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SOCIO-ECONOMIC VARIATION AT AMERICAN FORTS IN THE UPPER GREAT LAKES: AN ARCHEOLOGICAL PERSPECTIVE FROM FORT GRATIOT (1814-1879), PORT HURON, MICHIGAN

By

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ABSTRACT

SOCIO-ECONOMIC VARIATION AT AMERICAN FORTS IN THE UPPER GREAT LAKES: AN ARCHEOLOGICAL PERSPECTIVE FROM FORT GRATIOT, PORT HURON, MICHIGAN, 1814-1879

By

Mark Edward Esarey

This primarily archeological investigation compares economic variation between different ranks of American soldiers in a hierarchically-stratified military social system at Fort Gratiot -- an 1812 to 1879 post at Port Huron, Michigan on the St. Clair River border with Canada. The research focused on the 1987-1989 archeological investigations conducted by personnel from Michigan State University at the site of Fort Gratiot. These archeological excavations provided the structural proveniences which were the primary social analytical units for this study. Buildings from other upper Great Lakes American military forts were added to create a regional setting. An economic analysis of tableware ceramics recovered from the building occupations was conducted using Miller's (1980, 1991) economic price scaling technique.

The economic distinctions between officers and enlisted men proved often neither to be very substantial nor always even to be discernable. Factors such as small group size and social and economic marginalization due to a political border interrupting economic networks and development were found to be the causes of the unexpectedly flat socio-

economic hierarchy. The patterns of economic variation between the ranks were found to be based in changes in the supply network over time and in adaptations to local circumstances in a socially and economically remote region along a political border of a developing nation state.

To my family and friends
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CHAPTER 1 -- INTRODUCTION

The purpose of this primarily archeological investigation is to demonstrate and interpret local variation as well as differences in distribution in time, space, and scale in economic status between different ranks of American soldiers in a hierarchically-stratified military social system at Fort Gratiot -- an 1812 to 1879 post at Port Huron, Michigan on the St. Clair River border with Canada.

Military sites serve a specialized function within a state society or empire. Strategic functions are related to topography and political boundaries, as well as to trade and frontier cultural interaction -- and all except topography do change. While there is much functional duplication among such sites in a regional network, one can not assume individual sites to be roughly equivalent or even to maintain the same functions over time. Indeed, they are spatially distributed and supplied in an explicit and formal hierarchy of sites and functions throughout the system. This is typical of forts and other types of sites that are part of highly specialized and hierarchically differentiated state-administered social organizations.

A number of previous archeological investigations at American forts have been architecturally oriented, many exclusively so (cf. Buchman 1977:13, 1978:1; Olsen 1975). The various archeological investigations at the first (1814-1830) and second (1830-1879) fortresses at the site of Fort Gratiot never had a primary focus of gaining data for architectural reconstruction. Indeed, my primary goal during the 1987-1989 field investigations (Esarey 1988, 1989, 1991) was to obtain samples of artifacts organized by function and date of deposition from as many structural proveniences as possible. This was in order to obtain data from as many different social and temporal groups of people who used the site as possible.

People are socially differentiated by class in nation states and empires. In the broadest sense when one compares the economic value of artifacts obtained from structurally-based functional contexts within the explicitly ranked social hierarchy of the army (cf. Dyer 1985:131-154), one is studying economic statuses in a stratified society. Social status and economic statuses are not necessarily equivalent, and economic status is, of course, only one of many factors contributing to social status. Other important factors include education, attitudes and behavior learned from family and peer groups, as well as an individual's ascribed or inherited status. Although military rank in the United States is not precisely correlated with social class, nineteenth-century American military sites in the upper

Great Lakes region are an example of this general kind of social context. This is due to the existence of differing and distinct formal roles and statuses for officers and enlisted men, even though these roles do not necessarily derive from inherited social statuses.

Historical documentation has well known biases that relate to social status. Bias due to documentation being created primarily, if not exclusively, by and for small powerful elite groups in a culture is ubiquitous. Archeology offers an alternative source of data -- one that differs from historical documentation in that it is not based on interpreting the information, ideas, and attitudes of individuals who kept records, but rather is based more generally upon patterns of group social behavior.

A region is the appropriate context for this kind of analysis, focusing herein upon the relative social statuses of groups of individuals at a primary site within a group of sites. One may best address questions about social variation, continuity, and change in such an encompassing regional framework. This is because it is easier to see and interpret differences and similarities when one can gauge whether they are representative or unique.

THEORETICAL CONTEXTS

The American military occupations of the upper Great Lakes forts during the nineteenth century can be interpreted within several different spatial theoretical contexts. Each of these approaches was established to address specific theoretical interests. They are commonly used independently; thus, no one has previously integrated them into a single interpretive system. However, an anthropological investigation of a place existing simultaneously along a political border and in a social and economic margin requires addressing political, social, and economic spatial theoretical concerns.

Economic Integration Frontiers

Recently, several anthropologists and other researchers (cf. Casagrande et al. 1964; Hardesty 1985; Katzman 1975; Lewis 1984; Margolis 1977; Steffen 1980) have studied a wide variety of developing frontier regions. While avoiding Frederick Jackson Turner's (1893) main thesis proclaiming continual expansion into open land as the foundation of frontier society, intentionally or not, all parallel Turner in his lack of integration of native and other ethnic groups (cf. Boorstin 1987:76-93; Jacobs 1969:100-106) and political boundaries in their approaches and analyses of frontier regions. Significantly, a major difference is the

anthropologists' primary focus upon tracking and explaining the expansion of groups of European descent or upon the economic development of nation states. Pursuing this approach, they have relied on formal economic land use or market models borrowed from geography. These formal models, which are summarized below, are very powerful analytical tools; however, they generally exclude non-economic social factors from consideration.

Smith (1976a) describes Thünen's 1826 agricultural land use model as a well-tested predictive model of the pattern of agricultural production, land use, and marketing relations. This model was developed for mapping isotropic agricultural landscapes where transportation cost as a function of distance is the only variable. Smith also summarizes Christaller's ideas about retail market function and differentiation from his theory of central places. Central place theory (cf. Kolars and Nystuen 1977:79-109) is not a universal economic model, but rather specifically assumes a retail market economy. Therefore, it is useful only in analyses of partially or fully commercial economies and in contacts between these and non-commercial or partially commercial economies. The rank size settlement pattern analysis in central place theory is based on an assumed direct relationship between actual population size and the number of commercial functions in a settlement (Smith 1976a).

In central place theory, there are several common non-exclusive patterns concerning the location and number of lower level centers. The K3 pattern is an agricultural pattern, K4 is an urban commercial pattern, and K7 is an urban administrative pattern. Another common pattern is the primate center, which shows extreme centralization. This pattern, though often correlated with developing countries, actually reflects centralized administrative and political control by a concentrated elite class (Smith 1976a).

Smith (1976c) discusses several kinds of economic exchange distribution systems underlying these economic distribution patterns. Uncommercialized distribution systems have direct non-market exchange. Partially Commercialized systems have a non-competitive, controlled market exchange. Fully Commercialized distribution systems have a competitive market exchange, especially when it includes local levels. Within these three levels of distribution, Smith (1976c) defines several spatial patterns.

First, Extended Network Systems are a form of Uncommercialized distribution characterized by exchange between equal settlement nodes or individuals and by delayed generalized reciprocity. The key is the lack of controllable critical resources, goods, or services. A second form of Uncommercialized distribution is Bounded Network Systems. These have exchange between unequal ranks. They are small regional systems with a local dispersed

hierarchy and little outside contact or trade, and in which there is stable control of a local resource (Smith 1976c). These two distribution systems should characterize the various pre-contact Native American trade networks.

Dendritic Central Place Systems (Smith 1976c) are a form of Partially Commercialized distribution system. These are vertically tiered, hierarchical systems often characterized by trade/market monopolies where the core center sets the prices, and the only goods to leave the hinterlands are low-bulk high-profit items, such as furs, ivory, spices, fine cloth, and precious metals. Artificial scarcity is often created by the monopolies, and commerce usually dominates politics. This pattern is found in what are often referred to as the peripheries of mercantile or capitalist economies. Labor and social stratification along ethnic lines is usually present within this pattern. This pattern best represents the early fur trade period, as well as the concept of a cultural interaction frontier discussed below.

Interlocking Central Place Systems are given as an example of Fully Commercialized distribution systems (Smith 1976c). These are characterized by hierarchical social organization with a high degree of division of labor throughout. They are integrated by horizontal network links. Distribution scarcity is created by the extreme division of labor. K3 agricultural and K4 urban market central place patterns are common. In these systems markets

compete directly with each other at all levels. This pattern describes the idealized Euro-American integrated economic system, including Wallerstein's (1974) world-economic-system model.

Based on the concepts above, economic frontier regions are generally presumed to be directional -- with the more numerous or militarily powerful of the two groups expanding into the territory of the other. In such places this spatial frontier region undergoes a process of integration over time and in space, termed "colonization gradient" by Casagrande et al. (1964), into the political, social, and especially economic systems of the expanding group (also cf. Dyson 1985; Giddens 1987a, 1987b; Lewis 1984, Meinig 1986; Nash 1981; Prucha 1953, 1987; Schneider 1977; Smith 1976b, 1976c).

Following these frontier economic development schemes, the developing nature of expansion by the United States can be placed in context within Wallerstein's (1974, 1980, 1989) core - semiperiphery - periphery model of a world economic system (also cf. Braudel 1984:21-88 and Wolf 1982). Wallerstein (1980:236-241) referred to the early United States as an emerging economic semiperiphery and to London, England as the nineteenth century's international economic core. As an emerging economic semiperiphery in the early nineteenth century, the United States was trying to develop and maintain political and economic control of its own western territories. In the upper Great Lakes, America was

competing directly for the fur trade with Great Britain, a nation from which in this view it was politically, but not economically, independent.

In this perspective the United States' ambivalent relations with then colonial Canada become somewhat clearer. British Canada was still a political and economic periphery. Along the border the emerging American nation was competing not so much with Canada as with Great Britain itself. In the early nineteenth century, the east coast of the United States was developing its own political hinterland -- taking over and expanding upon the previously European controlled trade in North America and especially further developing agricultural settlements in the western frontier region, which provided the one sure way to guarantee and strengthen its own economic and social control of this region.

In the expansion of Euro-Americans into North America as a particular case, many of the writers cited in the following section refer to the significance of <u>temporary</u> changes from more common patterns of European military behavior that took place as a result of local control of military institutions in these frontier regions. Importantly, they recount the relative success of these local adaptations in comparison to the instances where Europeans attempted relatively straight-forward coercive behavior controlled by distant bureaucracies.

Aldrich (1979) relates a sequence of early change in American frontier militia laws, especially in regions more

remote from Great Britain, as expedient developments for the safety of the local Euro-American populations. He illustrates his point by recounting how the Illinois militia reverted to the Massachusetts militia law pattern, which was close to Great Britain's, within 50 years of the first American occupation of the Illinois Country.

Stone (1974) for Fort Michilimackinac and Faulkner and Faulkner (1987) for Fort Pentagoet relate sequences of early military adaptation to frontier conditions, especially for subsistence. Over time these forts displayed an increasingly direct dependance upon the central supply systems of their associated nations instead of upon the regions in which they were located. These writers also noted that the British occupations at both posts were more directly tied to European supplies or European foods. This probably is the result of temporal factors more than cultural ones, as the British occupations of both forts were the most recent ones. By then extra-local economic networks were better developed, and local populations were larger.

South (1977) developed a set of archeologically derived artifact settlement patterns that to me seem to reflect spatial stages of integration into the Euro-American economy. Bartel (1985) took this model and expanded the distinctions to differentiate between colonial (with settlers) and imperial (without settlers) situations along the Roman frontier. Within these, he made an important distinction between the policy aims of the colonial/imperial

powers and the success of implementation of these policies. Bartel correlated South's patterns with his own terminology as follows: Carolina (Colonial Acculturated), Brunswick (Ethnic Enculturated), and Frontier Military (Colonial Enclaves/Replacement). Bartel's distinction between colonial and imperial situations also parallels Prescott's (1965) distinction between frontier as region and frontier as political boundary, which is discussed in the section on political frontiers below.

Bartel's model also coincides with Dyson's (1985) observation that Roman policy implementation did not often actually use the method of forced peace and acculturation generally understood by the term "Pax Romana." Dyson describes the process as being a gradual incorporation of frontier peoples into Roman traditions by encouraging dispersed Romanized settlements with special trade functions that first integrated with the local people on their own economic time table, before their political, and then finally social integration. Hasselgrove (1984) similarly describes the process of the partial Roman enculturation of England through indirect trade contacts with Roman Gaul.

Dyson (1985) describes the documented occasions of forced acculturation by Rome as failures and as the specific cause of military resistance by the subject peoples. There was no general policy of population replacement by the Romans, although sometimes groups of people were moved and

replaced by other non-Roman groups better integrated into Roman lifestyles.

Williams (1985), in describing Spanish North American frontier policy from 1700-1821, also focuses on the differences between the Hapsburg's policy (similar to Rome's) of gradual enculturation and subsequent use of these groups as frontier guardians. He further describes that policy's long-term general success, versus the disastrous results of the Bourbon's forced acculturation/domination program.

