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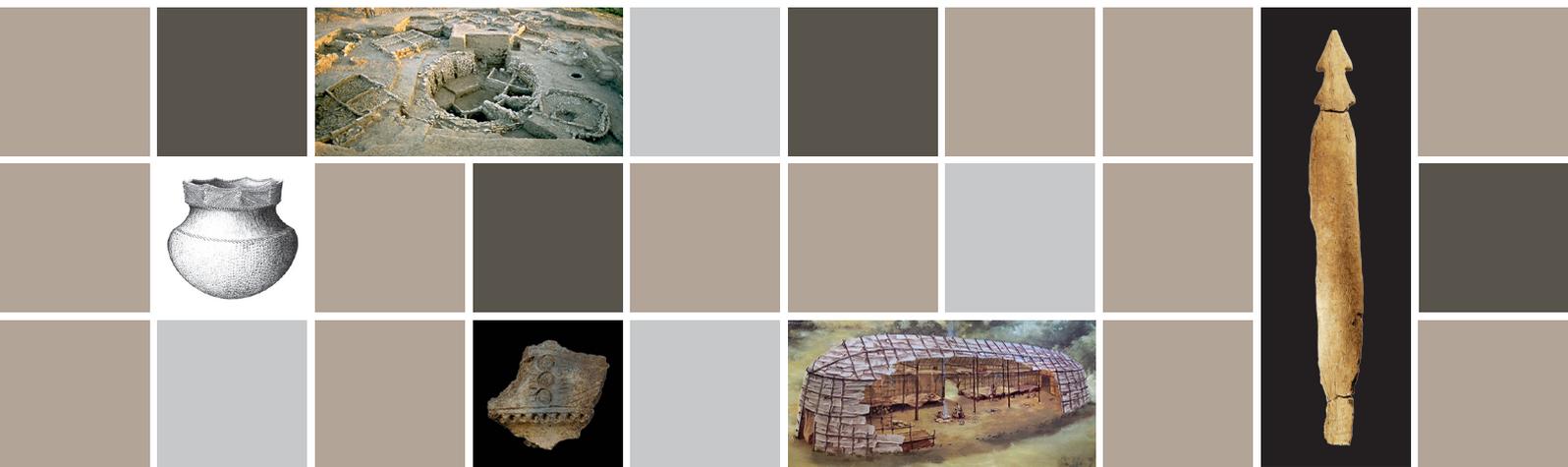
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HOUSEHOLD ARCHAEOLOGY

A Transatlantic Comparative Approach



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EXTENDING THE RAFTERS:

The Iroquoian Longhouse as a Sociotechnical System

John L. CREESE

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EXTENDING THE RAFTERS:

The Iroquoian Longhouse as a Sociotechnical System

John L. CREESE

Abstract

A better understanding of the role of domestic dwellings in shaping past social relations is needed. Here, Northern Iroquoian longhouses are studied as sociotechnical systems, following Pfaffenberger (1992). This approach allows us to appreciate how social relations were generated and contested in the very activities of building and living in houses. I examine a sample of pre-Columbian longhouses from southern Ontario, Canada. Variation in aspects of house construction, spatial layout, and ritual indicates that sociotechnical networks associated with different houses were variable in scale, durability, and organization. What emerges is the sense that a dynamic, driving tension between forces of collectivization and atomization, inclusion and exclusion, lay at the heart of longhouse life.

Keywords

Longhouse, sociotechnical system, vernacular architecture, Northern Iroquoians.

Introduction

In light of the failures of stage-based evolutionary thinking (e.g., Feinman, Neitzel 1984; Pauketat, 2007), the time has come for a more dynamic approach to the study of domestic dwellings in middle-range societies. The recognition of houses as active historical phenomena is a necessary counterpart to a more flexible, non-linear understanding of non-state societies (cf. Crumley, 1987). One way to achieve this is to think about domestic dwellings as *sociotechnical systems* (Pfaffenberger, 1992). Placing the study of Iroquoian longhouses in this framework allows us to appreciate the ways in which social relations were produced and challenged in the very activities of creating, maintaining, and rebuilding houses. Here, I examine longhouses drawn mainly from 13th to 15th century Northern Iroquoian villages in southern Ontario (figure 1). Heterogeneous patterns of house construction, internal spatial organization, and ritual activity indicate that the sociotechnical networks associated with different houses were surprisingly variable in scale, durability, and organization, even within the same village. What emerges is the sense that a dynamic, driving tension between forces of collectivization and atomization, inclusion and exclusion, lay at the heart of longhouse life.

1 - The Longhouse in Anthropology and Archaeology

During the Late Woodland period (ca. 900-1650 AD), timber-frame, bark-covered longhouses were commonplace across much of Northeastern North America (figure 2). Prototypical longhouses first appeared in southern Ontario as early as the 10th century, and were widespread



Figure 1 - Location of sites mentioned in the text.

in the region by 1300 AD (Creese, 2011). They were constructed from a framework of relatively slender wall posts and more substantial interior supports (Kapches, 1994). Measuring from 6 to 8 m in width, they varied in length depending on the number of resident families, up to a maximum of about 100 m (Tuck, 1971: 82). Among Northern Iroquoian peoples, longhouses were typically inhabited by a core of related women and, variably, their in-marrying husbands and children (Morgan, 1881). The interior of the structure was organized around a row of central hearths. Pairs of nuclear families occupied space on either side in a modular arrangement sometimes delineated into compartments (Snow, 1990, 1997). Along each wall, a row of benches ran the length of the building. These remained open to the central corridor, encouraging collective work and communal consumption (Richter, 1992: 19). Entrance vestibules at both ends of the structure doubled as granaries in historic times (Prezzano, 1992; Kapches, 1993, 1994).

Since Lewis Henry Morgan's pioneering ethnography, the Iroquoian longhouse has been seen as an ideal reflection of the tribal society. For Morgan (1881), longhouse form was a natural corollary of the Iroquois place in social evolution. It epitomized his state of "barbarism", wherein kinship and "communism in living" defined the social order. With its row of shared central hearths, communal storage, and resident families linked through the maternal line, the longhouse seemed a perfect image of this fundamental order. As village-dwelling horticulturalists, Iroquoian societies continue to be characterized as "tribal". In the classic anthropological model of the tribe, the major social problems facing small-scale agrarian societies are resolved by *being tribal* (Sahlins 1968): social integration is achieved through the warp of kinship and the weft of pan-residential institutions. For scholars influenced by mid-century anthropological theory, the tribe's archetypal structuring principals – flexible segmentary organization and a domestic mode of production (Service, 1971; Sahlins, 1972) – appeared to be the primary correlates of longhouse form (Engelbrecht, 1974; Trigger, 1976; Snow, 1994). As lineages grew, matrilocality and a sharing ethic combined to make the longhouse an organizational imperative.

