

THE DEATH OF OWASCO—REDUX

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Abstract. *Owasco is a culture-historic taxon originally defined by Arthur C. Parker and later refined by William A. Ritchie in the first half of the twentieth century. This taxon was at the heart of a debate on northern Iroquoian origins in the 1990s and early 2000s. In a 2003 article Brumbach and I announced “The Death of Owasco” based on an analysis of the histories of the traits used to establish the boundary between Owasco culture and the earlier Point Peninsula culture. Here I review the research on these traits since that publication that indicate an even more extended and complex set of independent histories. I reiterate the need for archaeologists to move away from culture-historic taxa as units of analysis, interpretation, and summary.*

When one thinks of New York archaeology during the twentieth century, three names are likely to come to mind: Arthur C. Parker, William A. Ritchie, and Robert E. Funk. Each of these men had important impacts on the development of archaeology as a discipline in the state. Each was extensively involved in archaeological fieldwork throughout the state. Each was a prolific publisher of books and articles for both professional and popular audiences. Each worked for large portions of his career at the New York State Museum; Ritchie and Funk each served as New York State Archaeologist. So important were their collective contributions that Parker, Ritchie, and Funk established a tradition of how the past was organized and interpreted by generations of archaeologists working in New York and elsewhere. An essential component of this tradition was the culture-history scheme that originated with Parker (e.g., 1922), was revised, refined and extensively expanded by Ritchie (e.g., 1936, 1944, 1965), and was extended and refined by Funk (e.g., 1976, 1993). Ultimately, this scheme provided a means of organizing sites and site components into chronological sequences across the breadth of New York. It also served as the primary plat-

form on which Indian occupations of the state prior to European incursions were interpreted (e.g., Ritchie and Funk 1973).

The predominance of the Parker-Ritchie culture-history scheme was such that little thought was given to its applicability in modern archaeological research in the later portions of twentieth century. Rather, the scheme was simply applied, with the placement of a site or site component into a taxonomic unit serving as a fundamental analytical goal. When placed in a taxon a site/component became part of a list of like sites/components in which the ancient inhabitants of New York conformed to specific norms of behavior. Departures from the norms were used to expand and refine taxa definitions. This was an example of extensional definition in that a taxon was defined on the basis of a list of attributes enumerated by the original definer and refined by that definer and other researchers as more sites were excavated (Dunnell 1971; Lyman and O'Brien 2002)¹. These definitional refinements included a taxon's temporal and spatial boundaries, as well as its formal content (i.e., list of traits). Such definitions were subjective and historically contingent, dependent on available traits and the individual assessments of the enumerator and those of subsequent researchers.

As with all culture-historic schemes the Parker-Ritchie scheme was hierarchical, with higher levels in the hierarchy representing more general behaviors than the lower levels (Ritchie 1936; Ritchie 1969). The scheme was related in various graphical forms showing the progression of taxa at various levels of integration through time. This stacked box-like approach had a strong influence on how the past was interpreted with the boundary between two sequential taxa representing a shift from one state to another. That is, at a more-or-less-precise point in time, the attributes reflecting the behaviors of Indians changed. The behaviors that changed varied depending on the hierarchical

level of the taxa. With higher-level, more-inclusive taxa (e.g., stages, cultures), the changes were fundamental aspects of subsistence, and/or settlement, and/or technology. With lower-level, less-inclusive taxa (e.g., phases), the changes may simply have reflected different manners of decorating pottery.

One important mid-level unit in this scheme was the Owasco culture. This taxon was thought to begin around A.D. 1000. It included traits that were believed to represent the onset of a sequence of occupations leading to the historic northern Iroquoians (Ritchie 1965; Ritchie and Funk 1973). These included maize-bean-squash agriculture, longhouses and assumed matrilineality and matrilocal, nucleated villages, and pottery technology and decorations. The appearance of these traits formed the boundary between the Middle Woodland stage-Point Peninsula culture and Late Woodland stage-Owasco culture. As expressed by Ritchie (1969:180), "A principal distinction setting off Late from Middle Woodland cultures is the now obvious fact of the importance of cultigens—corn, beans, and squash demonstrably—in the economy. This change accompanied, *pari passu* [hand-in-hand], a major alteration in settlement pattern, with large villages, the later ones protected by palisades, containing a sessile or semi-sedentary, augmenting population, dwelling communally in longhouses." Within the Owasco culture were three phases, each encompassing a span of 100 years (Carpenter Brook ca. A.D. 1000–1100, Canandaigua ca. A.D. 1100–1200, Castle Creek ca. A.D. 1200–1300). The phases were defined primarily on the basis of changes in pottery type percentages.

Owasco became the crux of a debate in the 1990s and early 2000s on the "origin" of northern Iroquoians in New York, southern Ontario, and Quebec. In building and refining New York's culture history Ritchie (1965, 1969) had defined a phase he called Hunter's Home that represented a 100-year transition starting at ca. A.D. 900 from the Middle Woodland stage to the Late Woodland stage, representing the end of the Point Peninsula culture. The phase was defined primarily on the co-occurrence of Owasco and Point Peninsula pottery types. To Ritchie and many contemporary and subsequent researchers, this 100-year phase represented the transition of indigenous Indian groups of the Point Peninsula culture into recognizable ancestral northern Iroquoians of the Owasco culture. This was subsumed under the so-called "in situ hypothesis" of northern Iroquoian origins.