Lang (1975) contrasts the earlier Spanish colonial policy of extractive trade and control to Britain's pre-1763 colonial policy of movement into and development of lands suitable for European style agriculture. Although the British followed a Roman style policy of using native groups as buffers and allies in New England and elsewhere, notably with the New York Iroquois, there was a relatively constant push outward, a de facto, if not actual, policy of replacing native populations with Euro-American ones (cf. Canny 1973; Jennings 1975; Meinig 1986; Wallerstein 1974, 1980, 1989). One of the primary reasons this succeeded, in stark contrast to the earlier precedents mentioned above, was the decimation of concentrated agricultural New World native populations by European diseases (Crosby 1972, 1986; Dobyns 1983; Ramenofsky 1987) and by their participation in military actions (cf. Brose 1983; Jennings 1975; Trigger 1976, 1983, 1984a, 1984b, 1985; Wolf 1982). In contrast,

Kay (1984) points out that the northern upper Great Lakes tribes, who lived in smaller dispersed groups, recovered their pre-epidemic population levels relatively quickly. Cleland (n.d.) believes that these northern groups were pushed off of their lands because their more egalitarian socio-political organizations could not stand before better organized, more populous, and more powerful states.

Military establishments had a direct role of maintaining order and monitoring the economic and political situations in expanding frontier regions. They also functioned to induce economic development through the stable jobs and payrolls the establishments provided. The soldiers also brought skilled labor to the frontier, and quite a number of them stayed on in the region after their duty ended. Military posts sometimes disappeared completely from a frontier region after its integration into the national economy. Remaining establishments usually served supply functions, and thus lay along major transportation networks (cf. Prucha 1953, 1964, 1987).

Cultural Interaction Zones

Another definition of a "frontier" is as a zone of cultural interaction and change between two or more different cultures (Waselkov and Paul 1981). Military establishments are often found in this type of frontier. They usually have a direct role in monitoring or controlling

contact and trade between the different groups. When this was the case, an Indian Agent was usually present at the post. When forts did not serve in this capacity, they often served to protect or restrain one group, or to supply more distant military or trade establishments (cf. Faulkner and Faulkner 1987; Prucha 1953, 1987; Stone 1974).

In the upper Great Lakes, much of the cultural interaction pertained to the fur trade. From the 1780s until the 1820s, when Fort Gratiot and many of the other regional American forts were built, the United States and Jacob Astor's American Fur Company were competing with Great Britain and the North West Company for the furs trapped by Native American groups. American government policies in regard to indigenous groups, land ownership, settlement, and military forts were framed in light of this conflict and related desire to control the region and its products. The collapse of the fur trade in Michigan in the 1820s left many unresolved issues that originally developed during the interaction and trade period, such as citizenship and ownership and use-rights to land by remaining groups like the Ottawa and Chippewa (Dunbar and May 1980:77-167; McClurken 1988; Stone and Chaput 1978).

Interaction zone frontiers, and the socio-economic frontiers discussed above, generally have an expectation of spatial directionality correlated with the expansion of the more politically and economically complex society. Although they may be concurrent in the early nineteenth century upper

Great Lakes, political boundaries and zones of cultural interaction as frontiers are not spatially congruent. Political boundaries create a tension zone between groups that has a relatively permanent spatial dimension to it. Dendritic supply networks operated by state-licensed monopolies are characteristic of these situations.

The archeological presence of relatively high frequencies of locally obtained dietary remains is a sensitive indicator of cultural interaction zone frontiers (cf. Faulkner and Faulkner 1987; Stone 1974). During the early European-Native contact period in this region, the high percent of local dietary artifacts from wild animals and plants and the fort gardens resulted from the relative physical isolation of the soldiers at these sites. The switch over time to greater frequencies of centrally supplied goods, reflects the transition from a zone of cultural interaction to a Euro-American economic expansion frontier. However, poor supply transportation systems may also be an important cause for this initial situation.

Social and Economic Marginalization

Economic integration models, perhaps with the exception of ones based on boom-bust cycles (cf. Margolis 1977; McBride 1991), posit an increasing developmental integration of settlements into national or world economic systems. However, that situation is far from a certain result,

especially in the long term. Recent studies in geography concerning social concepts of space and one's place in it have recognized and sought to interpret this fact (cf. Relph 1976, 1981; Shields 1991). Earlier geographical studies (cf. Hudson 1969; Whebell 1969) touched on the subject economically without developing its social aspects.

Hudson (1969) developed A Locational Model for Rural Development with three stages: colonization, spread, and competition. The first two stages -- moving into and filling up an environment -- are the basis for many of the "frontier" spatial systems approaches used by anthropologists (ie. Casagrande et al. 1964; Lewis 1984; Steffen 1980). The last stage -- competition -- is rarely discussed in anthropology, except within ecological contexts (ie. Hardesty 1985). Alternately, competition is the explicit core of the economic geography models that anthropologists have borrowed, especially Thünen's agricultural land use theory and Christaller's theory of central market places. In his study area of Iowa in the middle and late nineteenth century, Hudson (1969) used it to describe the process of competitive elimination of economically inefficient agricultural farmsteads on a mature post-development landscape.

Whebell (1969) studied the ability of established trade corridors and their associated urban settlements to withstand the development of new and usually more efficient transportation routes. He found that the earliest

established routes and commercial areas retained their historically developed dominance until well after the costs associated with newer transportation networks had a clear and substantial advantage. In spite of this founder's effect, the United States is just as replete with towns that declined or were abandoned (cf. Whebell 1969) when steamboats, railroads, highway systems with trucks, or airplane cargo lines outcompeted earlier transportation systems, as it is with abandoned farmsteads (cf. Hudson 1969).

The fact that a political border was drawn down the middle of the lakes, the preeminent natural economic transportation corridor in the upper Great Lakes region, created conditions that produced similar results. The political border between the United States and Canada interrupted the creation of a fully developed central place commercial network. However, these conditions were present well before Hudson's (1969) last stage of economic competition could take place. The region suffered from an artificial spatial handicap on the development of an efficient transportation network, which marginalized the whole region economically. This exacerbated other problems such as poor, thin post-glacial soils and short growing seasons. Furthermore, the political border created an artificial social boundary (cf. Barth 1969:9-10; Cleland 1983:41; Giddens 1987a, 1987b:140-182). Thus, the political boundary produced inefficient economic conditions and

socially isolated communities. This did not prohibit development; it just inhibited its pace.

Shields (1991) in his research concentrates on social, rather than economic, margins or peripheries. Social marginalization is then the process of a place becoming identified as existing somehow at the edge of the realm of everyday experience (Shields 1991:1-11, 255-265, 276-278). He presents places such as Niagara Falls, Brighton Beach in England, and the Canadian north as examples of a social space where one goes to experience rites of passage, carnival atmospheres of temporary freedom from social norms, the subliminal awe of raw natural power or of beautiful nature, and idealized images of the land itself as the source of a shared national unity or coherence. A sense of social distance, or what Shields calls liminality, in the expectations of such places is a prerequisite to the experience of them.

The northern upper Great Lakes with its immense waterscapes, vast forests, wild animals, natural beauty set on an overwhelming scale, and tourist attractions and festivals precisely fits Shields' expectations for a place on the margin. Early Native Americans there existed beyond Shields' Euro-American definition of social space in the sense that they were perceived as existing in a different social system, rather than at the edge of the Euro-American one. This was largely because they had a different and

opposing sense, not only of socio-economic relations, but also of social landscape.

Economic and social marginalization affected the soldiers stationed at many of the upper Great Lakes forts. Their small group size and relative isolation put them in a situation where the normal social rules could not be strictly followed. Local conditions such as irregular supply networks required behavioral adaptations. These included spending time gardening and hunting to supplement their food resources, building anything they needed themselves, often being partially dependant for food on local populations that they were supposed to monitor, and traveling long distances for such social events as were available (cf. Heintzelman 1828-1831; Prucha 1958). Studying economic variation and change within the above social, political, economic, and historical contexts allows a better understanding of the differences and developments within and between socially ranked military groups on a simultaneous political, social, and economic margin of a developing nation state.

Political Boundaries

Political boundaries are sometimes referred to as frontiers, especially formal national political borders (cf. Prescott 1965). Following Prescott's terminology, I will refer to political frontiers as "borders" to avoid

confusion. A national political border is not only a physical boundary line, but also can be understood as one (non-ethnic) limit of psychological group identity (cf. Barth 1969:9-10; Giddens 1987a, 1987b:140-182). Military establishments on political borders, while probably never unifunctional strategically, generally did not have a primary direct economic trading function. They often served to control trade access across the border, or to guarantee or deny access to traders, other military units, or easy movement to foreign enemies or potential allies.

A factor of critical importance in the evaluation of American frontiers, especially frontiers east of the Mississippi river, is that the Treaty of Paris of 1783 created the United States as an empire -- there were "territories" from its inception. However, this was an empire of militarily and politically, rather than traditional economically (cf. Braudel 1984:21-88), created frontier boundaries. Indeed, most of the western territory, especially the upper Great Lakes, lay outside the established economic domain and trade network of the new nation.

Accordingly, the Native Americans of the region thought it absurd that in 1763 and 1783 several European nations and the United States exchanged political control over land and access to economic routes and trade partners without their involvement or consent (cf. Dunbar and May 1980:77-85, 117-123; Meinig 1986:408). They felt this way because the basis for alliance from a native point of view was peace and

trade, not war (Colden 1964; Jacobs 1966; Snyderman 1948; Trigger 1985:311).

The presence of a political boundary affected the American upper Great Lakes military posts by artificially obstructing and lengthening the economic and military transportation supply lines and communication networks. The inauguration of the Erie Canal late in 1824 alleviated the supply situation considerably (cf. Risch 1962). However, some problems persisted until construction of rail lines beginning in the 1850s obviated the need for access to the St. Lawrence river route, or at least diminished the time and cost differences. The St. Lawrence river transportation corridor did not become a reliable conduit for American goods until after the 1870s (cf. Bloomfield and Fitzgerald 1958), by which time we had finally settled our last serious North American problems with Great Britain and no longer needed the upper Great Lakes forts.

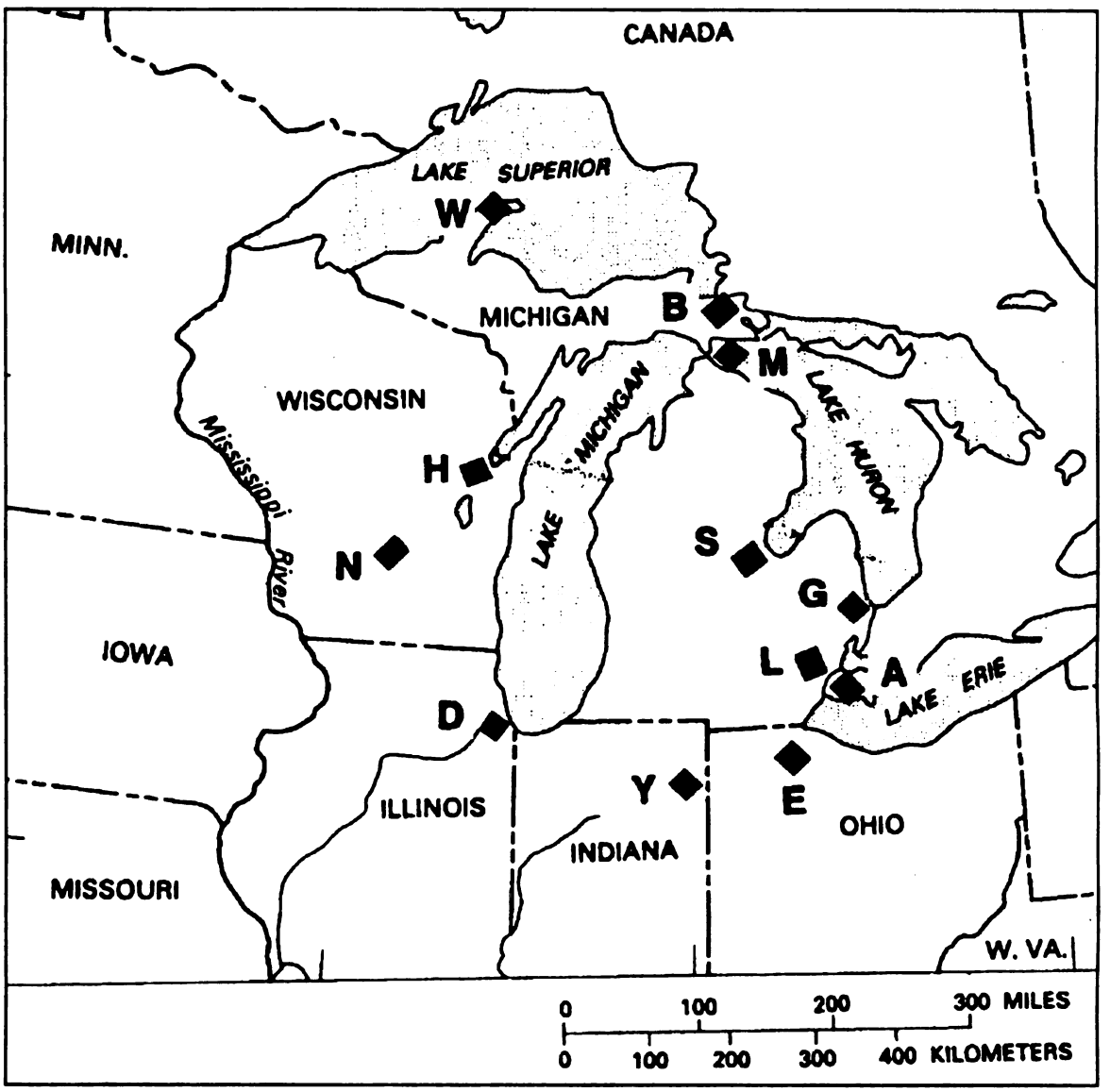
The way to evaluate the usefulness of theoretical approaches is to make case studies that expose the theory's congruence, or lack thereof, with substantive circumstances. Fort Gratiot and the upper Great Lakes American military supply network are appropriate settings, because the economic and social data relating the key variables and relationships in the theories discussed in the above section are present. The archeological and historical data explored in this study include artifacts for which economic price scales exist, spatially separable occupations for officers

and enlisted men, as well as documents on the extra-regional social and economic context.