This iconic vision of the longhouse has, unfortunately, had a dulling effect on the archaeological imagination. The archaeological record of these buildings is extraordinarily robust, with hundreds of houses excavated over the last 50 years. In spite of the huge potential of such a sample, however, archaeologists have felt little need to pay close attention to variation in house layout and architecture. The bulk of research has been concerned with tracing the origins of Iroquoian post-marital residence patterns and clan organization (Warrick, 1984; Kapches, 1990; Birch, 2008) – in other words, with finding the material correlates of Iroquoian tribalism. Where variation between houses has been studied, it has been mainly for culture-historic, dating, and demographic purposes (Dodd, 1984; Warrick, 1989; Kapches, 1994). Perhaps for this reason, the rich archaeological record of Iroquoian longhouses has been undervalued. Architectural variation that fails to conform to a normative tribal model has often been ignored (Creese, 2012b), while important anthropological questions about social dynamics in acephalous societies are neglected.



Figure 2 - Reconstructed Iroquoian longhouse, Ska-Nah-Doht village and museum, London, Ontario (Photo: John L. Creese).

2 - Longhouses as Sociotechnical Systems

We would do better to turn back the clock and attempt to look forward, with the Iroquoian people of the 13th to 15th centuries, at a future that was not at all fixed, but full of competing visions for how people should form enduring and productive communities (cf. Harris, 2014). An analytical framework that provides some purchase on these issues is that of the *sociotechnical system* (Lemonnier, 1986; Pfaffenberger, 1992). This concept has been developed by sociologists of science and technology, but is having an increasing influence on the direction of archaeological theory (e.g., Hodder, 2012; Pauketat, 2013). In essence, it rejects the familiar distinction between technology (as material) and culture (as mental) that sits at the heart of modern thought. In its place, complex assemblages like electrical power grids (Hughes, 1983), and sailing vessels (Law, 1987)

are analyzed as structured webs of human and non-human actors. These webs, to operate as people want them to, take effort to build and maintain (Hodder, 2012: 88). Consequently, they tend to draw people into dependencies, or entanglements, as Hodder has called them, in which the coordination of labour, techniques, materials, knowledge, and power becomes a structuring force in human history. The whole assemblage expresses emergent capacities distinct from its component parts (DeLanda, 2006), that is, an agency of its own (Bennett, 2005). This agency is not only instrumental or utilitarian, but socio-genic. As Pfaffenberger (1992: 502) puts it, sociotechnical systems “produce power and meaning as well as goods”.

With this in mind, I suggest that a more productive way to approach the longhouse is as a kind of sociotechnical assemblage. Rather than a closed entity – a *fait accompli* – I should like to view the house as an open, uncertain, and contested social project. We might think of it as a kind of net or trap, an assemblage of heterogeneous things and beings – wood and bark, pottery, drying fish, tobacco, animals, the dead, masks, and spirits – that collectively worked to entangle people within dynamic relationships (cf. Deleuze, Guattari, 1988). Rather than viewing the archaeological remains of a house as a simple reflection of a stable tribal order, we must grasp its past involvement in social work – the labour by which such orders were tenuously composed and ceaselessly tested and contested (cf. Bourdieu, 1977; Foucault, 1975, 1977).

In what follows, I examine three fields of Iroquoian domestic practice: house construction, spatial organization, and ritual. The relevant question in each case will be how these practices allowed Iroquoian subjects to draw people and resources into enduring relationships, and how competing visions of what those relationships might be were negotiated.

3 - Building Houses; Building Relationships

The house was a complex technology, and making one required a diverse array of skills, resources, intergenerational know-how, and cooperative labour. Houses had to be built rapidly, and at the correct season, so successful building depended on fast work by many hands. Of the construction process, Sagard, a Recollect missionary to the Wendat nation in the early 17th century, paints a harmonious picture of joint action. He informs us that “when any one of their fellow townsmen has no lodge to live in, all of them with one accord lend a hand and build one for him” (Wrong, 1939: 79). However, this rosy portrayal conceals a messier reality of conflict over who should be expected to work for whom. Simmering resentments existed just below the surface. Sagard relates that “a young lad who was not working at it [building the missionaries’ house] with goodwill complained to the others of the trouble and pains they were taking in building a lodge for people who were *no relatives of theirs*” (Wrong, 1939: 78, my emphasis). Building a longhouse was not only an occasion for action by cooperative social groups, but, crucially, a field for testing and disputing the grounds on which those relations might be defined. In agreeing to build a house for the Recollects, the builders were simultaneously redefining them as “friends and relations”, though they were strangers (Wrong, 1939: 78-79).

This episode encourages us to take a fresh look at archaeological variation in house construction. During the 13th century, longhouse lengths rapidly expanded in villages all across southern Ontario, from an average of 12 m in Early Iroquoian (900-1280 AD) settlements, to 38 m in Middle Iroquoian (1280-1400 AD) times (Dodd, 1984; Creese, 2011: 246). Rather than a simple response to population growth, house expansion at this time should be seen as an arena for politics (Varley, Cannon, 1994). Houses could not be effectively extended unless the necessary alliances could be made and maintained – both internally, defining an extended family of occupants, and externally, defining more distant relations and friends who could be called upon when help was needed.

Site	House	Original Length (m)	Maximum Length (m)	Original Width (m)	Maximum Width (m)	Maximum Perimeter (m)	Maximum Area (m ²)	Wall Construction
Wellington	House 1	21.6	36.4	6.6	6.6	81.1	234	single
Wellington	House 2	21.0	21.0	6.2	6.2	53.5	140	single
Berkholder 2	House 1	52.0	52.0	7.5	7.5	112.8	340	paired predominant
Berkholder 2	House 2	31.5	31.5	7.0	7.0	74.0	217	paired predominant
Berkholder 2	House 3	47.3	47.3	7.7	7.7	103.6	349	paired predominant
Berkholder 2	House 4	45.7	45.7	7.4	7.4	99.8	326	paired and single
Myers Road	House 1	48.5	60.0	7.1	8.5	128.4	455	paired predominant
Myers Road	House 2	34.2	34.2	8.1	8.1	78.6	265	paired predominant
Myers Road	House 3	54.8	83.6	7.7	8.0	175.0	640	paired predominant
Myers Road	House 4	38.5	49.5	6.5	6.5	106.6	344	paired predominant
Myers Road	House 5	12.5	12.5	6.8	6.8	33.5	75	single
Myers Road	House 6	17.0	25.0	7.2	7.2	58.1	168	single
Myers Road	House 7	36.1	36.1	7.2	7.2	80.2	249	single predominant
Myers Road	House 9	85.9	85.9	8.0	8.0	180.9	701	paired predominant
Myers Road	House 10	25.0	25.0	8.3	8.3	63.0	202	single

Site	House	Undisturbed Wall Post Density (posts/m)	General Wall Post Density (posts/m)	Mean Support Post Diameter (cm)	Max Support Post Diameter (cm)	Wall Straightness	Renovation Score
Wellington	House 1	3.3	4.4	17	38	0.997	2
Wellington	House 2	2.4	1.9	17	25	0.960	0
Berkholder 2	House 1	5.0	4.4	18	27	0.997	0
Berkholder 2	House 2	6.7	7.3	21	48	0.999	2
Berkholder 2	House 3	6.0	3.9	21	41	0.995	0
Berkholder 2	House 4	4.0	3.3	19	30	0.997	1
Myers Road	House 1	4.5	8.5	na	33	0.999	3
Myers Road	House 2	3.3	2.6	na	29	0.992	0
Myers Road	House 3	4.7	6.8	na	34	0.996	4
Myers Road	House 4	5.3	4.4	na	37	0.994	3
Myers Road	House 5	4.8	3.8	na	30	0.994	1
Myers Road	House 6	3.4	3.0	na	30	0.991	1
Myers Road	House 7	4.0	4.0	na	28	0.988	1
Myers Road	House 9	4.1	5.3	na	32	0.995	2
Myers Road	House 10	2.9	2.1	na	26	0.990	0