In 1995, Snow published what became a very controversial article in which he dismissed the Hunter's Home phase. He argued that northern Iroquoian agriculturists migrated to New York from central Pennsylvania and displaced non-agricultural

Algonquian populations ca. A.D. 900; this is a version of the so-called "migration hypothesis." What Snow saw in the archaeological record was a sharp break defined by discontinuities in several key traits at the onset of Owasco; there was no period of transition. As stated by Snow (1995:71), "archaeological evidence indicates that multifamily (probably matrilineal) residence, horticulture, and compact villages appeared suddenly, not gradually, in Iroquoia." Based on new evidence for maize agriculture and settlement patterns in southern Ontario (Crawford and Smith 1996), Snow (1996:794) later suggested the beginnings of Iroquoian migrations to as early as the eighth century A.D., but maintained that Owasco could not have originated from Point Peninsula, and that agriculture arrived with the Iroquoian migrants (Snow 1996:794).

Ritchie, Snow, and others saw the initiation of recognizable northern Iroquoian antecedents with the onset of Owasco; it was just a matter of what happened to establish the boundary between Owasco and Point Peninsula, and when that boundary occurred. In Ritchie's case it was the adoption of maize-bean-squash agriculture, and with it hand-in-hand changes in subsistence and settlement traits along with a change in pottery. Longhouses arose when northern Iroquoians became matrilineal after the adoption of agriculture as female labor became the dominant source of subsistence (Ritchie 1969). With Snow (1995) it was the migration of ancestral Iroquoian maize agriculturists into the territory of hunting-gathering Algonquians represented by a replacement of Point Peninsula by Owasco pottery. The Iroquoian reaction to hostility on the part of the indigenous Algonquians was to adopt matrilineal residence so that fraternal interest groups were broken and hostilities could be focused on Algonquians rather than other Iroquoians. Matrilocal gave rise to longhouses. In either case, the various traits identified as directly antecedent to historic northern Iroquoian occupations in the region arrived as a package or were adopted or developed in quick succession (see Martin 2008 for a detailed history of in situ and migration hypotheses for northern Iroquoian origins).

This initiating boundary for Owasco was critical to both hypotheses for northern Iroquoian origins in New York. By the early 2000s, my colleagues and I had been conducting research that while not directly focused on culture history had important implications for this boundary. In 2003, Hetty Jo Brumbach and I used the results of this research to examine the histories of the traits associated with the boundary. Our conclusion was that each of the traits had a history separate from the others, and that, in fact, all of the traits did not assemble together in the Finger Lakes region until ca. cal. A.D. 1300. This led us to announce "the death of Owasco"

and subsequently to question in toto the viability of the Parker-Ritchie scheme for investigation of the past (Hart and Brumbach 2005). In the remainder of this chapter, I will review the histories of these traits as we understand them now after nearly a decade of additional investigation.

POTTERY TYPES

Like culture-historic taxa, pottery types are extensionally defined. A typical definition will include a list of defining attributes that in combination are supposedly distinct to the type. The pre-Iroquoian typology for New York was established by Ritchie and MacNeish (1949). The principal objective of their effort was to better distinguish between Point Peninsula and Owasco pottery; the study was designed in order to refine the existing culture-historic taxonomy (Hart and Brumbach 2003:740–742). In other words, the types were defined with a specific goal in mind. While Ritchie (1965) later posited an overlap in Point Peninsula and Owasco types over a 100-year period, Snow (1995) argued that assemblages with types of both series were mixed, and that, in fact, Owasco types replaced Point Peninsula types as Iroquoian groups displaced Algonquian groups. If the co-occurrence of types was chronologically confirmed at any given site, then it represented captured women of one or the other ethnicity that continued to make pots reflecting their ethnicity (see Knapp 2009).

The first real test of chronological relationships between Point Peninsula and Owasco types was published by Schulenberg (2002a, 2002b) who directly dated charred cooking residues adhering to the interior surfaces of 12 sherds with accelerator mass spectrometry (AMS). These sherds, from the Hunter's Home, Kipp Island, and Levanna sites, included three assigned to Point Peninsula types and eight to Owasco types. While the three Point Peninsula types fell within Schulenberg's expected time frame for late Point Peninsula (before cal A.D. 950), five of the Owasco type sherds occurred as early as the cal. seventh century A.D. overlapping the dates of the Point Peninsula sherds. Brumbach and I subsequently AMS-dated charred cooking residues from 13 sherds assigned to late Point Peninsula or early Owasco types from the Hunter's Home, Kipp Island, and Wickham sites (Hart and Brumbach 2003: 743–745). Combined with Schulenberg's results, the 25 dates clearly indicated that Point Peninsula and Owasco types occurred together at sites with components dated as early as ca. cal. A.D. 625.

Brumbach and I continued to obtain AMS dates on cooking residues and published a more comprehensive assessment of Ritchie's (1969) Middle Woodland–Late

Woodland boundary (A.D. 900–1000) two years later (Hart and Brumbach 2005). In total, we added 25 dates resulting in a total of 50 dates from 14 sites. Of these, 37 of the sherds from 15 site components were assigned to late Point Peninsula or early Owasco types. The dates conservatively demonstrated a period of overlap up to 600 years (Figure 8.1). Clearly such a lengthy period of overlap made any thought of a transition period untenable, as it did the idea of a rapid replacement of one series of types by another and thus the purported replacement of one ethnic group by another (also see Miroff 2009).

POTTERY ATTRIBUTES

Ritchie and MacNeish (1949) had posited a distinction in forming techniques between Point Peninsula and Owasco pottery. Point Peninsula pottery was formed through coiling, while Owasco was formed through modeling. We would, therefore, expect a rapid replacement of coiling by modeling under Ritchie's in situ hypothesis and a sharp break or discontinuity under Snow's migration hypothesis.

