip Form														
Flat	5	1	1	1	1		1	1	3		2	2	1	
Rounded	2	1				1	1			5			3	1
Beveled in						1								
Beveled out														
Flanged							1			1			3	
T-Shaped														

Table 9: Morphological Attribute Frequencies

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	4	2	1	1	14	25
Lip Thickness															
<6 mm	2		1	5	4	1		1	2	4	1	1		5	17
7-9 mm		1					1							3	5
>10 mm														1	4
Rim Thickness															
<6 mm	3		2	3	6	1			1	4	1	1	1	3	6
7-9 mm	1	1		1			1	1	1					3	16
>10 mm														4	3
Body Thickness															
<6 mm	1		1	1	1					2	1	1	1	2	2
7-9 mm	4		1	3	4	1	1		1		1			8	8
>10 mm		1			1				1					2	7

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Lip Thickness														
<6 mm	3	1			2									
7-9 mm	4	1	1	1		1	3		1	3	2	2	6	1
>10 mm						1		1	2	3			1	
Rim Thickness														
<6 mm													2	
7-9 mm	6	3	3	1	2			1		2	2	1	4	
>10 mm	1					2	5		3	5		1	1	1
Body Thickness														
<6 mm					1									
7-9 mm	3	2	1	1	1	1	1			2		1	6	
>10 mm	4		2		1	1	4	1	3	5	2	1	1	1

Tables 10: Metric Attribute Frequencies

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	3	2	1	1	14	25
Motif on Lip															
Simple horizontal															7
Simple vertical					1			1						6	7
Left obliques															1
Right obliques					1	1								4	3
Criss-cross															
Chevron															1
Triangles															

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Motif on lip														
Simple horizontal														1
Simple vertical							1			2			2	
Left obliques					1			1	1		1		2	
Right obliques	7	1	1	1		2	2		1	3	1	1		
Criss-cross										1				
Chevrons														
Triangles														

Table 11: Design Attribute Frequencies: Lip

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	3	2	1	1	14	25
Motif on exterior rim															
Simple horizontal					1					3	1	1		5	8
Simple vertical				2		1								3	2
Left obliques				1						2	1				2
Right obliques				1	1	1		1	1					4	10
Criss-cross														1	2
Chevron				1										1	1
Triangles															
Horiz.bands of vert.rocker.stps				1		1	1		1		1		1	3	5
Vert.bands of horiz.rock. stps				1	3	1			1					4	12
Horizontal row of punctates				1	1					3		1		2	2
Diagonal row of vert. stps.		1													1
Diagonal row of horiz. stps									1						

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Motif on exterior rim														
Simple horizontal	3	1		1					3	4	1	2	4	
Simple vertical		1				1	1		2	3		1	2	
Left obliques		1			1	1		1			1	1	1	
Right obliques	7			1						1			3	
Criss-cross												1		
Chevrons				1					1					
Triangles												1	1	
Horiz.bands of vert.rocker stps	3				1	2	2							
Vert.bands of horiz.rock. stps	3	1	1		1	1	2							
Horizontal row of punctates		1	3					1	3	4	2	2	6	
Diagonal row of vert. stps.	1									2				
Diagonal row of horiz. stps	2													

Table 12: Design Attribute Frquencies: Exterior Rim

Sites / Period designation	BkDm14 SJR-CP1	BhDm7 SJR-CP1	BkDm14 SJR-CP2a	BlDn12 SJR-CP2a	BlDm1 SJR-CP2a	BlDn8 SJR-CP2a	BlDo1 SJR-CP2a	BlDo4 SJR-CP2a	BlDq1 SJR-CP2a	CeDw8 SJR-CP2a	CeDw3 SJR-CP2a	CeDu1 SJR-CP2a	BkDm14 SJR-CP2b	BlDn12 SJR-CP2b	BlDm1 SJR-CP2b
sample size	5	1	4	5	6	1	1	1	2	3	2	1	1	14	25
Motif on interior rim															
Simple horizontal															
Simple vertical														1	3
Left obliques															
Right obliques															
Criss-cross															2
Chevron															
Triangles															
Horiz.bands of vert.rocker.stps														1	4
Vert.bands of horiz.rock. stps															
Horizontal row of punctates														1	1
Diagonal row of vert. stps.															
Diagonal row of horiz. stps															

Sites / Period designation	BlDn8 SJR-CP2b	BlDo1 SJR-CP2b	BlDo4 SJR-CP2b	BlDq1 SJR-CP2b	CeDw3 SJR-CP2b	BlDn12 SJR-CP3	BlDm1 SJR-CP3	BlDn8 SJR-CP3	CaDu8 SJR-CP4	CaDv1 SJR-CP4	BlDn12 SJR-CP4	CeDw3 SJR-CP4/5/6	BlDq-1 SJR-CP4/5/6	CeDw13 SJR-CP4/5/6
sample size	7	3	3	1	3	2	5	1	3	8	3	2	7	1
Motif on interior rim														
Simple horizontal														
Simple vertical										1				
Left obliques	1													
Right obliques														
Criss-cross						1								
Chevrons														
Triangles														
Horiz.bands of vert.rocker stps	5						1							
Vert.bands of horiz.rock. stps			2											
Horizontal row of punctates				1	1			1						
Diagonal row of vert. stps														
Diagonal row of horiz. stps														

Table 13: Design Attribute Frequencies: Interior Rim