Site	House	Total Pits	Central Hearths	Sweat Lodges	Burials	Ritual Score
Wellington	House 1	25	8	2	0	2
Wellington	House 2	22	3	1	1	3
Berkholder 2	House 1	20	2	0	0	0
Berkholder 2	House 2	9	1	0	0	0
Berkholder 2	House 3	26	5	0	0	0
Berkholder 2	House 4	13	2	0	0	0
Myers Road	House 1	69	4	6	3	9
Myers Road	House 2	11	3	1	0	1
Myers Road	House 3	103	12	6	0	6
Myers Road	House 4	20	3	2	1	3
Myers Road	House 5	1	0	0	0	0
Myers Road	House 6	5	5	0	0	0
Myers Road	House 7	8	2	2	1	3
Myers Road	House 9	10	8	2	0	2
Myers Road	House 10	9	2	0	0	0

Table 1 - Summary data on longhouse dimensions, construction attributes, and internal features from three Iroquoian village sites in southern Ontario. Houses were measured from plans published by Robertson, 2005, and Williamson 1998, and 2005. Note that wall straightness was measured by dividing the straight-line distance of a side wall (between taper ends) by the actual wall perimeter. Thus, the closer the value to 1.0, the straighter the wall. Renovation score is the sum of instances of wall repairs, replacements, and extensions/contractions for a house. Ritual score is the sum of all human burials, animal burials, and sweat lodges found in a house.

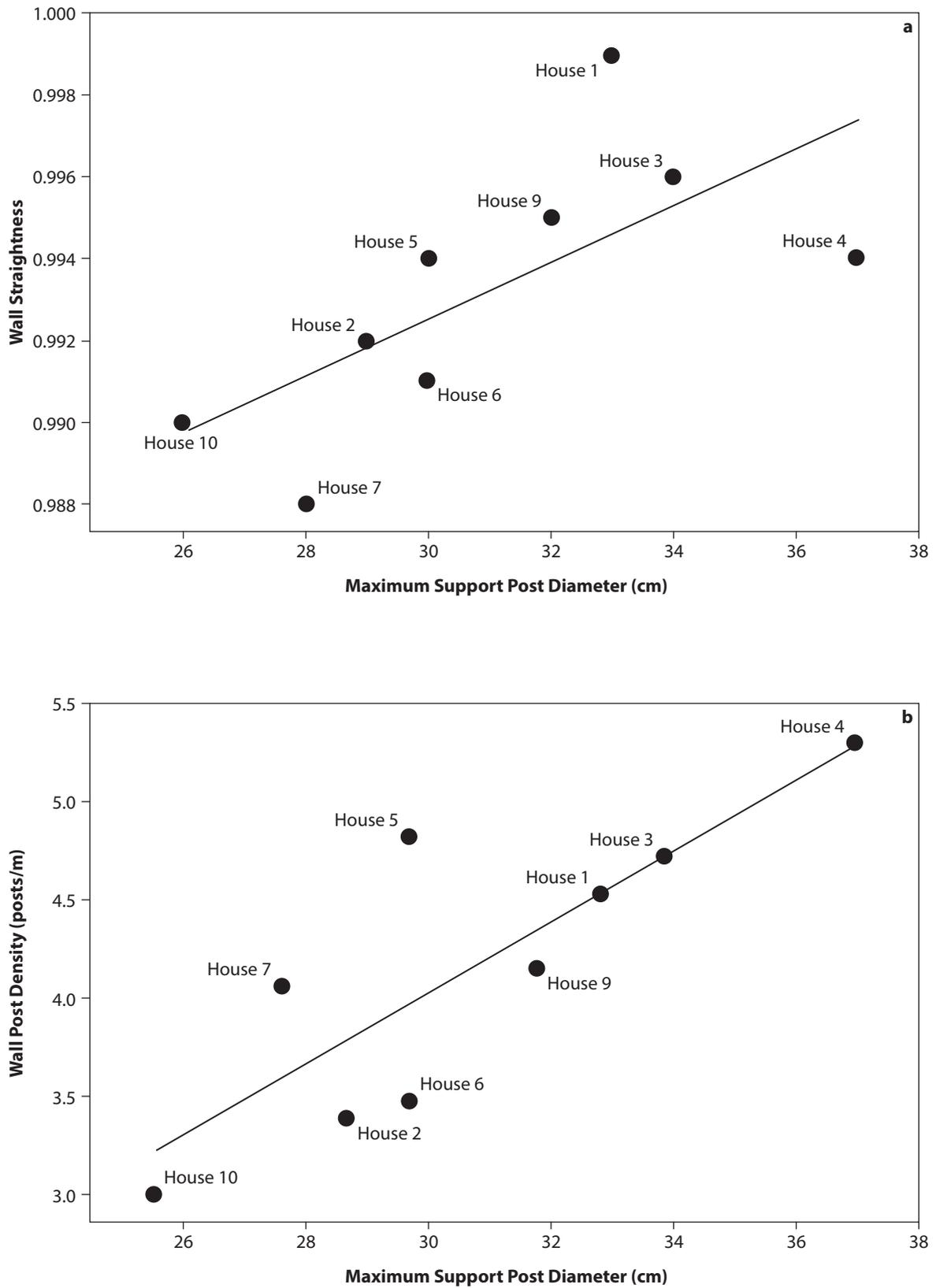


Figure 3 - Scatterplots of longhouse construction attributes at the Myers Road site (ca. AD 1280-1340). Regression lines show positive relationships between maximum support post diameter and (a) wall straightness ($R^2=0.48$, $F=6.38$, $p=0.04$), and (b) wall post density ($R^2=0.69$, $F=15.74$, $p=0.005$) in undisturbed portions of well-preserved wall. These patterns indicate that houses with larger interior supports had straighter walls that were built more robustly, repaired more over time, or both.