Schulenberg (2002a, 2002b) and Gates St Pierre (2001) published detailed attribute analyses of pottery from the Kipp Island and Hunter's Home sites. Both concluded that there was continuity in technology between the Point Peninsula and Owasco types. In discussing the co-occurrence of Point Peninsula and Owasco types from two components at the Kipp Island site, Gates St Pierre (2001:49) stated that "there seems to be a clear continuity in ceramic technology and types between the two groups. Point Peninsula and Owasco ceramic vessels not only have many traits in common they also frequently share these traits in very similar proportions and rank order." Schulenberg (2002b:88) concluded that "a clear line cannot be drawn between the two technologies"

Brumbach and I subsequently carried out an intensive study of pottery attributes to test the hypothesis of a rapid or immediate change in forming technique (Hart and Brumbach 2009) using a larger number of sites. Specifically, we examined sherds from 26 site components in the Finger Lakes region dated from 1100 B.C. to A.D. 1600. We first looked for evidence of forming technique by examining sherds for coil breaks. We found that the percentage of sherds with coil breaks formed a normal distribution over time with a peak at ca. cal. A.D. 450 and a gradual drop off to ca. cal. A.D. 1100 (Figure 8.2). There was no evidence for an immediate or quick change in forming technique. Rather the change in forming technique was a gradual process, with modeling evidently fully replacing coiling only

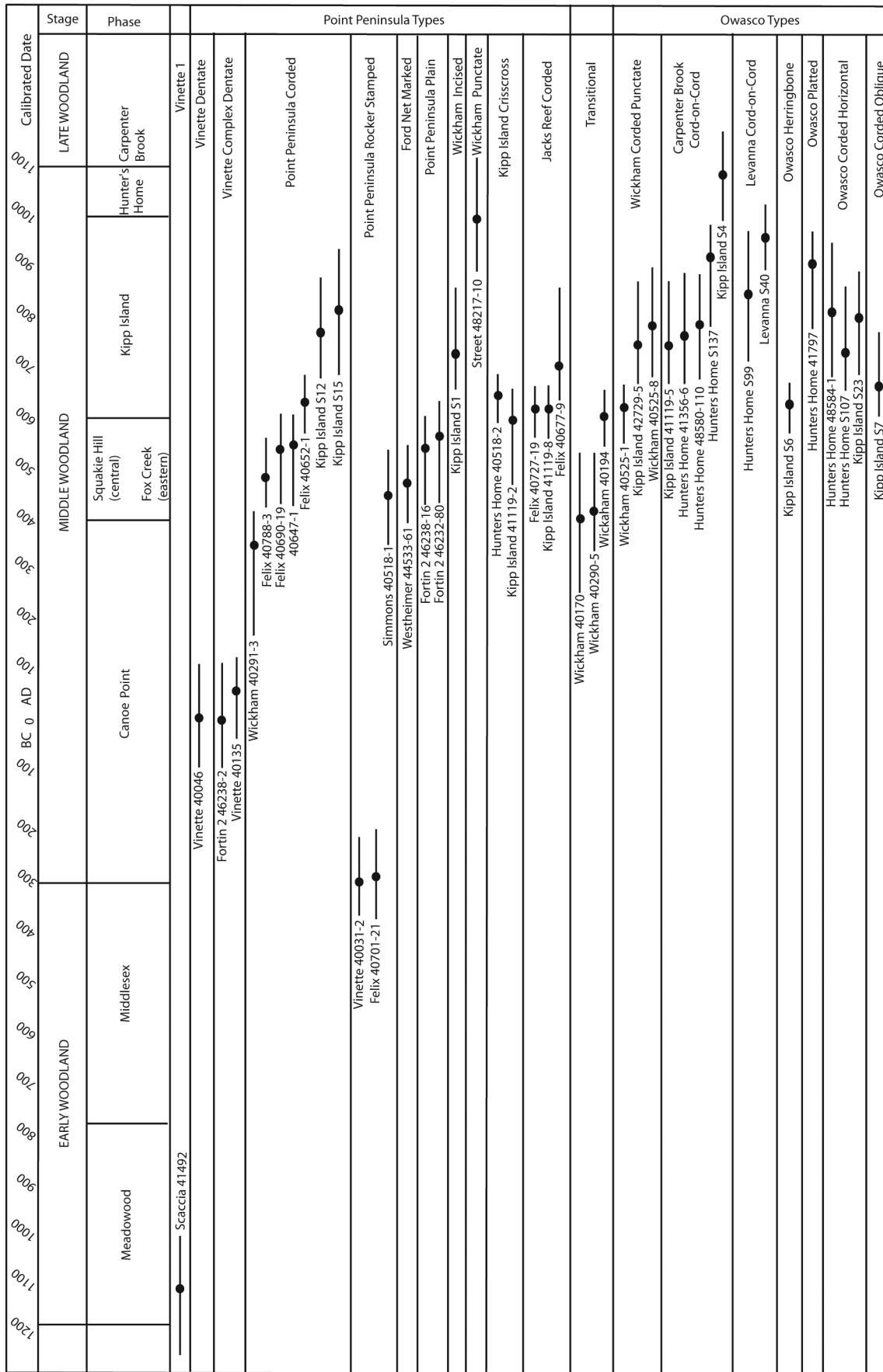


Figure 8.1. Graphical representation of individual cooking residue dates by pottery type and Ritchie's (1969) culture history phases for sites assigned to Ritchie's (1969) Early and Middle Woodland stages. Types are ordered according to Ritchie and MacNeish (1949). Bars are 2s calibrated ranges and dots are median probabilities. Sherd numbers with S prefix are those published by Schulenberg (2002a, b).