SETTING

Location and Environment

The forts in the military supply network under study were located in the upper Great Lakes (Figure 1.1). In the vernacular, the upper Great Lakes means the Great Lakes above either Niagara or Detroit. In order to make this spatially congruent with the military supply system, when referring to the upper Great Lakes, I mean Lakes Superior, Michigan, Huron, and the west end of Lake Erie. The upper Great Lakes basin is a region characterized by relatively low relief with diverse post-glacial habitats. These habitats include flat till plains, marshes, rolling hills, moraines, and lake edge dunes. They are covered by mesic prairies and deciduous forests in the south and primarily by coniferous forests in the north (Tanner 1987:13-17). Relief topography near the lake shores usually originates from bedrock outcrops or more commonly from post-glacial beach terraces abandoned through isostatic rebound uplift (cf. Larsen 1987). The U.S. Army engineers who built the American forts favored these relatively high, well drained glacial terraces.



A=Forts Malden and Covington, B=Fort Brady, D=Fort Dearborn, E=Fort Meigs, G=Fort Gratiot, H=Fort Howard, L=Fort Lernoult-Detroit-Shelby and Fort Wayne, M=Forts Mackinac and Holmes, N=Fort Winnebago, S=Fort Saginaw, W=Fort Wilkins, Y=Fort Wayne, Indiana (adapted from Larsen 1987)

Figure 1.1 Location of Regional Fort Sites

Historical Context

TRANSITION TO EURO-AMERICAN CONTROL

The indigenous pre-contact southern and eastern upper Great Lakes held the primarily agricultural economies of the Huron, Potawatomi, and Ottawa, while the northern upper lakes was home to peoples following hunting and collecting economies such as the Ojibwa and eastern Dakota (Quimby 1966; Tanner 1987; and Trigger 1976, 1985). Recently the region has been characterized by an agricultural and urban industrial economy in the south and by an economy centered around mining, logging, and tourism in the north.

The period after the 1680s saw the transition from Native American political and military control to Euro-American political and military control in the upper Great Lakes region. It began with the French erecting several permanent military trade forts between 1683 and 1715 (Stone and Chaput 1978). Control of the area fell militarily to the British by 1759 and politically in 1763, and transferred to the United States politically in 1783.

American control was confirmed both militarily and politically in the middle 1790s by the Jay Treaty, by which the United States acquired Fort Lernoult at Detroit and Fort Mackinac. American control of the region was reaffirmed by the War of 1812, when Fort Gratiot and Fort Meigs were established. Several other installations were built in the

next 20 years, including Forts Brady, Howard, and Winnebago (cf. Dunbar and May 1980; Prucha 1953, 1964).

American urban and agricultural settlement beginning in ernest in the 1830s (Hart 1974; Wade 1959:189-202) was the last period in the cultural transition from Native American to Euro-American control of the southern upper Great Lakes. This lead to the displacement of most of the remaining southern Great Lakes Native American populations.

However, due to the northern climatic limits for important cash crops (cf. Tanner 1987), the settlement patterns associated with intensive agriculture never have dominated the northern portions of the upper Great Lakes. The development of local political ties (cf. McClurken 1988) and living in environments not conducive to intensive agriculture were also important factors in the success of Native American groups such as the Ottawa remaining in the northern upper Great Lakes, in spite of an official government policy of removal.

The middle to late nineteenth century abandonment of many upper Great Lakes forts was due to two roughly concurrent processes. First, immigrants from the eastern United States and from Europe completed the settlement of the southern agricultural portion of the region between the late 1820s and the 1860s (cf. Hart 1974). Second, border tensions diminished shortly after Canada gained political independence in 1867, and the United States and Britain

settled lingering tensions in the early 1870s that had arisen during the American Civil War (Stuart 1988).

THE AMERICAN MILITARY SUPPLY NETWORK

The upper Great Lakes American military supply network came into existence in the 1790s and continued through the establishment of American urban and agricultural settlements. The early nineteenth century occupations at the upper Great Lakes forts were considered very remote, at the far reaches of the American frontier. As new forts in an area where there was no direct or economical American supply route, they were poorly supplied before Thomas Jesup became Quartermaster General in 1818. Supply shortages and concurrent high costs of locally available goods were typical of forts in such regions (Hawkins 1986; Prucha 1953: 149-165; Risch 1962:181-235).

The supplies for the upper Great Lakes forts came from the United States military supply headquarters at Philadelphia or were contracted for locally (Beers 1935; Prucha 1953; Risch 1962; Wesley 1935). After the American occupation began in 1796, Detroit became been the regional military supply depot for upper Great Lakes forts. After sorting, the materials were sent to local forts by ship. Troops also were moved along the same corridors (Heintzelman 1828-1831; Prucha 1953:172-188; Risch 1962:154, 208).

In the early 1800s supplies from Philadelphia came by land to Pittsburgh, by flatboat a short distance on the Ohio

River, overland though Ohio to Lake Erie, and by boat to Detroit. The average length for the trip from Philadelphia to Fort Gratiot during the 1810s was seven months (Hawkins 1986:14, also see Risch 1962:204-209). At Fort Gratiot arms and ammunition were in short supply through 1816 and clothing and blankets until 1818 (Hawkins 1986:14, 24). The soldier's regular duties at distant posts included gardening to supplement shipped food (Hawkins 1986:13, 20-21; Heintzelman 1828-1831; Prucha 1953:120-130; 1958:6-7, 82-88, 134; Risch 1962:203-204; Schoolcraft 1821:81-82).

In late 1824 the Erie Canal opened barge traffic from New York to the upper Great Lakes. During the 1830s and 1840s steamships became common on the upper Great Lakes, visiting lakeside posts weekly or biweekly from April to October. Although the Welland Canal around Niagara Falls opened in 1833 (Dunbar and May 1980:312), not until 1854 did the United States finally gain use of the St. Lawrence river (Bloomfield and Fitzgerald 1958:5-6). In 1848 the Illinois-Michigan Canal opened barge traffic between the upper Great Lakes and the Mississippi river (Dunbar and May 1980:314). Finally, the Soo Canal opened ship traffic into Lake Superior in 1855 (Dunbar and May 1980:312).

Not until after 1844 with the invention of the telegraph did military communication exist in any mode apart from the physical transportation supply network for goods and people (cf. Giddens 1987b:172). Telegraph lines to forts apparently were installed mainly in the 1850s and

early 1860s. In the middle to late 1850s railroads arrived at Chicago and Detroit, and with them rail connections to the East and Gulf coasts (Howard 1972:237-252; Dunbar and May 1980:316-7, 321). Soon thereafter direct rail links existed to most forts.

The above sequential improvements in the transportation system were of great importance, and substantially altered the character and reliability of the supply and communication system during the later occupations of the upper Great Lakes forts, especially during the winter months. The only notable exception to this steady improvement was between 1866 and 1871, when the United States lost use of the St. Lawrence river route because of problems that arose with Great Britain during the American Civil War (Bloomfield and Fitzgerald 1958:6). This period of heightened tensions coincides with the post-Civil War reoccupations of Forts Gratiot and Wilkins.

STRATEGIC FUNCTIONS OF FORTS

In his book Broadax and Bayonet (1953) the American military historian, Francis Prucha explained the role of American frontier forts as direct in maintaining order. The forts also induced economic development through the labor skills soldiers brought to the frontier regions and the stable jobs and payrolls the establishments provided. Some thirty years later when he wrote Sword of the Republic (1987), Prucha added another direct role for the military.

He proposed that the West Point trained officers were purposeful agents of empire, who often directly manipulated the economic and political situations in the frontier regions where they had great influence. This, of course, would be true of any professional officer corps in a similar situation (cf. Dyer 1985:147-152). However, economic and political manipulation generally was performed by non-military persons (for example see Trigger 1985:298-343) prior to the advent of the world's earliest modern professional officer's schools in the first few years of the nineteenth century (Dyer 1985:147-147).

The acquisition of British forts by the Jay Treaty and the building of new American forts in the middle 1790s were the first strategic steps in gaining economic and socio-political control of the region. The strategic roles of American border forts within the historical context discussed above were three fold. One was to deny Great Britain control of and even access to trade for the natural resources of the region with the predominantly Native American populations. A second was to monitor Native American groups, and if necessary intervene in activities that ran counter to American national development interests. The third was to serve as a secure focal point for American economic, political, and social activities in the area (Carter 1942:521-523, 744-746, 818-821, 827-831; Carter 1943:374-375, 930-932, 1198-1199; Carter 1945:156).

Some American nineteenth century forts in the study area had primarily extra-national military strategic functions due to their locations along a political border. Most of the remainder had primarily frontier region economic functions. In other words they stood at the interface between actual economic, social, and especially political control of the internal nation and its primarily economic ties into external territories. These territories were regions that it claimed against other nations, but which it did not actually control politically and socially. The presence of Indian Agents at some forts marked a direct economic role, while other forts functioned indirectly through their locations along key transportation routes. Only a few forts, such as the ones at Detroit and at Sault Ste. Marie, served both political border and economic functions simultaneously during part of their existence.

The Euro-American trade routes into the western Great Lakes were the traditional Native American trade routes. An important consideration to American control of the region was that many of the native groups were British allies both economically and politically. Thus, trade routes from British Canada into or through the Michigan Territory and the locations of Native American villages were important strategic points for gaining and maintaining American control of the upper Great Lakes. So, control of British trade access, control of the Native American populations

themselves, and short-term logistical reasons governed the choice of specific locations for American forts.

Unlike their British counterparts, most of the American forts were not trading forts -- in other words not trading posts. Instead, they functioned strategically to maintain political and economic control of this frontier region at a political boundary between the United States and Canada, a colony of Great Britain. As such, the region was a political boundary between nation states, not a cultural and economic transition/interaction zone between a state and less complex Native American socio-political organizations, which was the common case with most American frontier forts or posts, such as those on the Great Plains (cf. Prucha 1964). Those frontier region forts basically functioned to facilitate economic access, while the main upper Great Lakes forts both guaranteed economic access and defended political borders of the nation. Logistically important American forts were occupied only for relatively short periods of time, often only a few years (cf. Prucha 1964:Plate 14).

Fort Wilkins in the 1840s was somewhat of an exception to the conditions above in that its primary purpose was surveillance and maintenance of order over an internal American population -- copper miners on the Keweenaw Peninsula of Michigan (Martin 1985, 1986). This police role of protecting the internal social, political, and economic order of the nation (cf. Giddens 1987a, 1987b), was one in

which most upper Great Lakes forts only served occasionally, especially early in the nineteenth century.

In summary, American military personnel stationed at nineteenth century forts in the upper Great Lakes were chosen as the subject of this study in light of these fort sites' existence near the periphery of a centralized and hierarchically-controlled military supply network along a political border and a social and economic margin. The character of military supply network was transformed and generally improved over time as the transportation infrastructure developed. Also, the functions of the region's forts were related to topography, the political border, proximity of Native American groups, and intra-cultural trade, as well as to occasional internal police roles. Where Native Americans managed to successfully resist removal, along the United States-Canada border, and where a region was not developed for agriculture purposes -- forts stayed longer. The study uses the above theoretical, social, and historical contexts to provide data to integrate into and help interpret the results of an analysis of economic patterns between the ranks of nineteenth-century American military personnel.

ANALYSIS

Sources of Data

The choice of employing primarily archeological data is based upon the cultural sources of bias in both the historical and archeological records. Culture is both a socially and a materially constructed reality -- not just shared behavior and ideas, but also the specific material objects used to help obtain desired results. However, historic documentation and archeological data both have well-known biases in both their creation and preservation. Their use for interpretation is, of course, limited by these biases.

Documents tend to be written and kept for specific purposes, and therefore reflect a particular view of the world and one's place in it. The importance of historiography in the study of history well illustrates that this is a serious consideration in the interpretation of historical source materials. This is not to say that the use of historical documentation is unproductive, but that sometimes there may be information from other sources that is more direct or that does not suffer from the same problems.