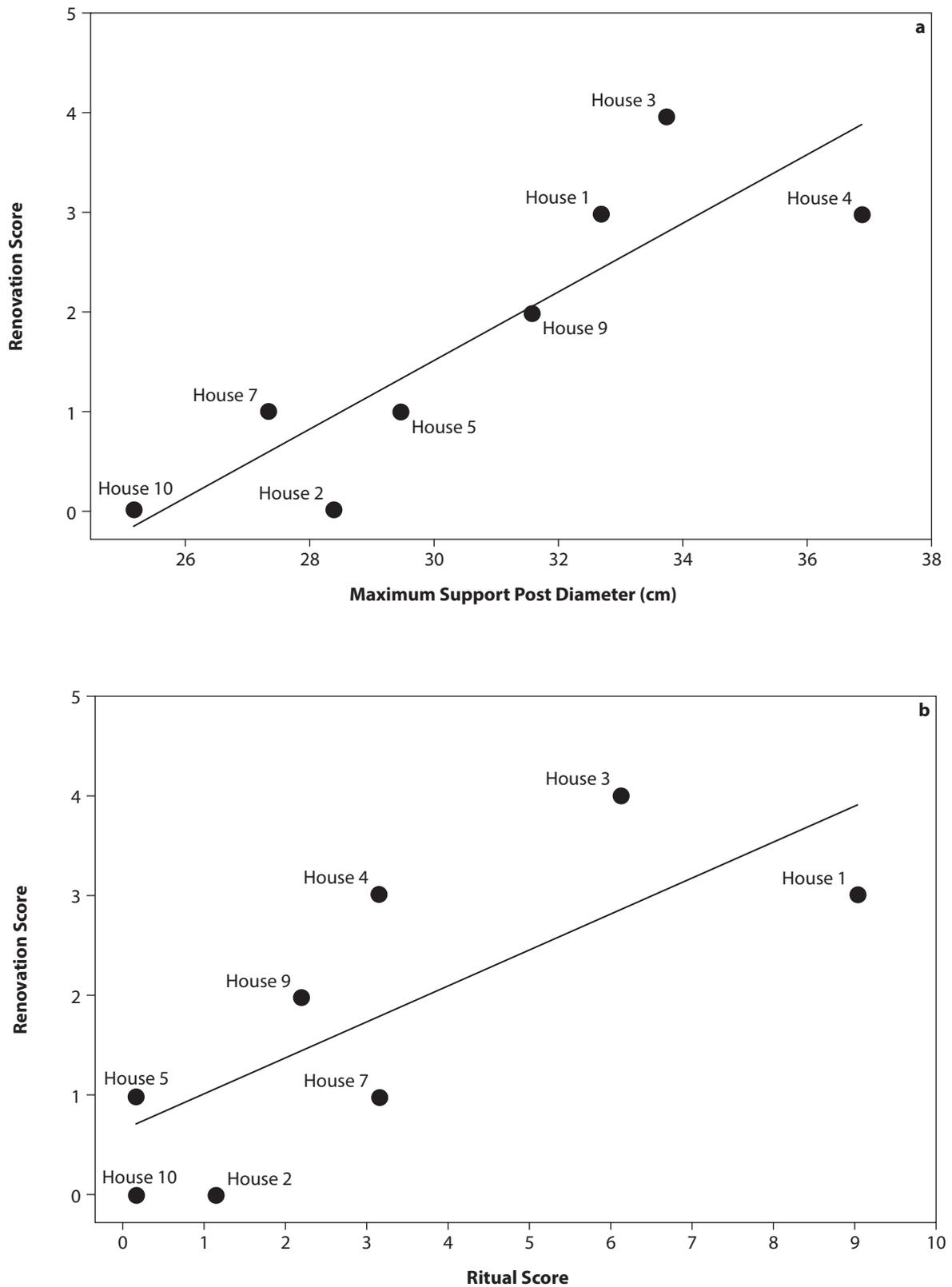


Figure 4 - Scatterplots of longhouse construction attributes at the Myers Road site (ca. AD 1280-1340). Regression lines show positive relationships between (a) maximum support post diameter and renovation score ($R^2=0.76$, $F=21.72$, $p=0.002$), and (b) ritual score and renovation score ($R^2=0.60$, $F=10.48$, $p=0.01$). These patterns indicate that houses with larger interior supports had more episodes of repair, wall reconstruction, and extension/contraction during their lifetimes than those with smaller interior supports. Houses with more evidence of renovation also had higher numbers of human burials and semi-subterranean sweat-lodges (e.g. Houses 1, 3).

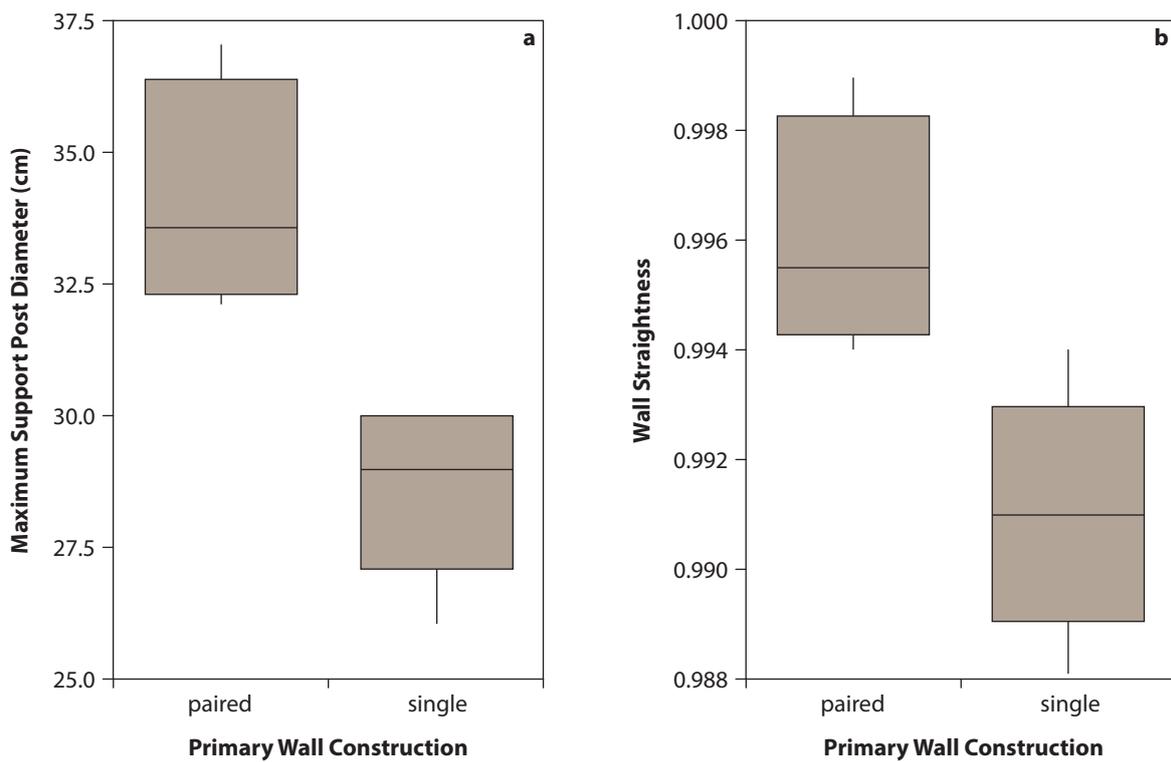


Figure 5 - Boxplots of longhouse construction attributes at the Myers Road site (ca. AD 1280-1340). Maximum support post diameter (a) and wall straightness (b) are significantly higher for houses constructed mainly using the paired and staggered post technique. Single-row constructed houses have smaller supports and more erratic walls.