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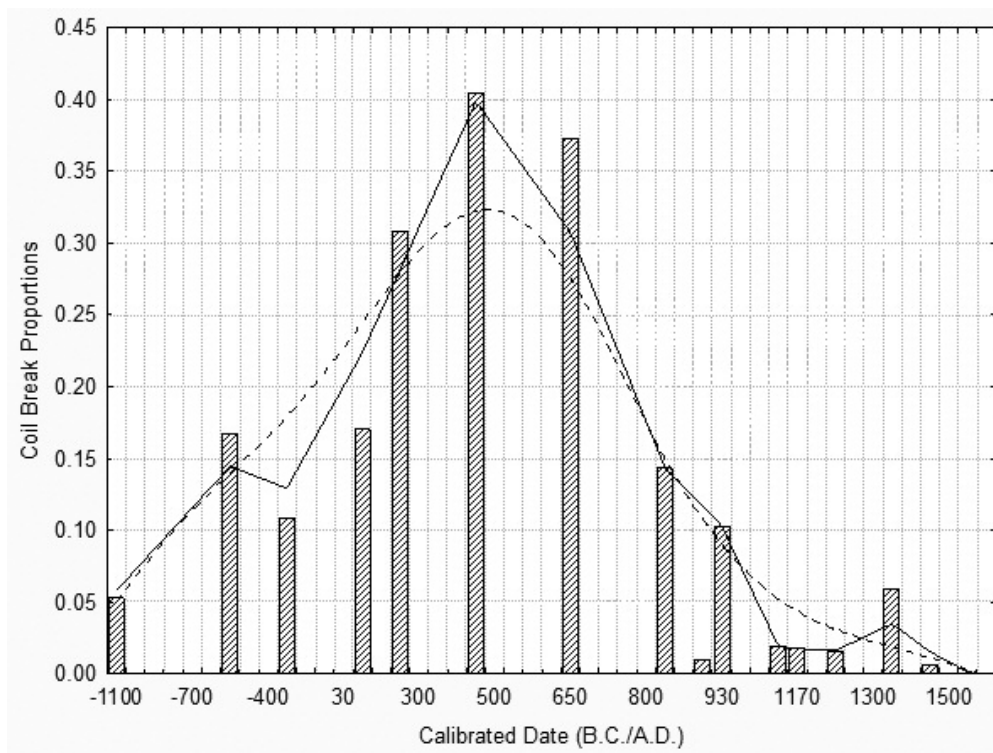


Figure 8.2. Bar graph of the proportion of sherds with coil breaks in pottery assemblages by date. The solid trend line is LOWESS smoothing and dashed is distance weighted least squares (DWLS) smoothing.

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after ca. cal. A.D. 1100. Others have noted the use of coil forming in pottery assigned to early Owasco types (e.g., Gates St Pierre 2001; Prezzano 1985; Rieth 2004).

Second, we examined pottery wall thickness. This was done under the assumption that thinner-walled pots are more efficient than thicker-walled pots for water-based cooking of grains (e.g., Braun 1983; O'Brien et al. 1994). If there was a replacement of Algonquian hunter-gatherers by agricultural Iroquoians, there should be a sharp break in vessel wall thickness—from thicker- to thinner-walled pots. Alternatively there should be a quick drop off in vessel wall thickness if there was a 100-year period of transition between hunting-gathering and agriculture. We found instead that there was a gradual decrease in vessel wall thickness beginning around cal. A.D. 450 (Figure 8.3). When adjusted for vessel girth, the decrease began as early as ca. cal. A.D. 1 and continued through ca. cal. A.D. 1600 (Figure 8.4). In other words, as with forming technique, there is nothing to indicate the shift from one state to another at a specific temporal boundary. Rather, there was a gradual process of change, perhaps related to the greater incorporation of maize into the regional cuisines (Hart and Brumbach 2009).

Third, we examined similarity of pottery decoration for each component. Under Ritchie's and Snow's hypotheses, we would expect greater similarity at nucleated village sites of agriculturists as opposed to short-term occupations of hunter-gatherers. The latter represent palimpsests of repeated occupations over years and/or generations each contributing to the archaeological record, resulting in diverse pottery assemblages. The former represent extended occupations with established pottery decoration traditions (see Hart and Brumbach 2009 for details). What we found was that there was a gradual increase in similarity beginning as early as ca. cal. A.D. 200 and continuing to ca. cal. A.D. 1600 (Figure 8.5). Here too, then, there is no sharp break or short period of transition.

In a separate research project evidence came to light for long-term pottery technology continuity. Eleanora Reber extracted fatty acids incorporated into 17 charred residues and absorbed by the pottery fabric from 12 sherds. Each of the sherds in this analysis was among those for which AMS dates had previously been obtained on charred cooking residues, spanning the period 1100 B.C. to A.D. 1450 (Reber and Hart 2008). Reber found evidence for both meat and plant cooking