Written records also are at least partially based in the shared social views of the individual writer's culture and subculture. A basic premise of anthropology is that

each culture differs from others in at least a few and perhaps in many of its values, social institutions, and material technology. Furthermore, archeologists, like historians, have a special interest in how perceptions and objects in a society inevitably change over time. For example, one would expect an early nineteenth century American who was an officer in the military to behave and think differently from an enlisted man in the British army, and each of them to behave and think differently from a late twentieth-century American businessman.

In the early nineteenth century, written accounts by individuals about their military activities or ideas were almost exclusively by officers. These accounts and most official documents predominately concern their own roles in the system (Coffman 1986:406-432, 454-468; Prucha 1953, 1987). In deed, much of the copious documentation that exists concerns the structural maintenance of the military itself (cf. Crackel 1987; Dyer 1985; Heitman 1903; Palmer 1941; Prucha 1958, 1964; Risch 1962; Wesley 1935).

Information about early nineteenth century enlisted men is infrequent, and when present, is predominately from the perspective of the officers, who were better educated (cf. Coffman 1986:439-454, 475-488). Enlisted men did not generally write much about their daily life, diet, social status, or how that status changed over time. However, they did leave artifactual evidence about their diet and daily

personal activities. The same is true for the artifacts left behind by the officers.

It is axiomatic that cultural behavior creates patterns and regularities in archeological deposits. However, some behaviors and ideas exist that have only minimal material accoutrements or that ordinarily use some objects that have multiple functions. In such cases indirect inference itself can become a problem. The multiple sequential logical sequences required to attempt indirect inferences compound errors within themselves by their own structural relationships. Whether due to misunderstood or miscalculated initial conditions or from observational or sampling errors introduced later, this type of error alone substantially decreases or even obliterates our ability to predict results correctly and to detect regularities or correlations. However, this theoretical problem generally is restricted to situations where one is testing a formal predictive model. This situation has been further avoided by the use of an artifactual analysis of ceramic tablewares, because their functions and related economic data are well established.

Archeological data are also subject to post-depositional disturbance or destruction. Recent interest in site formation processes (cf. Schiffer 1972, 1987; South 1977), including in the archeology of military sites (Lees 1988; Nass 1981, 1983; Staski 1990; Tordoff 1979), acknowledges this source of bias. Post-depositional

problems do not preclude the use of archeological data; they just create a need for assessing the appropriateness of the use of artifacts acquired from certain kinds of archeological contexts. Proveniences for this analysis were limited to building contexts in order to assure that the artifacts used in the analysis would correlate with documented functions and historically and archeologically established periods of occupation.

People in the time period under consideration commonly disposed of the material remains of their activities at or near the location where they used them. Thus, because the people at hierarchically organized sites like forts used spatially segregated living quarters, archeological remains of goods used by different groups of people are also spatially segregated. Archeological data from cellars, floors, and other structural proveniences similar to those used in this analysis can optimally provide evidence of the day to day activities of individuals who used the location.

As seen in the following section, previous researchers have established that tableware ceramics were useful for socio-economic analysis; however, other categories of artifacts recovered from Fort Gratiot were not usable for socio-economic analysis. Glass containers should have a value for analysis similar to the tableware ceramics; however, there is little price data available for glass containers, the contents are often unknown, and the fort samples are too small (Esarey 1988, 1989, 1991).

As for architecture, there were two structural components at Fort Gratiot, in other words two temporally separate forts, with the second Fort Gratiot (1830-1879) built atop the ruins of the first Fort Gratiot (1814-1830). All of the first fort buildings were destroyed in 1830. Among the second fort buildings, only two parts of one building still stand. It was an officer's quarters that was later converted into a hospital. Structural remains from excavated buildings consist of bricks, mortar, cobblestones, window glass, and fragments of wood (Esarey 1988, 1989, 1991), none of which have any use for socio-economic analysis of military personnel.

Buttons and other military uniform insignia, while quite specifically correlated to rank, have no economic value. They are essentially symbols. They, therefore, primarily reflect the relative socio-political statuses of individuals in groups, rather than necessarily correlating directly with socio-economic status. Categories of insignia such as cap plates or shoulder belts were infrequent at Fort Gratiot. The first fort buildings have large samples of uniform buttons, but only one of the second fort buildings has even a marginally adequate sample (Esarey 1988, 1989, 1991). This is due to the fact that there was a much larger number of troops stationed there during the first fort occupation (cf. Hawkins and Stamps 1989:Appendixes A and B). Furthermore, supply problems in the 1810s necessitated the

continued use of worn out uniforms, from which buttons were lost more easily (cf. Hawkins 1986:14-17).

Results of Previous Ceramic Analyses

Lees and Kimery-Lees (1984:19-23) created a modified rank-order ceramic index and demonstrated that differences exist in the distributions of index values at coeval military sites from separate supply transportation networks. This discovery was important in my choice to limit this analysis to military posts in a single supply network. Later, Lees (1988) researched archeological site formation processes on nineteenth century farmsteads and military sites from the southern Plains, and concluded that ceramics were one of the few categories of artifacts capable of yielding data on social and economic status.

Spencer-Wood (1987:352) used a ceramic-derived consumer economic index to show that there were demonstrable behavioral differences in the distribution of ceramic wares and vessel forms between residential sites of varying socio-economic statuses near Boston. She further showed that this is a far more reasonable explanation for these differences than variation due to site formation processes or sampling errors.

A subsequent analysis using the distribution of ceramic tableware vessels by Adams and Boling (1989) demonstrated that Miller's (1980, 1991) technique, which will be

described on the following section, also could reflect socio-economic differences among the various occupants of three eighteenth and nineteenth-century plantation sites in the southeastern United States. Adams and Boling (1989:93-94) acknowledge the serious problems in using ceramics to ascertain social status that were noted by Kelso (1984).

However, Adams and Boling found that ceramics did prove useful in investigating economic differences. This was especially true where the individuals occupying sites acquired their own tableware, rather than having it provided for them (Adams and Boling 1989:94). The fact that the soldiers at Fort Gratiot bought their own tableware ceramics is born out by the infrequency of matched sets of table china. There were only four duplicate vessels out of the 219 tableware vessels recovered from structural contexts. At American military establishments prior to 1890, officer's and enlisted men were responsible for acquiring their own kitchen and table items. In the summer of 1890 the army quartermaster corps began providing them to military personnel in standardized matched sets (cf. Secretary of War 1889).

Miller's Economic Scaling Technique

Based on the successful results of the ceramic studies above and the fact that quantifiable comparisons can be made, Miller's (1980, 1991) economic index scale for

tableware ceramics was used. Miller (1980) documented that British Staffordshire ceramic manufacturers fixed prices over a long period of time. The evidence consisted of a series of price fixing agreements that specified retail prices for ceramic ware groups, detailed by vessel form and decoration.

Miller (1980) created a economic value index scale for these tableware ceramics by setting an index value of 1 for common creamware vessel forms, which were the cheapest category on each list. He then established a relative index value for the more expensive Staffordshire tableware categories by calculating the proportional difference in their prices per dozen vessels from the price for common creamware. He created this index purposefully to establish a way to compare the relative economic status of archeologically recovered tableware ceramic assemblages.

Miller's (1991) recent revision extends the temporal range of the price fixing lists and provides data from retail invoices substantiating price discounting of older ware categories and decorative styles. Miller's index (1980, 1991) dates from the late eighteenth to late nineteenth century and contains solely British tableware ceramics. Thus, the data base restricts the use of this technique to sites from that period, and specifically ones that contain adequate samples of British manufactured tableware ceramics. Prices were different for non-British manufacturers of the period and for all manufacturers at

other periods. This is an important restraint in the choice of spatial contexts for studies such as this, as one must choose a region where the particular social process or transformation being researched occurred within this time frame in order to use this technique.

Researchers using Miller's technique recently have come to understand that ceramics become less useful for establishing economic status through time during the nineteenth and twentieth centuries. This is because ceramics comprise a slowly ever lessening proportion of commodities bought by consumers through that time period (cf. Spencer-Wood 1987:325). In hope of remedying this problem, Miller is attempting to integrate his technique with a long established national economic commodities price index. The resulting index will include useful adjustments both for inflation and for the declining percent of ceramics in total consumer commodity expenses during the nineteenth century. If he is successful, it should allow a significant refinement to his method. While further technical improvements are important to studies such as this one, archeological deposits often can not be so precisely dated as to allow the full benefit of them.

The archeologically obtained tableware ceramics discarded at the site of Fort Gratiot were categorized by building and date of occupation. To insure that the artifacts should relate to the use of the buildings, contexts pre-dating or post-dating the occupation of the

buildings were excluded. Economic analysis of the ceramics from the forts in this study follows Miller's (1980, 1991) technique, especially in its primary emphasis on creating a minimum ceramic vessel count for each spatial analytical unit.

The first step in the analysis was to delete all non-tableware ceramics, since no economic index values were available for them. Tableware ceramics from pre-occupation contexts for each structure, such as builder's trenches that date to the original construction of building, also were deleted. Then the next step in creating the minimum vessel counts was to lay out all the ceramic sherds from each building by feature and fill zone. Sherds were sorted by ware, vessel form, vessel size, and decoration. After mending or refitting all possible sherds, each vessel was numbered, described, cataloged, and the specific archeological provenience of all sherds noted.

The index value for each vessel in each context was obtained from Miller's (1991) lists. The value for the year closest to the median date of occupation for each analytical context was used. For each context average index values were calculated for each vessel form category established by Miller -- teawares, plates, and bowls. Then, a mean value for all vessels was computed. Finally, composite values were calculated for building categories and temporal periods. Among the calculated index values, the higher the value, the more costly the ceramics in the assemblage.

Results Expected

The results of the analysis of tableware ceramics reflected internal socio-economic variation in the social organization of the American military at Fort Gratiot. This was accomplished by a comparison of the distribution of groups of artifacts between the structural feature contexts at the site. The goal was not to prove social distinctions based on rank existed, which would simply be "affirming the consequent", since my classification of the building contexts was based on documented functions and rank associations. Rather, the purpose was to demonstrate and interpret local variation as well as differences in distribution in time, space, and scale.

The spatial segregation of military personnel by rank makes this comparison of distribution patterns possible. Fort buildings are spatially discrete and generally have documented functions. Social status categories can be correlated with building function. However, non-structural contexts such as ditches or middens do not contain artifacts relating to a single function, but are fill deposits mixed from many locations and functions.

Change over time in the relative amount of hierarchical differentiation also was expected to be apparent. There were two opposing historical trends affecting hierarchical social differentiation. The first and more long term historical trend runs counter to the second. The first

trend is based in the fact that American society developed historically from a stratified European base, and gradually evolved towards the more egalitarian ideal of the United States' revolution and constitution. During the nineteenth century, the rise of the American middle class blurred sharp distinctions between upper and lower classes, especially economically. From Jefferson's to Jackson's presidency, there was a particularly strong surge towards a more egalitarian society (Mathews 1991, especially 3-25 and 150-152).

The other time trend was discussed in the introductory section on frontiers. It relates to the temporary relaxing of social distinctions in frontier situations, and a gradual reestablishment of social distinctions as a region is incorporated into national and international, socio-political and socio-economic networks. In a North American context, temporary frontier egalitarianism among Euro-Americans resulted not just from the necessities of regular extra-cultural interaction and isolation out on the fringe of a dendritic supply network, but also resulted in a significant sense from sheerly demographic consequences. In other words temporary egalitarianism was a result of people living in small social groups, rather than in large ones. According to Dyer (1985:113-115, 118-120, 142-146) a departure from the behavior traditionally expected in large groups, like the strict observance of formal roles and duties, also holds true with military personnel in small groups.

Sites of this region and period are quite recent in comparison to the specific military cases mentioned in the review of spatial frontiers literature where temporally discernable socio-economic responses to cultural frontier environments were reported, especially by those researching dietary remains. However, dietary research at Fort Gratiot discussed in the next chapter showed a much higher frequency of use of local and wild resources during the early occupation of the fort than in the later occupations.