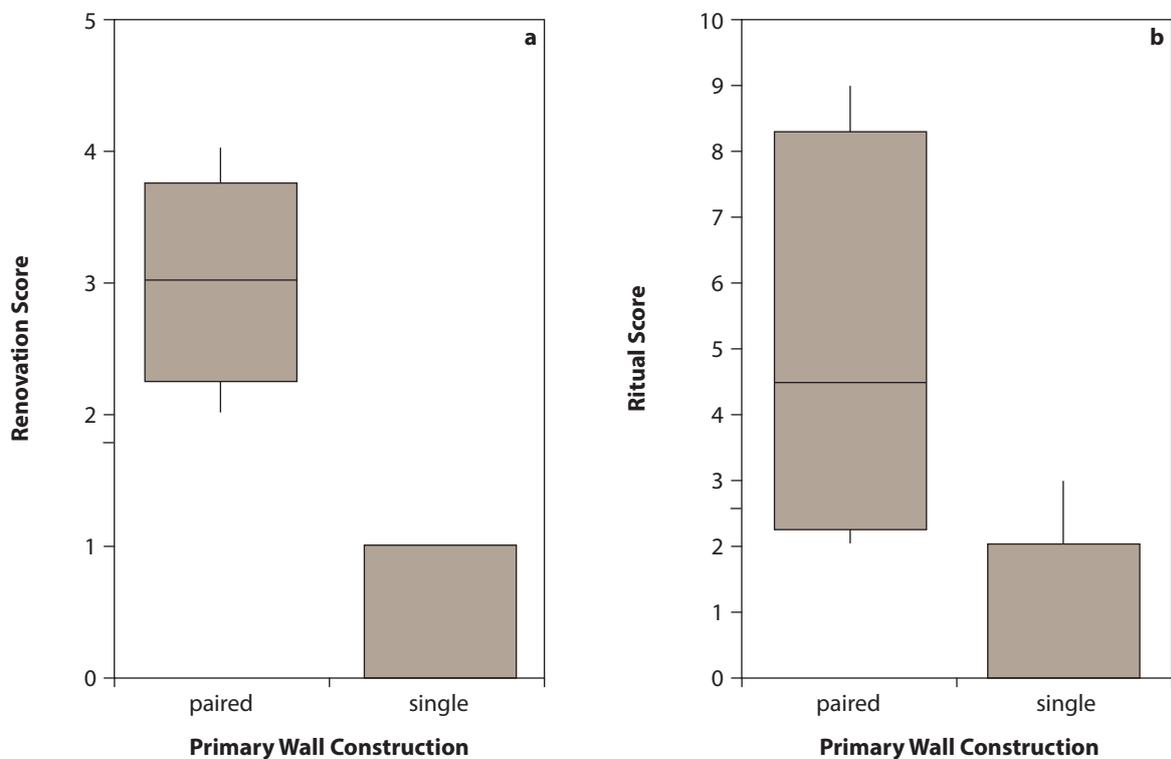


Figure 6 - Boxplots of longhouse construction attributes at the Myers Road site (ca. AD 1280-1340). Renovation score (a) and ritual score (b) are significantly higher for houses constructed mainly using the paired and staggered post technique. Single-row constructed houses have fewer rebuilds and extensions/contractions, and fewer intramural burials and sweat lodges.

Thus, the 13th century was a critical period in which questions of social alliance would have been brought to the fore. Building houses and “extending the rafters” (Foster *et al.*, 1984) to accommodate newcomers were projects of sociotechnical system-building, producing distinctive forms of domestic dwelling, but also structuring Iroquoian notions of power and personhood in the process (Creese, 2012a).

Not all households were destined to be equally successful in these projects, and those differences are revealed archaeologically. Longhouse wall construction methods, for instance, varied between two main types: (1) single row, and (2) paired, staggered-row techniques. Single-row construction required fewer wall posts per meter (table 1), and can be seen as a low-investment option that was also probably less durable. Paired-post type construction used more posts per meter (table 1), and was likely more demanding in terms of technical complexity, labour, and resources.

Wall straightness also varied between houses, even between structures located just meters apart and on similar terrain. In houses averaging nearly 40 m in length, straight walls would have been difficult to achieve. Where present, they attest to the coordination of large numbers of workers by experienced master builders. Similarly, the average and maximum size of support posts would have had implications for labour costs and the long-term durability of structures. Evidence for house longevity and refurbishment in the form of wall reinforcements, renovations, and extensions, may reflect the ability of residents to sustain the house in the face of demanding reciprocal obligations to provide labour and expertise to peer groups.

Summary data on these attributes is provided in table 1 for a sample of 13th to 15th century longhouses from the Wellington, Berkholder 2, and Myers Road sites (Williamson, 1998, 2005; Robertson, 2005). Strong patterns are evident in the data. Across the sample, houses with larger internal support posts were also likely to have straighter walls ($R^2=0.48$, $F=6.38$, $p=0.04$; figure 3a). Extra support would have facilitated higher storage loads for foodstuffs like maize, which historically was braided and hung from the rafters to dry. Support post size and wall straightness were also positively associated with wall post density ($R^2=0.69$, $F=15.74$, $p=0.005$; figure 3b) and renovation intensity ($R^2=0.76$, $F=21.72$, $p=0.002$; figure 4a), suggesting that high-investment buildings had longer lifespans and were more likely to be reinforced and extended. Houses with single-row wall construction had smaller maximum supports, more erratic walls, lower wall post densities, fewer interior features, and fewer extensions and repairs than houses with paired-post wall construction (figures 5-6). Moreover, at Myers Road, high investment, long-lived houses were more likely to contain intramural burials and semi-subterranean sweat baths ($R^2=0.60$, $F=10.48$, $p=0.01$; figures 4b, 6b). The association of these ritual activities with renovation intensity may indicate their importance in memorializing important events in the life of the house (see below). Together, these patterns illustrate significant variation in households' ability to draw upon reliable allies and kin over the lifespan of the house. Some families were clearly more successful than others, and disputes over who would be defined as appropriate kin and friends were probably endemic.

4 - Spatial Order and the Domestic Economy

The spatial arrangement of everyday activities about the house provides additional perspective on these issues. As part of my doctoral research I used a method for examining patterns in the organization of interior space known as kernel density estimation. I digitized the plans of 45 hearth areas from longhouses dating between AD 900 and 1500. Hearth areas were defined by a sampling square proportional to house width centred on the hearth. For each hearth area, kernel density estimation algorithms were used to extrapolate probability surfaces that represent general trends in feature distribution (Creese, 2012b).

Putting this data together it was possible to come up with a model hearth area plan showing the typical arrangement of space about the central hearth (figure 7). Equally uniting and dividing, the hearth formed a critical axis for the organization of domestic space. It mediated symmetrical social relations between paired nuclear families in the lateral dimension, and asymmetrical relations between residents and outsiders in the longitudinal dimension. As I have argued elsewhere, these patterns both reflected and reproduced a characteristic Iroquoian ontology of social wholes as potent alliances of parts (Creese, 2012a).