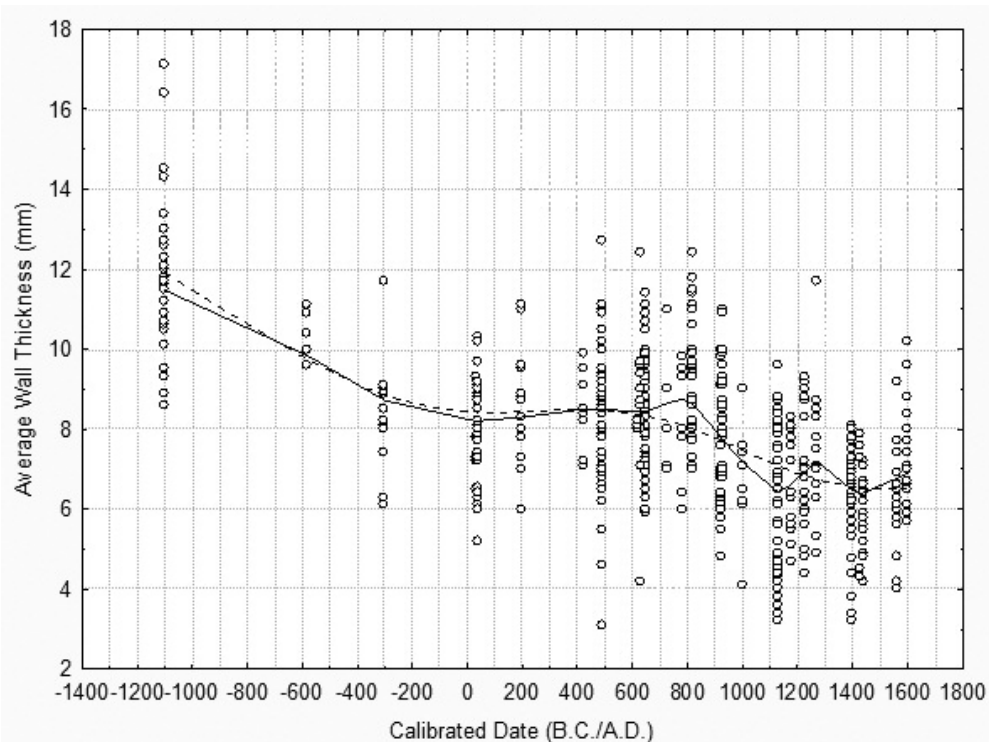


Figure 8.3. Scatter plot of average wall thickness for sherds by date. The solid line is LOWESS smoothing, and the dashed line is DWLS smoothing.

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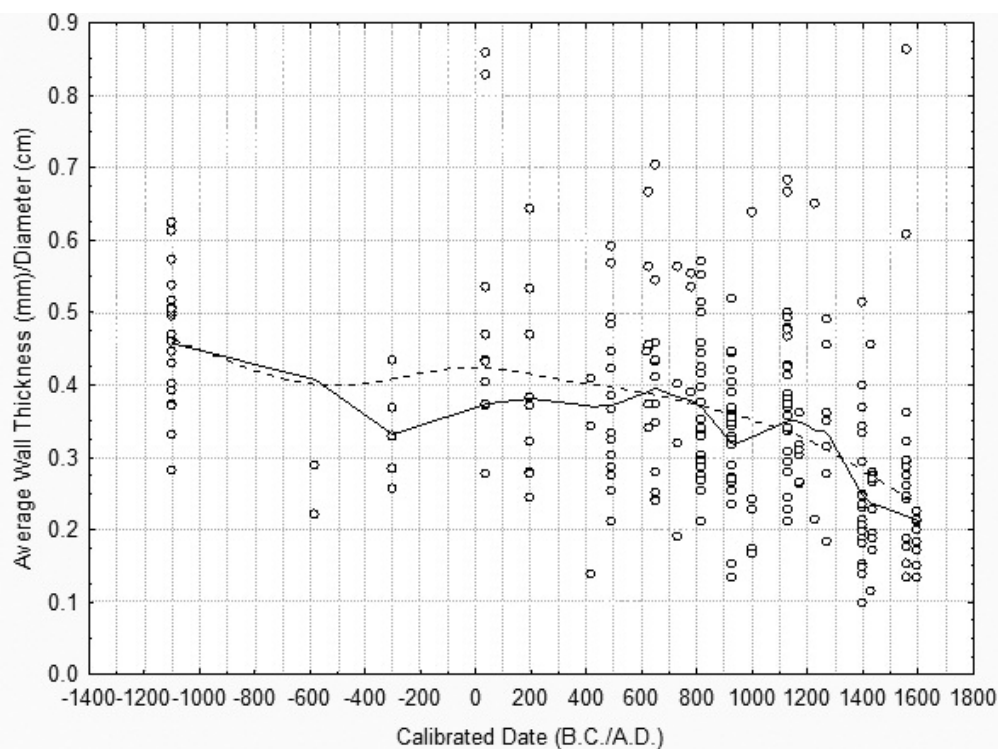


Figure 8.4. A scatter plot of average wall thickness in mm divided by diameter in cm by time. The solid line is LOWESS smoothing, and the dashed line is DWLS smoothing.

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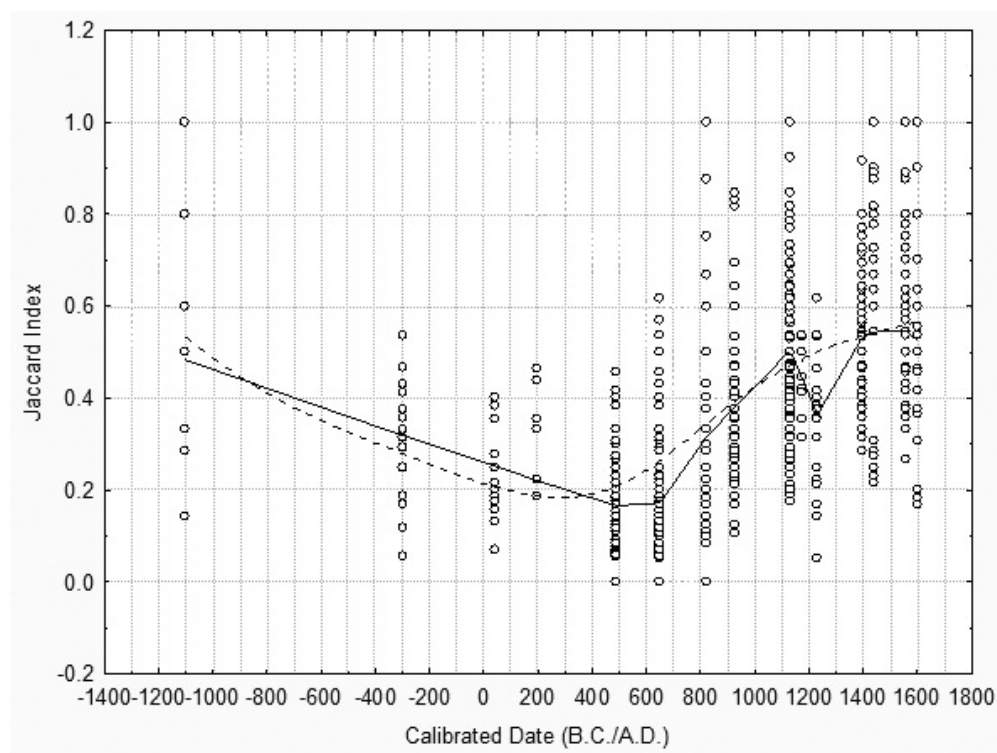


Figure 8.5. A scatter plot of Jaccard similarity values by time. The solid line is LOWESS smoothing, and the dashed line is DWLS smoothing.