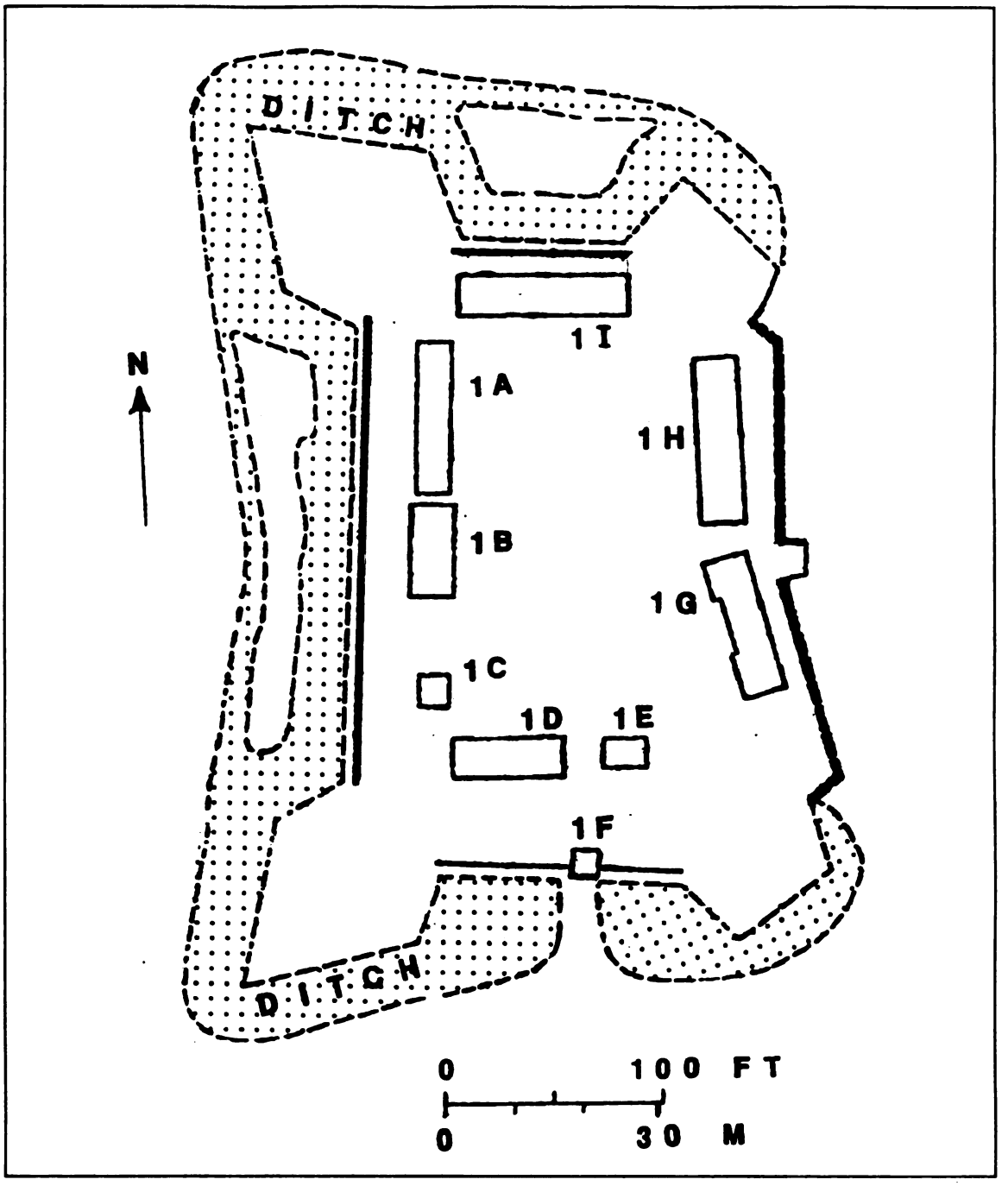
The other fort sites considered for use in the regional analysis in Chapter 3 (also see Appendix A) were all served by the same nineteenth-century upper Great Lakes American military supply network as Fort Gratiot. Importantly and obviously, these sites also were part of the same social organization. In the regional analysis in Chapter 3 only those data from sites that meet the same specific criteria for analysis were used in Chapter 2. Comparative data were derived from proveniences with acceptable sample sizes and from identifiable structural contexts occupied by military personnel. A regional comparison should allow not only variation to be seen within each fort but also should allow an inquiry into whether there were temporal or perhaps concurrent spatial differences within the supply network due to social, economic, or political factors.

CHAPTER 2 -- FORT GRATIOT

Fort Gratiot existed on the west bank of the St. Clair River several hundred meters below Lake Huron. The site now lies within the city of Port Huron, Michigan. Additional data concerning the locational setting, biographical data, field research methods, a history of MSU investigations, and descriptions of first and second fort features appear in the annual reports of investigations (Esarey 1988, 1989, 1991).

Historical Context

In May of 1814, along the eastern edge of what was then the Territory of Michigan, local militia and the United States Infantry under the command of Major Forsyth arrived at the site. Captain and District Engineer Charles Gratiot, Jr. directed construction of a fort (McAfee 1816:425-426). At first the fort (Figure 2.1) was known informally as Camp Rapids (McCloskey to Gratiot, May 24, 1814) or as the fort on the St. Clair River (Carter 1942:464-465).



(adapted from Smith 1818)

Figure 2.1 First Fort Gratiot Structures, 1818

Following a recommendation of General William Henry Harrison, only a month after construction started the Secretary of War ordered "the contemplated fort . . . dispensed with" (Carter 1942:465). In reply, General Duncan McArthur requested permission to destroy the completed portion, if the place was to be abandoned. However, by the middle of July after Britain's successful defense of Fort Mackinac, an American fort on the St. Clair river was again thought necessary (Carter 1942:464-465). The fort came to bear Gratiot's name by early August 1814, when orders were given to complete it (Carter 1942:471-473).

Gratiot did not return to supervise the construction after his participation in the attack on Fort Mackinac. When McArthur's army entered Ontario in the fall, Gratiot was named temporary military commander of the Michigan Territory and western Ontario and stationed at American-held Fort Malden at Amherstburg just south of Detroit (Todd to Gratiot, October 19, 1814). In the rush of war, the army never obtained legal title to the land where they built Fort Gratiot. A fact they did not recognize until 1818 and did not finally remedy until 1833 and 1834 (Bonhamme 1834; Carter 1942:779-784, Carter 1943:1212, 1224; Carter 1945:40-41, 44-45, 50; Desnoyers 1834; Westbrook 1833).

Fort Gratiot was built to control access by British naval and merchant ships through the St. Clair River at the outlet of Lake Huron, to control the Native Americans and their fisheries in the region, to protect Detroit from an

attack from British bases on Lake Huron, and to provide a logistical base for a planned assault upon British-held forts on Mackinac Island during July of 1814.

The fort's garrison was reduced following the War of 1812 and with few exceptions remained about 30-60 soldiers during the rest of its intermittent occupations (Carter 1942:521-522, 774-776, 818-821, 828-831; Carter 1943:362-363, 931, 1198-1199; Gilpin 1958:235-257; Hawkins 1986:1-8; Jenks 1920; Lossing 1869:849-853; McAfee 1816:414-445; Post Returns 1815-1879; Prucha 1964:76; Schoolcraft 1821:81; Stanley 1983:288-298).

While Fort Gratiot's long-term strategic significance lay in controlling access by naval and merchant shipping traffic into the upper Great Lakes, it was not a trading post like Fort Mackinac. Its location at a political border and lack of an Indian Agent underscores its regional military, rather than local economic, function. These strategic functions followed from President Jefferson's western fur trade development policy, the Monroe Doctrine of 1820, as well as both of their and Andrew Jackson's policies of Indian Removal (Prucha 1964:10).

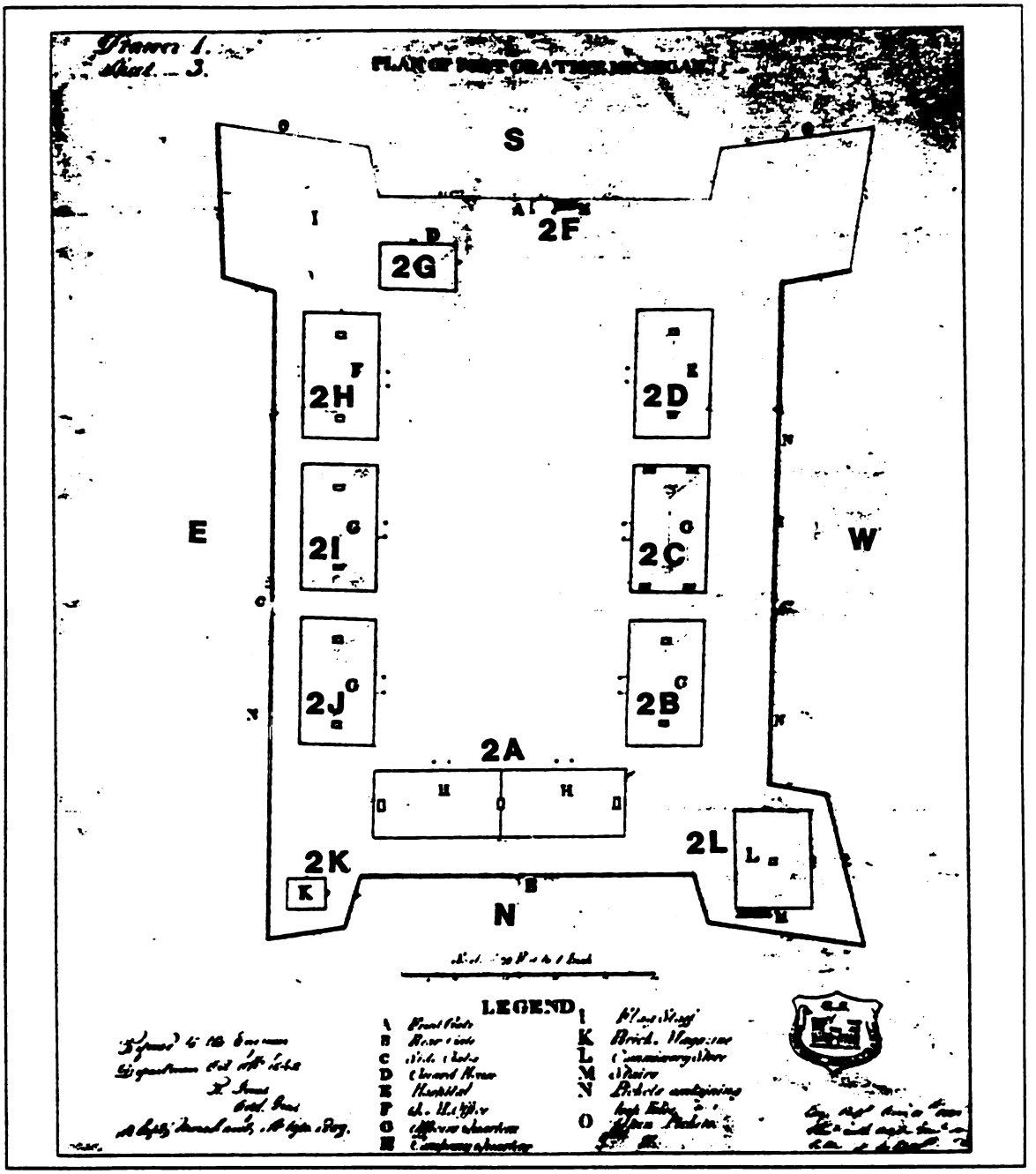
Fort Gratiot was abandoned in 1821 as the United States established new forts farther north and west in the Great Lakes such as Forts Brady and Saginaw, which were built in 1822, as well as forts in the upper Mississippi and central Missouri river basins. These were built in an effort to establish American control by contradicting British trade

and influence with the Indians in those regions (Prucha 1964:5-8, Plate 14; but also see Palmer 1941). The 1817 ratification of the Rush-Bagot Treaty, which stabilized the border, also lessened the need for strictly military fortifications (cf. Bloomfield and Fitzgerald 1958:4).

A war between the United States and the Winnebago in a western portion of the Michigan Territory, now in Wisconsin, was the official cause for the United States repairing the existing buildings and reoccupying old Fort Gratiot in the fall of 1828 (Carter 1943:1198; Heintzelman 1828-1831; Prucha 1964:76). Coincidentally, Charles Gratiot, Jr. was promoted to Chief Engineer of the US Army only a few months before the reestablishment of the fort (cf. Heitman 1903:470).

Between June and December of 1830, US Army personnel and a few hired assistants constructed a second Fort Gratiot (Figure 2.2). They proceeded by demolishing one structure at a time in the old fort and building a new one in the same general location, before moving on to the next one (Heintzelman, journal entries between June and December 1830). The layout and construction techniques used to build the new fort were standard in the French-derived American fortifications of the period (cf. Crackel 1987:54-97, 173-179; Millis 1966:90-110, 117-121; Sarkesian 1984:100-118).