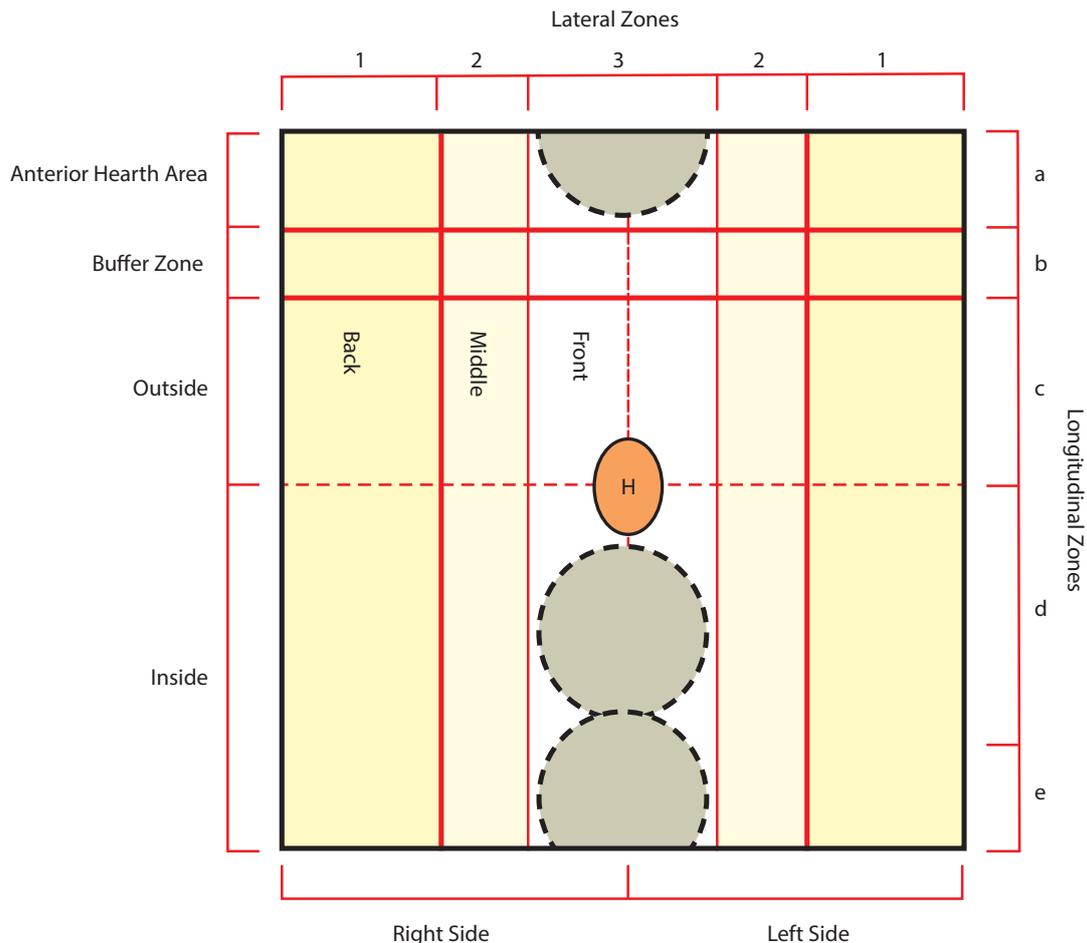


Figure 7 - Model of activity zones around an ideal central hearth based on a kernel density estimation analysis of 45 hearth areas from longhouses in southern Ontario. Note that the hearth defines two overlapping orthogonal axes of spatial activity. Activity zones of symmetrical size and content occur bilaterally (zones 1-3), while those of asymmetrical size and content occur longitudinally (zones b-e). Dotted circles represent the position of dense post clusters. Details are published in Creese, 2012a, b (CAD: John L. Creese).

However, these regularities belie the tensions and contradictions through which they emerged. This is especially evident during the Early Iroquoian period. At this time, deep cylindrical storage pits can be found in a variety of contexts, both inside and outside houses (Williamson, 1985; Fox, 1986; Timmins, 1997). In some cases, we see them located beneath bunk-lines, suggesting that nuclear families controlled associated production and consumption. However, in other cases, storage seems to have been organized at larger scales extending beyond the house itself (Fox, Salzer, 1999). With the rapid growth of longhouses in the 13th century, end vestibules tripled in area on average (Creese, 2011: 246), and became areas for collective above-ground storage for large cooperative groups (Dodd *et al.*, 1990; Kapches, 1994). Most likely, the longhouse as a whole was established as the primary institution for the communal appropriation of surplus.

Revealingly, however, this development did not put an end to variation in storage solutions. Deep pits continued to appear in some houses and not others. Their real-world distribution was sporadic, not regimented according to patterns of bilateral symmetry. Moreover, smaller pits, used by the Wendat to conceal items from common view (and from the demands of a sharing ethic) were unevenly distributed across hearth areas. [Table 2](#) lists feature counts and total pit volume

Site	House	Hearth Area	Area (m ²)	Pits (n)	Features Left Side (n)	Features Right Side (n)	Feature Symmetry (min/max)	Total Pit Volume (l)	Pit Volume Left (l)	Pit Volume Right (l)	Pit Volume Symmetry (min/max)	Inter-HA Storage Distribution (min/max)	Inter-HA Feature Distribution (min/max)	Inter-HA Support Post Distribution (min/max)
Wellington	House 1	1 East End	42.3	4	5	1	0.20	4174.0	57.8	4116.0	0.01	0.05	0.75	0.86
Wellington	House 1	2 East Middle	42.3	3	1	2	0.50	197.5	172.1	25.4	0.15	0.05	0.75	0.86
Wellington	House 2	1 East End	33.6	7	7	3	0.43	338.6	153.9	120.9	0.79	0.99	0.64	0.83
Wellington	House 2	2 West End	42.3	11	8	7	0.88	335.1	303.9	31.2	0.10	0.99	0.64	0.83
Berkholder 2	House 1	1 East End	57.8	4	2	2	1.00	275.4	168.2	107.3	0.64	0.04	0.25	0.76
Berkholder 2	House 1	2 West End	56.3	1	1	2	0.50	10.3	0	10.3	0	0.04	0.25	0.76
Berkholder 2	House 2	1 East End	49.0	4	3	4	0.75	119.3	48.4	70.9	0.68	0.04	1.00	0.62
Berkholder 2	House 2	2 West Middle	51.1	4	4	2	0.50	3060.1	1125.7	1934.4	0.58	0.04	1.00	0.62
Berkholder 2	House 3	1 East End	58.5	7	3	8	0.38	477.1	197.3	279.8	0.71	0.28	1.00	0.42
Berkholder 2	House 3	2 West End	58.5	7	4	2	0.50	1682.8	1119.2	536.9	0.48	0.28	1.00	0.42
Berkholder 2	House 4	1 East End	51.8	1	0	0	na	230.2	0	0	na	0.11	0.50	0.93
Berkholder 2	House 4	2 West End	54.8	2	1	0	0	2003.1	111.3	0	0	0.11	0.50	0.93
Mean			49.9	4.6	3.3	2.8	0.51	1075.3	288.1	602.8	0.38	0.25	0.69	0.74
SD			8.1	2.9	2.5	2.5	0.29	1361.6	399.5	1233.0	0.32	0.36	0.28	0.18
Min			33.6	1	0	0	0	10.3	0	0	0	0.04	0.25	0.42
Max			58.5	11	8	8	1	4174.0	1125.7	4116.0	0.79	0.99	1.00	0.93