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in the form of biomarker lipids (e.g., cholesterol, sitosterol, campesterol, stigmasterol). Of greatest note, however, was that 8 of the 12 absorbed residues included evidence (triterpenoids) for the use of pine resin as did 11 of 17 charred cooking residues. Interestingly, evidence of pine resin use had also been recovered by Reber from cooking residues adhering to steatite sherds from the Hunter's Home site that were directly AMS-dated to ca. cal. 1845–1524 B.C. (Hart et al. 2008).

The most likely explanation for the occurrence of pine resin in both the steatite and pottery was the desire to make the vessel interiors impermeable. Steatite vessels used in Brazil today erode and crack after repeated use if interior surfaces are not sealed (Quintaes et al. 2002). There is ethnographic (Longacre 1981), historical (Beck et al. 1989), and experimental (Schiffer et al. 1994) evidence that pine resin is useful as an interior sealing agent for pottery. These results indicate continuity in cooking vessel technology over a 3,300-year period. Unknown is whether this sealing technique was exclusive to the Finger Lakes region or was in use over a broader region. That is, the long-term record of this technology in central New York should not be used as evidence for ethnic continuity in the region. It could

very well be a geographically wide spread technology that has not been recognized in adjacent regions simply because the appropriate analyses have not been done.

AGRICULTURE

A primary attribute defining Owasco was maize-bean-squash agriculture. These three crops, known sometimes as "the three sisters," were the principal crops of northern Iroquoian groups at the onset of European incursions (Engelbrecht 2003). In Ritchie's (1969) view, the advent of maize-bean-squash agriculture at the Point Peninsula-Owasco boundary resulted in major changes to subsistence and settlement systems. In Snow's (1995:71) view, maize-based agriculture arrived suddenly with Iroquoian migrants at the boundary between Point Peninsula and Owasco.

In other areas of eastern North America, much longer histories had been discovered for maize—as early as ca. cal. 45 B.C. in Illinois (e.g., Riley et al. 1994). Nearer to New York, Crawford et al. (1997) reported directly AMS-dated maize in southern Ontario at ca. cal. A.D. 500. In New York, the oldest directly AMS-dated maize

was no older than ca. cal. A.D. 985 (Cassedy and Webb 1999). (Knapp [2009] later reported a direct date on maize from the upper Delaware River valley of ca. cal. A.D. 815). As late as 2000, all evidence for maize in the Northeast came from macrobotanical remains. Working with Robert Thompson, Brumbach and I began a systematic investigation of phytolith assemblages extracted from directly dated cooking residues. Phytoliths are silica bodies that form in and around the cells of plants (Piperno 2006). By comparing assemblages of phytoliths recovered from ancient cooking residues with those recovered from modern plants, it is possible to identify the plants from which the phytoliths recovered from cooking residues originated. In the case of maize, phytoliths from the cob called rondels are used in this analysis. Thompson classified a standard 100 rondel phytoliths from each residue and from modern maize cobs and the inflorescences of various native grasses according to a taxonomy originally developed by Mulholland and Rapp (1992) and revised by Thompson (Hart et al. 2003). Statistical analysis of the resulting counts was then used to assign the rondel phytolith assemblages extracted from residues to grass species.

In 2003, our analyses indicated that maize was used in the Finger Lakes region by ca. cal. A.D. 625 (Hart et al. 2003). This was based on the analysis of six residue-extracted rondel phytolith assemblages from the Hunter's Home, Kipp Island, and Wickham sites. We continued to pursue this line of inquiry analyzing a total of 33 residues, of which 24 from 12 sites produced rondel phytolith assemblages. The results indicated maize was being used in the Finger Lakes region of New York as early as ca. cal. 300 B.C. at the Vinette site and that there was a fairly continuous record of use in the region thereafter (Hart et al. 2007; Hart and Madson 2009). As related in this volume (Hart et al.), the analysis of teeth from a cemetery at the Kipp Island site suggests substantial maize consumption by some individuals by ca. cal. A.D. 650.

While the use of cucurbits (squashes, gourds) in eastern North America has a very long history (King 1985; Smith 1992), by the late 1990s there was no evidence for cucurbit use before ca. cal. A.D. 1300 in New York (Hart and Scarry 1999). This was despite the discovery of gourd rind fragments in central Pennsylvania (Hart and Asch Sidell 1997) and Maine (Petersen and Asch Sidell 1996) directly AMS-dated to ca. cal. 4225 B.C. and ca. cal. 4545 B.C., respectively, and the recovery of squash rind fragments from central Pennsylvania directly AMS-dated to ca. cal. 645 B.C. (Hart and Asch Sidell 1997). The New York evidence for squash changed with the recovery of phytoliths from charred cooking residues. In 2003, we reported phytolith evidence for squash from each of the components for which we

reported maize phytoliths, the earliest being the Kipp Island component dated to ca. cal. A.D. 625 (Hart et al. 2003). In our expanded analyses, we reported ca. cal. 1100 B.C. phytolith evidence for squash at the Scaccia site from a directly AMS-dated residue (Hart et al. 2007), placing the earliest evidence for squash in central New York in line with that for Pennsylvania, Michigan (Lovis and Monaghan 2008; Monaghan et al. 2006), and Minnesota (Perkl 1998) among other northern localities (Smith 1992).