Although tactically less defendable without its ditches, the construction techniques used in the new fort were considerably more durable than those used for the first



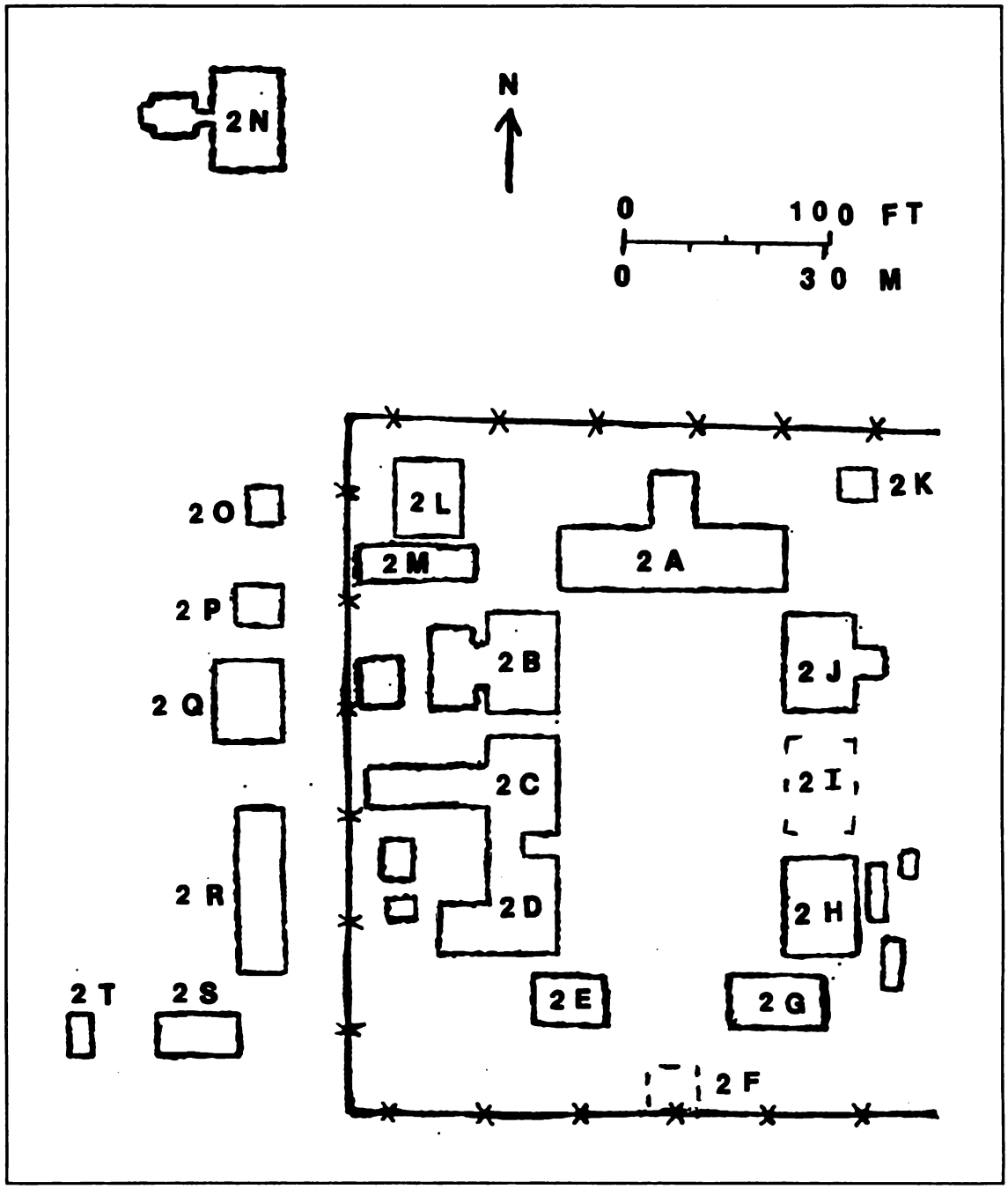
(adapted from Moreland 1839)

Figure 2.2 Second Fort Gratiot Structures, 1839

Fort Gratiot. The second fort was repaired, modified, and expanded numerous times (Blue 1869; Brigham 1867; Clarke 1875; Crittenden 1879; Whiting 1840, 1842, 1843, 1845), but it retained the core 1830 layout for the rest of its existence (cf. Anonymous 1834; Taylor and Alden 1871).

Military activities peaked at the second Fort Gratiot several times, including during the Black Hawk War of 1832-1836, Canada's troubles with and near rebellion from Britain in the early to middle 1830s, and the early to middle 1840s American-British dispute over the northern border of the Oregon territory. The fort was vacated for over two years during the Mexican War, then reoccupied for four years. In 1852 the fort was abandoned, and "not a single regular soldier was stationed at this post for fourteen years previous to the close of the [Civil] war" (Johnston 1868). However, the Michigan militia began using the site for training starting in 1862.

In 1866 the regular army returned and soon began adding new buildings (Figure 2.3). They upgraded older structures until at least 1875. Most of the troops were withdrawn in 1878, and the hospital closed in May of 1879. Several buildings were dismantled in 1879, and the fort grounds sold for house lots in 1880 and 1881 (cf. Anonymous 1892; Bancroft 1888; Blue 1869; Brigham 1867; Clarke 1875; Crittenden 1879; Hawkins and Stamps 1986, 1989:7-13; Jenks 1920; Record Group 94, 26 May 1879; Land Deeds in 1881 in Record Group 153; Stuart 1988:103-105, 129-143, 215-261).



(adapted from Taylor and Alden 1871)

Figure 2.3 Second Fort Gratiot Structures, 1871

Fort Gratiot was decommissioned in 1879 for two primary reasons. First, American urban and agricultural settlement of southeastern Michigan followed soon after the signing of land cession treaties with local Chippewa groups in 1819 and 1837 (Dunbar and May 1980:167-214). Made economically feasible by the opening of the Erie Canal late in 1824, immigrants from the eastern United States and from Europe completed the agricultural and urban settlement of the region near Fort Gratiot during the 1850s and 1860s (Hart 1974). In a significant sense the closing of the fort in 1879 marked the acknowledgment of the closing of the region as a settlement frontier.

Second and more importantly, by the middle 1870s the United States finally settled border tensions with what had recently become the independent Dominion of Canada (cf. Stuart 1988). While the St. Clair River remained a political border, the post-Canadian independence decision by both sides to adhere to previous British-US treaties, especially Rush-Bagot and the 1842 and 1846 treaties, which resolved disputes and essentially disarmed the border (Bloomfield and Fitzgerald 1958:6-8), alleviated the need to maintain military installations along the border.

Previous Research

Several people wrote about the history of Fort Gratiot relatively soon after it was abandoned (cf. Anonymous 1892;

Bancroft 1888; Jenks 1920). Hawkins and Stamps (1989:1-3, 121-125) provided an extensive list of the sources they consulted during their recent research.

An archeological crew from the Michigan Bureau of History under the supervision of Donald Weston successfully discovered the site of Fort Gratiot in 1974. An unpublished summary report (Weston 1974) of their findings is on file at the Bureau of History. In 1975 Weston and Richard Stamps co-directed archeological field school crews from St. Clair County Community College in Port Huron and from Oakland University in Rochester, Michigan, respectively. The 1974 and 1975 crews also investigated other sites in the area, including Draper Park (20-Sc-40). Stamps again directed student crews from Oakland University at Fort Gratiot in 1976, 1977, 1978, and 1985. Also in 1985 Bruce Hawkins directed a field school crew from St. Clair County Community College in Port Huron. The Museum of Arts and History in Port Huron funded a substantial portion of Stamps and Hawkins' research and assisted in many other ways.

These various crews between 1974 and 1985 located the first fort's north and south defensive ditches and several second fort buildings, including the cellars from the company quarters and one of the officer's quarters. A detailed report of the archeological findings and of documentary research, including some done at the National Archives, was completed in 1986 and published in 1989 (Hawkins and Stamps 1986, 1989). A booklet, Sentries in the

Wilderness: Soldier Life at Fort Gratiot, Michigan Territory, 1814-1821 (1986), written by Bruce Hawkins for the Port Huron Museum of Arts and History summarizes the environment, the building layout, the archeological findings, and especially the daily life of soldiers during the occupation of the first Fort Gratiot.

In 1985 the city of Port Huron sold the site of Fort Gratiot to the developers of the Thomas Edison Inn. A restriction in the deed prevented development of the site until the end of 1990. In the spring of 1986 after 12 years of archeological and documentary research on the Fort Gratiot, the Edison house, and Draper Park sites in Port Huron, Professor Stamps left to pursue research in China. Upon Dr. Stamps recommendation, the Museum of Arts and History contacted MSU to continue archeological research at the site of Fort Gratiot. In 1987 when MSU began work at the site, the Inn was under construction, and a large part of the site was in use as a staging and storage yard.

RESULTS OF PREVIOUS RESEARCH

Below follows a list of material analyses concerning the field research conducted at Fort Gratiot prior to MSU's 1987-1989 fieldwork and of analyses of the dietary materials acquired by MSU personnel. Branstner (1989), Egan (1986), Hauser and Wilkins (1977), Hawkins (1986), Hawkins and Stamps (1986, 1989), Martin 1987), Martinez (1989), and Miller (1978) analyzed the materials recovered from the

1975-1985 investigations at Fort Gratiot. Egan (1989, 1991) and Smith (1988, 1989, 1991) conducted analyses of the floral and faunal items excavated by MSU between 1987 and 1989.

These analyses can be organized by material category -- ceramics (Branstner 1989), flora (Egan 1986, 1989, 1991), fauna (Martin 1987; Miller 1978; Smith 1988, 1989, 1991), clay pipes (Hauser and Wilkins 1977; Martinez 1989), and other categories such as ordinance, clothing and personal items, table glass, and construction materials (Hawkins and Stamps 1989). The soils at Fort Gratiot were relatively alkaline leading, as often is the case, to poor floral preservation and good faunal preservation. My discussion below is limited to providing a summary of previous analyses of the ceramic and the dietary categories, because they are most pertinent to the socio-economic analytical goals set forth for this study.

Floral

Egan's three reports (1986, 1989, 1991) provide the analysis all of the floral data collected from flotation samples from both Oakland's testing and MSU's excavations. Results of the analysis of a limited number of samples from Oakland's 1975 to 1978 and 1985 field work are detailed in the 1986 report. The 1989 report covers samples from the 1987 and 1988 field seasons by MSU personnel, while the 1991 report discusses samples from MSU's 1989 field season.

In the Oakland University first fort flotation samples, all from the south defensive ditch, the only dietary remains Egan (1986) found were corn and acorn. No food remains were present in the small number of second fort samples, which included the enlisted men's cellar.

In 1989 reporting upon MSU's 1987 and 1988 seasons, Egan found, as usual for Fort Gratiot, that most of the first fort floral remains from officer's quarters (Structures 1An and 1As) were charred architectural wood. Identifiable food remnants were huckleberry, mint, rose, blackberry seeds, a cherry pit, an acorn, rice, beans, and peas. Due to the range of size variation, Egan states that the peas were probably grown in the fort gardens. From the second fort officer's quarters (Structures 2Bn, 2Bs, and 2Cn) samples, Egan found corn, a tuber, and blackberry. No food remains were present in the enlisted men's quarters samples.

Egan's final report (1991) covers the 1989 MSU field season and summarizes the historical data available concerning food plants in a journal kept by Lt. Heintzelman (1828-1831), while he was stationed at Fort Gratiot from 1828-1831. The first fort samples were almost entirely from Structure 1D (hospital), where hickory nuts, beech nut, squash, peas, corn, blackberry seeds, tubers, and unidentified fruit were present. The second fort samples were primarily from Structure 2D (a hospital in the 1830s and later an officer's quarters) and Feature 332 (a privy in

use in the 1830s near Structure 2D), where walnut, blackberry seeds, tubers, and unidentified fruit were present.

General conclusions Egan (1991:7-8) made were that nut shells were common in low densities throughout the site. The corn, squash, peas, beans, and tubers probably were grown locally in the fort garden, while the rice was probably shipped there. Some use was made of wild berries during the fort occupations, especially blackberry, which was commonly found associated with the hospital contexts (Structures 1D and 2D and privy Feature 332). The rise in frequency of weed seeds indicates that the fort area was cleared of natural vegetation and became more and more disturbed through time.

Faunal

The analyses of Fort Gratiot faunal materials have been conducted by three people -- all associated with the PhD program in anthropology at Michigan State University. Miller (1978) did an inventory and analysis of a small group of the 1976 and 1977 provenience units, which Stamps had selected for him. Although most of the samples were from non-feature contexts, they did include material from the second fort enlisted men's quarters Features 25, 30, 35, and 54, the south defensive ditch of the first fort (Features 126, 127, 129, 209, 210, and 242), and two probable second fort drainage ditches (Features 34 and 50). Miller's

analysis concentrates on the diversity of species represented at the site and on the assemblage from cellar Features 25 and 30 in the second fort enlisted men's quarters (Miller 1978).

Martin (1987) inventoried and analyzed a faunal assemblage provided by Stamps, primarily from the 1978 and 1985 field seasons. Martin reports that 84% of the total assemblage he received was from the first fort, which in turn was derived almost solely from the south defensive ditch. The second fort assemblage provided to Martin came predominately (75%) from the enlisted men's (Structure 2Aw) cellar, with another 22% coming from an officer's quarters (Structure 2Cn) cellar (Martin 1987).

Smith (1988, 1989, 1991) inventoried and analyzed a large sample of first and second fort features from the 1987-1989 MSU excavations. Generally these were from the same structural proveniences as used in my ceramic analysis later in this chapter. Smith's 1988 and 1989 reports contain inventories of the faunal remains from the prior season's field work as well as totals for each major faunal category by time period of occupation. The 1991 report contains an inventory for the 1989 field season; however, it also has composite tables for all of the 1987-1989 material. These tables summarize faunal classes by fort occupation periods, and several more tables show the distribution of the classes by structure. The 1991 report also summarizes faunal dietary information from the journal kept by Lt.

Heintzelman (1828-1831), while he was stationed at Fort Gratiot from 1828 to 1831.