Table 2 - Summary data for 12 hearth areas from six longhouses at the Wellington and Berkholder 2 sites. Hearth areas were delineated by placing a square with dimensions equal to house width over each central hearth. Feature symmetry is the proportion of feature counts from one lateral side of the hearth relative to the other (min/max). Pit volume symmetry is the proportion of total pit volume on one side of the hearth relative to the other. Inter-HA storage distribution is the proportion of total pit volume in one hearth area relative to another in the same longhouse (min/max). Values close to 1.0 represent an even distribution of pit volume between hearth areas, while low values represent an uneven distribution. Pit volume was calculated from dimensions reported in Robertson, 2005, and Williamson, 2005 and should be considered approximate.

for left and right hand sides of a sample of 12 hearth areas at the Wellington and Berkholder 2 sites. At the whole-house level, features were, on balance, symmetrically distributed on either side of the central axis. However, *within* any given hearth area, the distribution was markedly asymmetrical, with an average of 2.5 times the storage volume on one side of the hearth as the other. Even more striking, total storage volume varied widely between different hearth areas, ranging from 10 to 4174 litres, with a standard deviation of 1362 litres (table 2). Among contemporary hearth areas there was an average *four-fold* difference in total pit volume between any two hearth areas within any given longhouse (average inter-HA storage distribution = 0.25, table 2). This pattern is unlikely to be the result of differences in hearth area occupation duration or post-depositional disturbance, as interior support posts were relatively evenly distributed across the same hearth areas (table 2).

The high degree of unevenness in subterranean storage among hearth areas at Berkholder 2 and Wellington is telling. It indicates that the ways in which social groups within the longhouse routinely cooperated for activities such as food processing, storage, and consumption varied significantly. The use of communal storage in house end vestibules alongside unevenly distributed subterranean storage in family spaces suggests that tensions existed between the demands of communal production and consumption at the house level, and the interests of resident subgroups in withholding or concealing certain goods and activities from collective appropriation. The vision of daily life that emerges from this analysis is not one of harmonious egalitarianism, but rather of constant negotiation between competing scales of social and economic cooperation.

5 - Ritual and Social Memory

Ritual provided a third arena in which projects of sociotechnical network-building were pursued in the house. Like house construction and the rhythms of the domestic economy, ritual sweat bathing and mortuary processing were opportunities for extending social relationships through acts of literal and figurative body bundling (cf. Pauketat, 2013).

From the very beginning, longhouses were settings for interactions between the living and the dead (Spence, 1994a). In many Early and Middle Iroquoian houses, bundle-burials were interred in multiple graves beneath house floors or in semi-subterranean lodges (see below). These activities served to articulate social wholes through the bundling of bodies and bones. At the Miller site (Kenyon, 1968), seven widely scattered graves were discovered in various parts of the settlement, both inside and outside the palisade, and within a house. These graves held from one to 13 individuals, with most including three or four secondary bundle burials. At Praying Mantis, a secondary burial containing the remains of at least eight individuals was located in a pit at the east end of House 2 (Spence, 1994b; Howie-Langs, 1998). The pit was also used for other activities, probably initially storage and later for refuse disposal. The human burials marked a closure of the activities of production and consumption associated with the pit, and directly linked them with a specific social group through the bundling and deposition of human remains. Nearby this burial, another distinctive pit contained the near-complete remains of numerous mammals – a deer, two otters, and nine racoons. This parallel act of body bundling perhaps was intended to define the human social group through its connections with animal relations.

By the late 13th century, multiple secondary burials were increasingly located outside village boundaries (Williamson, Steiss, 2003). However, select burials and funerary processing activities continued to occur in the house. Human remains could be used to mark building and renovation events. At the Uren site, Wright (1986) reports the recovery of a human long bone from a support post foundation. At the Antrex site, a longhouse was rebuilt along a new orientation, but in a manner

that maintained an area of overlap with a multiple burial feature located beneath one of its central hearths (Thomas, Robertson, 2010). As noted above, intramural burials at the Myers Road site were positively correlated with house construction quality, durability, and renovation intensity. This pattern indicates that groups that were more successful in assembling enduring sociotechnical networks about the house memorialized these efforts through special mortuary treatments for certain individuals. If it is appropriate to view such practices as articulating and memorializing social groups connected with the house, then this variation indicates that competing visions of the nature of these social units co-existed, often within a single community.

Semi-subterranean lodges, probably specialized facilities for sweat-bathing (MacDonald, 1988, 1991), are often closely associated with intramural human and animal burials. They first appeared in the late 13th century, at the very time that longhouses were rapidly becoming monumental constructions. They are key-hole-shaped in plan, with a sloping entrance ramp leading to a small chamber dug into the ground and surrounded by posts that would have supported a roof. They often have complex use-lives, with primary floor activities leading to the formation of a greasy, black organic layer, sometimes associated with ritual deposits of animal faunal elements and artifacts. Many were later used for waste disposal as well as mortuary purposes (MacDonald, 1991).

If we view communal sweat-bathing as another context for social bundling, we find that the distribution of lodges within and across longhouses is telling. I quantified the orientation and location of semi-subterranean lodges across a sample of 157 longhouses from 23 sites in southern Ontario. Entrance ramps to semi-subterranean lodges built within longhouses normally faced in one of two directions. They were either aligned parallel or perpendicular to the long axis of the house. In this large sample, both orientations were equally popular at a regional scale of analysis. Of 108 sweat lodges in this study, entrance ramp orientation was almost perfectly evenly divided between parallel and perpendicular alternatives. If we look at the distribution of lodges across categories of house space, we find that a gradient of accessibility vs. depth was marked out. Just 5% of lodges were located in end vestibules, 15% in the central corridor, and fully 80% in side platform areas or appended externally (Creese, 2011: 285).

These patterns in location and orientation were not coincidental, but a matter of ritual concern. At the Hubbert site's House 2 (MacDonald, Williamson, 2001), bilateral pairing and orientational contrasts reinforced basic structural relations between social parts and wholes. Two longitudinally-oriented lodges were later replaced by lateral facing structures. Further, a central lodge faced in the opposite direction of the first two lodges (figure 8). Its central position seems an intentional counterpoint to the paired lodges to either side. Similar bilateral arrangements have been excavated at Alexandra, Day, Dunsmore, and Myers Road (MacDonald *et al.*, 1989; Robertson, Williamson, 2003, 2008).

At first blush, these spatial patterns appear to affirm a vision of the house as a balanced and harmonious union of allied sides. But here again, the normative pattern only tells part of the story. When we look at dimensions of variability in the distribution of sweat lodges, we are confronted not by inclusion and equal access, but by exclusion and preferential access. Sweat lodges were distributed very unevenly between houses. In my sample, 53% of Middle Iroquoian houses lacked sweat lodges entirely. Moreover, there was no statistical relationship between the size of a house and the number of sweat lodges it contained (Creese, 2011: 259-260). This suggests that the size of the social groups that controlled and used particular sweat lodges varied tremendously, and, given their predominantly restricted location within houses, indicates that these rituals were as important for who they excluded as who they included.