Since the discovery of bean along with maize and squash at the Roundtop site in the 1960s to which Ritchie assigned a date of ca. A.D. 1000 (Ritchie and Funk 1973), it was accepted throughout northeastern North America that bean was present by at least that date (e.g., Riley et al. 1994; Yarnell 1976, 1986). This began to change when I obtained direct dates of ca. cal. A.D. 1350 on maize and bean remains from the same feature deposit from which the squash seeds were discovered at Roundtop (Hart 1999). Subsequent dating of 39 bean and 12 paired maize samples from 26 sites across northeastern North America indicated that bean macrobotanical remains were not evident until ca. cal. A.D. 1300 (Hart et al. 2002; Hart and Scarry 1999). Hook-shaped phytoliths are produced in bean pods (Bozarth 1990). No such phytoliths have been found in the charred cooking residues adhering to pottery sherds.

While it is certainly possible that bean was used in northeastern North America prior to ca. cal. A.D. 1300 and left thus far unrecovered micro- or macro-botanical evidence, contrary to any speculation to that effect, currently there is no evidence of any kind for bean in such early contexts. As a result, there is no evidence at present that the maize-bean-squash triad was in use until ca. cal. A.D. 1300. Rather, each of the three crops has a history different from the others—maize and squash were in use up to two millennia prior to and beans a few hundred years after the traditional A.D. 1000 boundary. As a result, Ritchie's (1969) and Snow's (1995, 1996) formulations for agricultural history in central New York can be rejected. This further damages the concept of a boundary condition between Point Peninsula and Owasco, and thus the definition of Owasco.

LONGHOUSES AND NUCLEATED VILLAGES

As with maize-bean-squash agriculture, Ritchie's interpretation of the Roundtop site played a major role in conceptions of the history of longhouses in New York. Ritchie identified the patterns of two overlapping longhouses at the site (Ritchie and Funk 1973). One of these measured 24 m long by 7.9 m wide, while the second was initially 22.3 m long by 6.7 m wide and was later

extended to 28 m long. As with the maize, bean, and squash remains, Ritchie tied the longhouses to an occupation dating to ca. A.D. 1050.

Using charcoal obtained during the 1960s excavations at Roundtop, a careful assessment of pottery assemblages from features, and the super-positioning of features and of features and postmolds on excavation plan maps, I determined that the two longhouses dated to ca. cal. A.D. 1350 and A.D. 1600, respectively (Hart 2000). Similar analyses of other classic sites from Ritchie and Funk (1973) and a review of the literature indicated no evidence for longhouses in New York prior to the cal. twelfth century A.D. Thus, by 2003 there was no evidence for the appearance of longhouses around A.D. 1000 (Hart 2000). No new published evidence has arisen since to change this assessment.

Based on worldwide cross-cultural analyses of house size, matrilocality can be inferred from the presence of longhouses with floor space greater than 79 square meters (Divale 1977; Ember 1973; Hart 2001; see Porčić 2010). The single house plan at the White site (Whitney and Gibson 1987) approaches the threshold for a matrilocal residence. While this site was once thought to date to ca. A.D. 900 (Whitney and Gibson 1987), two recently obtained radiocarbon dates indicate a later occupation with a pooled mean median probability of ca. cal. A.D. 1100 (see Card 2002). Regardless, this floor plan does not represent a structure analogous to later longhouses.

Villages are generally defined as containing more than two households (Hart and Means 2002; Means 2007). In 2003, Brumbach and I reviewed evidence for villages in New York and determined that there was no credible evidence for such settlements before the cal. thirteenth century A.D. At that time, the earliest village with undisputed longhouses was Kelso, which based on newly obtained radiocarbon assays, was dated to as early as ca. cal. A.D. 1220 (Hart 2000). This date was on charcoal taken from a large longhouse support post and thus potentially reflected an old-wood date rather than the date of the site's occupation. A subsequent series of three dates on annual plants (two on maize, one on grass) and one on a cooking residue firmly place the site's longhouse occupation at ca. cal. A.D. 1400 (Hart and Lovis 2007).

Recent AMS dates on charred cooking residues from the Levanna site (Hart and Lovis 2007b; Schulenberg 2002b) suggest the possibility of a nucleated village as early as ca. cal. A.D. 930. The sherds from which the residues were dated were recovered by Parker (Ritchie 1928). Based on Parker's excavations, Ritchie (1928) reported 22 "lodges" at this site, although he did not present the specific evidence for these structures. On the basis of the original excavation plans, Schulenberg

(2002b:158) estimated that these postulated structures measured no more than four to six meters in length and encompassed approximately 30 square meters. The occupational histories of this site, the exact nature of any structures, and the chronological status of those structures have yet to be resolved. If a component at this site representing a village does date to the early tenth century A.D., it would be evidence for one nucleated village in central New York closer to Ritchie's (1965) assessment.