Smith (1991), on the basis of the twice larger assemblage she had to work with, reviewed Miller's and Martin's conclusions about the character of the assemblage overall, time trends, and differences between the enlisted men's and officer's assemblages. She found:

> In the present analysis, Miller's identification of relatively large numbers of sheep/goat is not supported in this analysis and probably results from his small sample. While sheep/goat are confined to second fort contexts, they are represented by few elements. Miller's observation about the relatively small cuts of meat is supported by the large sample here; this trend, in fact, applies to first fort bone as well as second fort assemblages. (Smith 1991:6)
>
> Martin noted the relatively high numbers of cow in relation to pig in the 1828-1830 period faunal assemblage. While the 1828-1830 assemblage is slightly higher in cow than pig in the larger sample analyzed here, the difference is not significant and does not approach Martin's observation that cow is twice as common as pig during this period. Martin's analysis reveals that chicken becomes more important than passenger pigeon after 1830; this analysis does not support that conclusion. (Smith 1991:6)

Smith (1991:56-57) summarized additional conclusions as follows. The personnel at Fort Gratiot during the 1810s were supplied with poor cuts of meat, even the officers. By the end of the first occupation the soldiers had become familiar with local wild food resources, especially walleye, passenger pigeon, ducks, and even turtle. The faunal assemblage in the 1830s and 1840s deposits from the early second fort occupation exhibit a similar use of local wild

foods. However, this is in conjunction with better domesticated "supplied" food, some of which may have come from the by then numerous local farms. By the 1860s and 1870s most food was commercially supplied and little wild game or even fish was present.

This parallels the findings at Forts Michilimackinac and Pentagoet discussed in the previous chapter. There, earlier components also were more dependant upon locally obtained supplies, and later ones were better integrated into the regional or international networks of supply (cf. Cleland 1970; Faulkner and Faulkner 1987).

Ceramics

Branstner's (1989:51-62, 78-91) analysis of the tableware and kitchen ceramics from each fort occupation is categorized by ware types and discussed by decoration and where possible by vessel form within each category. The whole sample of first fort ceramics studied by Branstner (1989:51-62) was derived from the defensive ditches, with almost all of the sherds being obtained from the test units in the southwest ditch. The remaining dozen or so sherds were from a test trench in the north defensive ditch. Additional analysis was not conducted on this assemblage, because it did not come from a structural provenience. Branstner's (1989:61-62) discussion primarily focuses on the dating of decorative types and of the deposit. He notes the high proportion of teawares to flatwares, and concludes from

it that this assemblage probably is not representative of regular trash disposal at the fort.

The ceramic assemblage from the second Fort Gratiot given to Branstner (1989:78-91) for inventory and analysis was obtained from an enlisted men's quarters cellar (MSU Structure 2Aw) and an officer's quarter cellar (MSU Structure 2Cn). Due to the fact that the overwhelming majority of the sherds were from the enlisted men's cellar, he made no formal comparison between the two cellars. The sherds from these two cellars were used in addition to those retrieved by MSU to create the ceramic vessel form index values for Structures 2Aw and 2Cn in the following analytical section. Although he did not use a formal method such as Miller's (1980) socio-economic scaling index, Branstner concluded that the distribution of ceramic vessel forms and decorations from the cellars were similar to middle and lower socio-economic status non-military residential occupations in the region.

SOCIAL FUNCTION OF STRUCTURES

The functions of structures at Fort Gratiot (Table 2.1) were established by the use of Army engineering maps and other documents. The 1834, 1839, and 1871 second fort maps (Figures 2.2 - 2.3) identify the function of every building. Also Hawkins (1986) and Hawkins and Stamps (1986, 1989)

searched quartermasters' reports and other Army records for information about when buildings were constructed and repaired. The three second fort privies (Features 258, 268, and 304/332) were not incorporated into the analysis, because of small ceramic sample sizes and difficulties in correlating some of them to specific structures.

The functions of first fort buildings were not as easily identified. Data about structures from Smith's (1818) first fort map and the early second fort maps (1834, 1839) were correlated with references to buildings and construction between June and December of 1830 in Heintzelman's journal (1830) to establish the function of the two first fort buildings used in the following analysis.

RESULTS OF CERAMIC ANALYSIS

Tables 2.2 - 2.13 are organized by the three major Fort Gratiot deposition periods. The early period signifies the occupation of the first Fort Gratiot from 1814 to 1830. The middle period equals the early second fort occupation from 1830 to about 1845. The late period denotes the second fort contexts that were sealed after 1845. The tables present the ceramic tableware vessel indexes categorized by vessel form and decoration for each building.

Table 2.14 presents the summary averages for ceramic tableware vessel indexes categorized by vessel form,

Table 2.1 Buildings by Function and Time

BUILDING CONTEXTS	FIRST FORT EARLY 1814-1830	SECOND FORT MIDDLE 1830-1845	SECOND FORT LATE 1860-1880
ENLISTED Q		St. 2Aw	St. 2Aw
OFFICER'S Q	St. 1An	St. 2Bn	St. 2Bn
	St. 1As	St. 2Bs	St. 2Bs
		St. 2Cn	St. 2Ds
PUBLIC	St. 1De		
	St. 1Dw		

Table 2.2 Ceramic Vessel Index for Early Fort St. 1An

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE-DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
1An	7	PW	BOWL SERVING, 9" DIA	EDG-PT	1814-1830	1822	1.60			1.60
1An	32	PW	BOWL SMALL, 5" DIA	TP-DkBl	1814-1830	1823	2.80			2.80
1An	2	CW	PLATE 6" DIA	CC	1814-1830	1824		1.00		1.00
1An	3	CW	PLATE 8" DIA	CC	1814-1830	1824		1.00		1.00
1An	31	PW	PLATE ?, UNK DIA	TP-WLW	1814-1830	1823		3.00		3.00
1An	4	CW	PLATE ? SMALL	CC	1814-1830	1824		1.00		1.00
1An	9	PW	PLATE 10" DIA	EDGE	1814-1830	1823		1.33		1.33
1An	1	CW	PLATE 6 1/4" DIA	CC	1814-1830	1824		1.00		1.00
1An	19	PW	PLATE 7 3/8" DIA	TP-WLW	1814-1830	1823		3.00		3.00
1An	29	PW	PLATE 8+" DIA	TP	1814-1830	1823		3.33		3.33
1An	23	PW	PLATE, CA. 8" DIA	TP	1814-1830	1823		3.41		3.41
1An	10	PW	PLATE, PROB 8" DIA	EDGE	1814-1830	1823		1.28		1.28
1An	24	PW	PLATE, UNK DIA	TP	1814-1830	1823		3.33		3.33
1An	8	PW	PLATTER	EDGE	1814-1830	1823		1.43		1.43
1An	20	PW	SAUCER 5" DIA	NO-DEC	1814-1830	1823			1.00	1.00
1An	13	PW	SAUCER 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1An	14	PW	SAUCER 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1An	16	PW	SAUCER 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1An	28	PW	SAUCER 5" DIA	TP	1814-1830	1823			3.00	3.00
1An	5	PW	SAUCER 6" DIA	PAINT	1814	1814			1.50	1.50
1An	22	PW	SAUCER, UNK DIA	TP	1814-1830	1823			3.00	3.00
1An	12	PW	TEA CUP	PAINT	1814-1830	1823			1.50	1.50
1An	21	PW	TEA CUP ?, 4" DIA	NO-DEC	1814-1830	1823			1.00	1.00
1An	25	WW	TEA CUP CA 3 1/2"	TP	1814-1830	1823			3.00	3.00
1An	33	PW?	TEA CUP CA. 4" DIA	TP-DkBl	1814-1830	1834			3.00	3.00
1An	17	PW	TEA CUP 3 1/2" DIA	PAINT	1814-1830	1823			1.50	1.50
1An	18	PW	TEA CUP 3 1/2" DIA	PAINT	1814-1830	1823			1.50	1.50
1An	6	PW	TEA CUP 3 1/2-4" DIA	PAINT	1814	1823			1.50	1.50
1An	15	PW	TEA CUP 4" DIA	PAINT	1814-1830	1823			1.50	1.50
						NO	2	12	15	29
						SUM	4.40	24.11	27.50	56.01
						AV	2.20	2.01	1.83	1.93
							BOWLS	PLATES	TEAS	TOTAL

Key for Tables 2.2 - 3.8. St = Structure, VSL# = vessel number, X-DEC = decoration, NDX-D = index date used, CW = creamware, PW = pearlware, WW = whiteware, BT = burnt, PORC = porcelain, Bslt = Basalt, CC = undecorated common creamware, DIP = annular decorated, EDG PT = painted at edge only, PT = painted, TP = transfer printed, DkBl = dark (China) blue, IMPRSD = impressed molded decoration, P PORC = painted porcelain, WLO = willow patern, IRON = middle to late 19th century hard paste whiteware, flt = fluted, ENML = enameled, INCIS = incised line

Table 2.3 Ceramic Vessel Index for Early Fort St. 1As

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE-DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
1As	16	PW	BOWL 6.5" x 1.5"	TP	1814-1830	1822	2.80			2.80
1As	37	PW	BOWL 8" DIA	TP-DkBl	1814-1830	1822	2.80			2.80
1As	15	PW	BOWL ? 5" DIA	TP	1814-1830	1822	2.80			2.80
1As	41	WW	BOWL ? 5" DIA	TP	1814-1830	1822	2.80			2.80
1As	9	CW	BOWL SERVING, 9" DIA	CC	1814-1830	1822	1.00			1.00
1As	38	PW	BOWL SMALL ?	DIP	1814-1830	1822	1.20			1.20
1As	36	PW	BOWL SMALL 5" DIA	TP	1814-1830	1822	2.80			2.80
1As	4	W/BT	PLATE APP 8" DIA	EDGE	1814-1830	1823		1.28		1.28
1As	43	WW ?	PLATE ? APP 6" DIA	IMPRSD	1814-1830	1823		1.00		1.00
1As	10	PORC	PLATE APP 10" DIA	PORC	1814-1830	1836-6"		7.14		7.14
1As	5	CW	PLATE APP 6" DIA	CC	1814-1830	1823		1.00		1.00
1As	20	PW	PLATE APP 6" DIA	TP-DkBl	1814-1830	1823		3.61		3.61
1As	18	PW	PLATE APP 8" DIA	TP	1814-1830	1823		3.41		3.41
1As	19	PW	PLATE APP 8" DIA	TP	1814-1830	1823		3.41		3.41
1As	39	PW	PLATE SOUP? 8" DIA	UNDEC	1814-1830	1823		1.00		1.00
1As	22	PW	PLATE SOUP? 9" DIA	EDGE	1814-1830	1823		1.33		1.33
1As	6	CW	PLATE 10 1/4" DIA	CC	1814-1830	1823		1.00		1.00
1As	7	CW	PLATE 10 1/4" DIA	CC	1814-1830	1823		1.00		1.00
1As	23	PW	PLATE 5 1/2" DIA	EDGE	1814-1830	1823		1.49		1.49
1As	24	PW	PLATE 5 1/2" DIA	EDGE	1814-1830	1823		1.49		1.49
1As	3	W/BT	PLATE 5-6" DIA	EDGE	1814-1830	1823		1.41		1.41
1As	26	PW	PLATE 5-6" DIA	EDGE	1814-1830	1823		1.49		1.49
1As	8	CW	PLATE 8"	CC	1814-1830	1823		1.00		1.00
1As	2	PW	PLATE 8" DIA	EDGE	1814-1830	1823		1.28		1.28
1As	21	PW	PLATE 8" DIA	EDGE	1814-1830	1823		1.28		1.28
1As	17	PW	PLATE 9" DIA	EDGE	1814-1830	1823		1.33		1.33
1As	44	PW	PLATE, ABOUT 8"	TP-WLO	1814-1830	1823		3.00		3.00
1As	11	PORC	SAUCER ?	PT PORC	1814-1830	1823			4.50	4.50
1As	45	WW	SAUCER APP 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	29	PW	SAUCER 5 3/4" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	30	PW	SAUCER 5 3/4" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	27	PW	SAUCER 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	28	PW	SAUCER 5" DIA	TP	1814-1830	1823			3.00	3.00
1As	46	WW	SAUCER 5" DIA	TP	1814-1830	1823			3.00	3.00
1As	31	PW	SAUCER 6"	PAINT	1814-1830	1823			1.50	1.50
1As	25	PW	SAUCER 6" DIA	EDG-PT	1814-1830	1823			1.50	1.50
1As	32	PW	TEA CUP /BOWL? 3-4"	PAINT	1814-1830	1823			1.50	1.50
1As	33	PW	TEA CUP /BOWL? 3-4"	PAINT	1814-1830	1823			1.50	1.50
1As	12	PW	TEA CUP ? APP 2" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	1	BSLT	TEA CUP OR CREAMER ?	INCIS	1814-1830	1823BWL			6.00	6.00
1As	34	PW	TEA CUP 3 1/2" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	35	PW	TEA CUP 3 1/2" DIA	PAINT	1814-1830	1823			1.50	1.50
1As	13	PW	TEA CUP 3 1/2" DIA	TP	1814-1830	1823			3.00	3.00
1As	14	PW	TEA CUP 3 1/2" DIA	TP	1814-1830	1823			3.00	3.00
1As	42	WW	TEA CUP 3 3/8" DIA	PAINT	1814-1830	1823			1.50	1.50
						NO	7	20	18	45
						SUM	16.20	38.95	40.50	95.65
						AV	2.31	1.95	2.25	2.13
							BOWLS	PLATES	TEAS	TOTAL