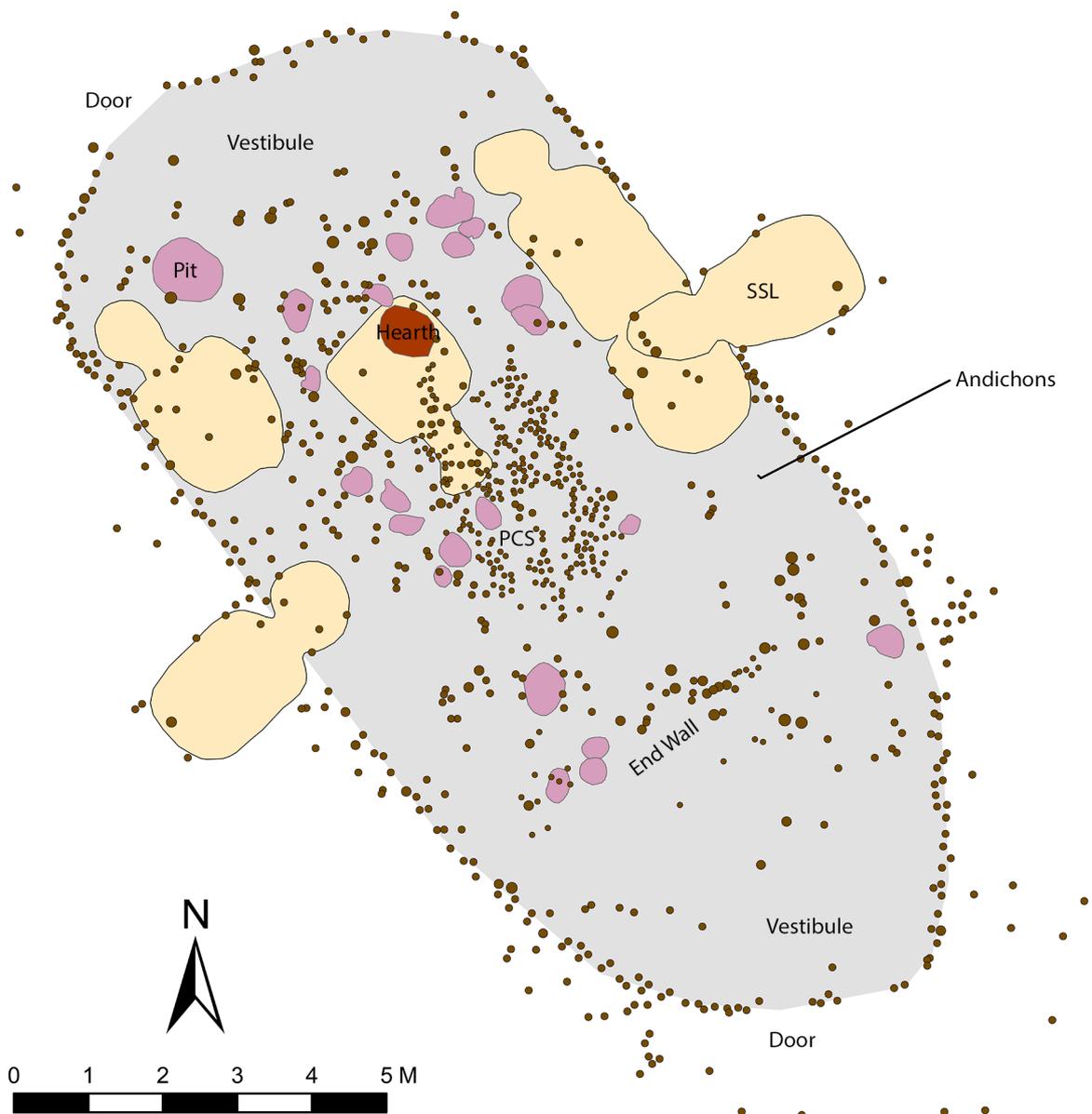


Figure 8 - Floor plan of House 2 at the Hubbert Site (ca. AD 1425-1475), showing bilateral pairing of semi-subterranean lodges (SSLs). These flank a central hearth that overlaps an earlier central SSL (after MacDonald, Williamson, 2001).

6 - Reassembling the Longhouse

So how does this way of looking at the longhouse change our understanding of its role in Iroquoian history? Viewed as an unfolding project of relationship-building, what can we say about how the longhouse constituted the social world of its builders and inhabitants? At the most general level, the house can be seen as the nexus of a series of social and economic accumulations and redistributions that negotiated a tense and sometimes conflicted relationship between social parts and wholes, individuals and collectives. As a sociotechnical system, the longhouse drew people and materials together for building and repairing the house itself, routine consumption

about the common pot, feasting and dancing, games and rituals. Moreover, the temporalities of house life structured these patterns of social gathering and dispersal according to distinct rhythms - daily as women departed to work in the fields and returned to eat and tell stories, seasonally as men followed the war-path and returned bearing captives or trophies, and generationally, as houses were established, grew to incorporate new families, and eventually contracted, broke apart, or were abandoned.

These patterns helped establish an enduring Iroquoian logic of social extension (cf. Foster *et al.*, 1984). Within this system, power and well-being were understood to flow from the expansion of social entities through alliance-building and adoption. This way of structuring demographic growth was a critical move that enabled people to increase their investments in productive activities while limiting the effects this might have had on social and economic equality. It ensured that surplus labour and resources could be extracted by and directed toward collective social institutions rather than individuals or nuclear families, where differences in wealth and status might begin to accrue (Trigger, 1990). At the same time, following Johnson's theory of sequential hierarchy (Johnson, 1982), expanding longhouse size limited village organizational scale, buffering social interaction stress and promoting consensus decision-making (Creese, 2011).

This reading leads us back to the problem of portraying the longhouse as an idealized and unchanging reflection of the tribal society. A closer look at this "logic of extension" has revealed it to be the outcome of an ongoing struggle. As Trigger (1990) has shown, the relative social equality typical of Northern Iroquoian communities was the product of an internal struggle against perceived selfishness, hoarding, and witchcraft - practices that threatened to undermine the benefits that might be gained by collectivizing production and consumption. Accordingly, if the longhouse seems ideally suited to promoting egalitarian economic and social relations, it is not because it mechanically reproduced those values, but because it emerged as the critical terrain of a contested project of social assembly.

Conclusions

The Iroquoian longhouse, then, was anything but the stale reflection of a transcendent social order dictated by a tribal imperative. Rather, it was the medium by which competing projects of sociotechnical assembly were enacted. Here I follow Barrett and Ko (2010), who, in discussing megalithic monuments of Neolithic western Europe, suggest that they were not erected with an intent to project conceptual schema onto the landscape. They argue instead that through the material engagement of builders with the process of building, new fields for social conceptualization and objectification were opened up: "monuments were not initiated to inscribe a cultural order on the landscape, but by their very construction they were the medium that revealed how an order of categories might have operated" (Barrett, Ko, 2010).

So it was, I believe, with the longhouse. Understood in this way, the analytical focus for archaeology shifts to material practices within and about the house that served to assemble or articulate particular kinds of social relationships. In the Iroquoian case, enduring themes for social contestation within the house seem to have surrounded the nature of the relationship between social parts - especially individuals and families - and wider institutional collectives, probably the house, clans, and villages. If something approaching an ideal "tribal" structure was ever reflected in the longhouse, it was only as a consequence of people's creative use of bodies and buildings to experiment with different ways of knitting people together.

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