ON THE RELIABILITY OF AMS DATES ON COOKING RESIDUES

Much of the new chronological information is based on direct AMS dating of charred cooking residues. Fischer and Heinemeier (2003) analyzed AMS dates on residues against dates on other materials from the same contexts at three sites from inland settings in Denmark. They concluded that because of fossil carbon in freshwater lakes it is possible for residues formed from cooking primarily fish from such bodies of water to produce radiocarbon ages 100 to 500 years too old. Lovis and I did an independent assessment of all of the dates published from these sites and found that there was only a single outlying date rather than a pattern of old apparent dates—not enough evidence upon which to build a case for a freshwater reservoir effect on residue dates (Hart and Lovis 2007a). Lovis and I subsequently analyzed 116 dates on residues from across northeastern North America against contextual dates on other materials and/or stratigraphic information and found that a maximum of 6 of these dates (5.2 percent) may be too old for their contexts (Hart and Lovis 2007b). This is an expected result for a large series of radiocarbon dates—there is no evidence that ancient carbon reservoirs in the region affect direct dates on cooking residues. There should be no doubt that the AMS dates on residues used in the various analyses of materials from central New York are accurate.

SUMMARY AND CONCLUSIONS

What is evident is that the key traits used to establish a boundary for the onset of Owasco at ca. A.D. 1000 have independent histories—they were not adopted as a package, nor did they develop hand-in-hand over a short period of time. Point Peninsula and Owasco pottery types co-occur for 200 to 600 or more years. Squash and maize have long histories in the state, with current evidence placing them at 1100 B.C. and 300 B.C., respectively. There is no credible evidence for bean,

and therefore, maize-bean-squash agriculture, until around cal. A.D. 1300. The earliest well-dated longhouses and nucleated villages do not occur until the cal. twelfth to thirteenth century A.D. The best documented early nucleated village with undisputed longhouses (Kelso) dates to ca. cal. A.D. 1400. As a result, on current evidence, what have been considered key traits for Owasco do not converge in central New York until ca. cal. A.D. 1300 to 1400. Brumbach and I announced the death of Owasco in 2003. What our subsequent research has done is bury this taxon even deeper.

So, then, what takes the place of Owasco? Do we define a new culture-historic taxon, revise the Parker-Ritchie culture-history scheme, or create an entirely new scheme? Do we even need a replacement? In concluding sections of our 2003 article Brumbach and I suggested that the persistent use of culture-historic taxa in archaeological research was a straightjacket that had channeled how archaeologists visualized the past. We argued that archaeologists needed to be aware of what culture-historic taxa represent and be cautious in their continued use (Hart and Brumbach 2003:749–750). Earlier, Smith (1997) had suggested abandoning the Middle and Late Woodland stages/periods in southern Ontario, recognizing that rather than chronological boundaries there are continua in any given region. Brumbach and I went further in our 2005 article by suggesting the complete abandonment of the Parker-Ritchie scheme in New York (Hart and Brumbach 2005:15).

One of our arguments was that units of analysis must be consistent with the theories being used to investigate the past (Dunnell 1971; Lyman and O'Brien 2002). Parker and Ritchie used the tools available at the time of their work. However, as Brumbach and I argued, the definitions of taxa in the Parker-Ritchie culture-history scheme were never theoretically justified; rather, they were simply justified on authority—that Parker and/or Ritchie recognized them (Hart and Brumbach 2003:743). In fact, one could argue that their definitions were atheoretical—they consisted simply of trait enumerations based on the number of sites excavated to date and Parker's and/or Ritchie's subjective selections. For example, Parker's original definition of what Ritchie (1936) later renamed Owasco, was based on a single site, and approximately 30 traits. Ritchie never questioned the taxon's validity—he simply accepted Parker's recognition of it and revised the definition as new sites were excavated. By 1944, Ritchie had redefined Owasco based on 30 archaeological sites and 288 traits. Why would archaeologists continue to saddle themselves with such historically contingent, subjective analytical units even to summarize large datasets?

Since the late 1950s there have been much more explicit, conscious efforts at archaeological theory building, resulting in a wide range of theoretical structures with which to investigate the past (see e.g., Bentley et al. 2009). There are an ever-growing number of increasingly sophisticated methods and techniques with which to create data from the archaeological record using new excavations as well as collections and other evidence curated for decades by museums and other institutions (see e.g., Maschner and Chippendale 2005). AMS dating technologies are becoming increasingly precise—some labs now report standard deviations of only 15 years. Because these labs require increasingly smaller amounts of organic material for dating it is becoming possible to obtain accurate dates on many more specific objects of chronological interest. As a result of the continued archaeological investigations by universities, museums, avocational archaeologists, and especially cultural resource management programs, there are now many more archaeological sites identified and excavated than were at the disposal of Parker and Ritchie. Unlike the almost exclusive focus on large, artifact-rich sites by earlier archaeologists, the continued investigation of the archaeological record in New York has included sites of varying size, content, and function (e.g., Curtin, this volume; Funk 1993; Miroff 2002; Rieth 2002; Rieth and Johnson, this volume). As a result, there are ever-increasing numbers of curated collections on which to pursue research. The massive amounts of data produced by field and laboratory projects can be easily processed and displayed by personal computers.

Given all this, the use of culture-historic taxa as units of analysis, interpretation, and summary is anachronistic. Studies that identify specific problems within specific theoretical contexts, where samples for analysis are selected that meet the specific needs of the analysis both in terms of content, geography, and chronology have great potential to increase our knowledge about the past. Comparing specific trends in artifact attributes between regions of New York and adjacent states and provinces has the potential to increase our understandings of spatial variations in human behavior. This will be especially possible by synthesizing various lines of evidence under theoretical constructs that allow the identification of contemporaneous groups and their ancestral and descendant groups. Simply asserting such relationships based on trait lists and/or geographical proximity will not suffice (e.g., Hart and Engelbrecht 2011). Culture-historic taxa served their purpose more or less satisfactorily under specific contexts that no longer exist. It is time to move on and do the studies that can make our knowledge of the past much more dynamic and interesting.

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ENDNOTES

- 1 Formally in an extensional definition “the necessary and sufficient conditions for membership in a unit rendered by enumeration of the members or a statistical summary of same” (Dunnell 1971:199).

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