Table 2.4 Ceramic Vessel Index for Early Fort St. 1De

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE-DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
1De	10	PW	BOWL SERVING 9" DIA	EDGE	1814-1830	1822	1.60			1.60
1De	9	PW	BOWL SMALL 5" DIA	TP	1814-1830	1823	2.80			2.80
1De	1	CW	BOWL 6-7" DIA	CC	1814-1830	1823	1.00			1.00
1De	15	PW/WW	BOWL, APP 4" DIA	TP	1814-1830	1823	2.80			2.80
1De	5	CW	PLATE /PLATTER ?	CC	1814-1830	1823		1.00		1.00
1De	4	CW	PLATE SOUP 9 3/8"DIA	CC	1814-1830	1823		1.00		1.00
1De	19	BT	PLATE 8" DIA	EDGE	1814-1830	1823		1.28		1.28
1De	3	CW	PLATE 8" DIA	CC	1814-1830	1823		1.00		1.00
1De	8	PW	PLATE 8" DIA	LINED	1814-1830	1823		1.71		1.28
1De	13	PW	PLATE, MEDIUM SIZE	EDGE	1814-1830	1823		1.28		1.28
1De	17	PW	SAUCER APP. 5"	PAINT	1814-1830	1823			1.50	1.50
1De	22	CW	SAUCER CA 6" DIA	CC	1814-1830	1823			1.00	1.00
1De	16	PORC	SAUCER ?	UNDEC	1814-1830	1823			1.00	1.00
1De	21	PW	SAUCER ? 6"	TP	1814-1830	1823			3.00	3.00
1De	18	PW/WW	SAUCER 5" DIA	PAINT	1814-1830	1823			1.50	1.50
1De	12	WW	TEA CUP 3 1/2" DIA	TP	1814-1830	1823			3.00	3.00
1De	7	PW	TEA CUP ?? LID	PAINT	1814-1830	1823			1.50	1.50
1De	11	PW	TEA CUP APP. 3 1/2 "	PAINT	1814-1830	1823			1.50	1.50
1De	6	PW	TEA CUP 3 1/2" DIA	PAINT	1814-1830	1823			1.50	1.50
1De	20	WW	TEA CUP 3 1/2" DIA	UNDEC	1814-1830	1823			1.00	1.00

	NO	4	6	10	20
	SUM	8.20	7.27	16.50	31.54
	AV	2.05	1.21	1.65	1.58
		BOWLS	PLATES	TEAS	TOTAL

Table 2.5 Ceramic Vessel Index for Early Fort St. 1Dw

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE-DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
1Dw	8	PW	BOWL ??	EDG-PT	1814-1830	1822	1.60			1.60
1Dw	3	CW	PLATE 9" DIA	CC	1814-1830	1823		1.00		1.00
1Dw	6	PW	PLATE, LARGE ?	EDGE	1814-1830	1823		1.33		1.33
1Dw	7	PW	PLATE, SMALL ?	EDGE	1814-1830	1823		1.40		1.40
1Dw	4	CW	SAUCER 5-6" DIA	CC	1814-1830	1823			1.00	1.00
1Dw	2	CW	SAUCER 5-6" DIA	PAINT	1814-1830	1823			1.50	1.50
1Dw	1	CW	TEA CUP	CC	1814-1830	1823			1.00	1.00
1Dw	5	PW	TEA CUP ?	TP	1814-1830	1823			3.00	3.00

	NO	1	3	4	8
	SUM	1.60	3.73	6.50	11.83
	AV	1.60	1.24	1.63	1.48
		BOWLS	PLATES	TEAS	TOTAL

Table 2.6 Ceramic Vessel Index for Middle Fort St. 2Aw

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Aw	51	WW	BOWL	DIP	1830-1843	1838	1.20			1.20
2Aw	14	PW	BOWL ? SMALL	TP-DkBl	1830-1843	1846	2.80			2.80
2Aw	26	WW	BOWL APP 6" DIA	TP	1830-1843	1838	2.80			2.80
2Aw	27	WW	BOWL 5" DIA	TP	1830-1843	1838	2.80			2.80
2Aw	28	WW	BOWL 5" DIA	TP	1830-1843	1838	2.80			2.80
2Aw	16	WW	BOWL 5-6" DIA	DIP	1830-1843	1838	1.20			1.20
2Aw	35	WWb	BOWL 5-6" DIA	IRONflt	1830-1843	1846	2.37			2.37
2Aw	30	WW	BOWL 5-6" DIA	TP	1830-1843	1838	2.80			2.80
2Aw	3	CW	BOWL 6" DIA	CC	1830-1843	1838	1.00			1.00
2Aw	36	WWb	BOWL 6" DIA	IRON	1830-1843	1846	2.37			2.37
2Aw	10	PW	BOWL 6" DIA	PAINT	1830-1843	1836	1.80			1.80
2Aw	37	WWb	BOWL, DEEP & 5" DIA	IRON	1830-1843	1846	2.37			2.37
2Aw	5	PW	BOWL, SMALL	DIP	1830-1843	1838	1.20			1.20
2Aw	12	PW	BOWL, SMALL ??	PAINT	1830-1843	1836	1.80			1.80
2Aw	29	WW	BOWL, SOUP ? 6" DIA	TPflt	1830-1843	1838	2.80			2.80
2Aw	22	WW	BOWL, 5 1/2" DIA	PAINT	1830-1843	1836	1.80			1.80
2Aw	38	WWb	PLATE APP 8" DIA	IRONflt	1830-1843	1846		2.22		2.22
2Aw	24	WW	PLATE APP. 8" DIA	TP	1830-1843	1838		3.00		3.00
2Aw	39	WWb	PLATE 10" DIA	IRON	1830-1843	1846		3.05		3.05
2Aw	2	CW	PLATE 5" DIA	CC	1830-1843	1838		1.00		1.00
2Aw	7	PW	PLATE 8" DIA	EDGE	1830-1843	1838		1.29		1.29
2Aw	18	WW	PLATE 8" DIA	EDGE	1830-1843	1838		1.29		1.29
2Aw	19	WW	PLATE 9" DIA	EDGE	1830-1843	1838		1.33		1.33
2Aw	20	WW	PLATE 9" DIA	EDGE	1830-1843	1838		1.33		1.33
2Aw	6	PW	PLATE, MEDIUM	EDGE	1830-1843	1838		1.29		1.29
2Aw	17	WW	PLATE, MEDIUM	EDGE	1830-1843	1838		1.29		1.29
2Aw	47	PW	PLATE, MEDIUM ?	TP	1830-1843	1838		3.00		3.00
2Aw	46	PW	PLATE, MEDIUM ?	TP-DkBl	1830-1843	1846		2.63		2.63
2Aw	8	PW	PLATE, SMALL	EDGE	1830-1843	1838		1.40		1.40
2Aw	48	PW	PLATE, SMALL ?	TP	1830-1843	1838		3.00		3.00
2Aw	41	WWb	PLATTER, APP 14" DIA	IRONflt	1830-1843	1846		3.23		3.23
2Aw	11	PW	SAUCER	PAINT	1830-1843	1838			1.50	1.50
2Aw	49	PW	SAUCER	PAINT	1830-1843	1838			1.50	1.50
2Aw	28	WW	SAUCER ?	TP	1830-1843	1838			3.00	3.00
2Aw	42	WW	SAUCER ? APP 5" DIA	ENML	1830-1843	1833			2.00	2.00
2Aw	23	WW	TEA CUP	PAINT	1830-1843	1838			1.50	1.50
2Aw	9	PW	TEA CUP	TP	1830-1843	1838			3.00	3.00
2Aw	32	WW	TEA CUP	TP	1830-1843	1838			3.00	3.00
2Aw	52	WW	TEA CUP	UNDEC	1830-1843	1838			1.00	1.00
2Aw	25	WW	TEA CUP ? 3 1/2" DIA	TPflt	1830-1843	1823			3.67	3.67
2Aw	40	WWb	TEA CUP W/HANDLE	IRON	1830-1843	1846			2.54	2.54
2Aw	15	PORC	TEA CUP, 2 1/2" DIA	PORC	1830-1843	1836			3.70	3.70
2Aw	1	CW	TEA CUP, 2" DIA	CC	1830-1843	1838			1.00	1.00
						NO	16	15	12	43
						SUM	33.91	30.35	27.41	91.67
						AVE	2.12	2.02	2.28	2.13
							BOWLS	PLATES	TEAS	TOTAL

Table 2.7 Ceramic Vessel Index for Middle Fort St. 2Bn

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Bn	6	PW	BOWL APP 5" DIA	PAINT	1830-1843	1836	1.80			1.80
2Bn	7	PW	BOWL APP 6" DIA	TP ?	1830-1843	1836	3.00			3.00
2Bn	32	WW	BOWL LARGE THICK	IRON	1830-1843	1846	2.37			2.37
2Bn	1	CW	BOWL 4" PLUS DIA	DIP	1830-1843	1838	1.20			1.20
2Bn	3	PW	BOWL 5" DIA	DIP	1830-1843	1838	1.20			1.20
2Bn	31	WW	BOWL 6" DIA	SPONGE	1830-1843	1855	1.11			1.11
2Bn	20	WW	BOWL, SMALL	DIP	1830-1843	1838	1.20			1.20
2Bn	23	WW	PLATE 8" DIA	IRON	1830-1843	1846		2.22		2.22
2Bn	28	WW	PLATE 8" DIA	TP	1830-1843	1838		3.00		3.00
2Bn	30	WW	PLATE 8" DIA	TP-WLO	1830-1843	1836		2.44		2.44
2Bn	35	WW	PLATE, MEDIUM	IRON	1830-1843	1846		2.22		2.22
2Bn	9	PW	PLATE, MEDIUM	TP	1830-1843	1838		3.00		3.00
2Bn	13	PW	PLATE, MEDIUM	TP	1830-1843	1838		3.00		3.00
2Bn	17	PW	PLATE, MEDIUM ?	TP-WLO	1830-1843	1836		2.44		2.44
2Bn	4	PW	PLATE, MEDIUM DIA	EDGE	1830-1843	1838		1.29		1.29
2Bn	5	PW	PLATE, SMALL DIA	EDGE	1830-1843	1838		1.40		1.40
2Bn	24	WW	PLATTER, MORE THAN 8"	IRON	1830-1843	1846		3.05		3.05
2Bn	33	WW	SAUCER	IRON	1830-1843	1846			2.08	2.08
2Bn	14	PW	SAUCER	TP	1830-1843	1838			3.00	3.00
2Bn	15	PW	SAUCER	TP	1830-1843	1838			3.00	3.00
2Bn	16	PW	SAUCER	TP	1830-1843	1838			3.00	3.00
2Bn	8	PW	SAUCER 5" DIA	PAINT	1830-1843	1838			1.50	1.50
2Bn	34	WW	TEA CUP	IRON	1830-1843	1846			2.08	2.08
2Bn	11	PORC	TEA CUP	PORC	1830-1843	1836			3.70	3.70
2Bn	29	WW	TEA CUP	TP	1830-1843	1838			3.00	3.00
2Bn	2	CW	TEA CUP 3 1/2" DIA	CC	1830-1843	1838			1.00	1.00
2Bn	22	WW	TEA CUP 3 1/2" DIA	IRON	1830-1843	1846			2.08	2.08
2Bn	27	WW	TEA CUP 3 1/2" DIA	PAINT	1830-1843	1838			1.50	1.50
						NO	7	10	11	28
						SUM	11.88	24.06	25.94	61.88
						AVE	1.70	2.41	2.36	2.21
							BOWLS	PLATES	TEAS	TOTAL

Table 2.8 Ceramic Vessel Index for Middle Fort St. 2Bs

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Bs	16	WW	BOWL 9" DIA	TP	1830-1843	1838	2.80			2.80
2Bs	2	PW	PLATE ? SMALL ?	EDGE	1830-1843	1838		1.40		1.40
2Bs	9	IRON	PLATE APP. 10" DIA	IRONflt	1830-1843	1846		3.05		3.05
2Bs	3	PW	SAUCER 5" DIA	PAINT	1830-1843	1838			1.50	1.50
2Bs	13	WW	SAUCER 5" DIA	PAINT	1830-1843	1838			1.50	1.50
2Bs	4	BRT	TEA CUP 3 1/2" DIA	PAINT	1830-1843	1838			1.50	1.50
2Bs	5	PW	TEA CUP 3 1/2" DIA	TP	1830-1843	1838			3.00	3.00
2Bs	15	WW	TEA CUP 3 1/2" DIA	TP	1830-1843	1838			3.00	3.00
						NO	1	2	5	8
						SUM	2.80	4.45	10.50	17.75
						AVE	2.80	2.23	2.10	2.22
							BOWLS	PLATES	TEAS	TOTAL

Table 2.9 Ceramic Vessel Index for Middle Fort St. 2Cn

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Cn	11	WW	BOWL 5" DIA	TP	1830-1843	1838	2.80			2.80
2Cn	12	WW	BOWL 5" DIA	TP	1830-1843	1838	2.80			2.80
2Cn	2	PW	BOWL, APP 5" DIA	DIP	1830-1843	1838	1.20			1.20
2Cn	10	WW	BOWL, SERVING ?	IRON	1830-1843	1846	2.37			2.37
2Cn	8	PW	PLATE 8+" DIA	TP	1830-1843	1838		3.00		3.00
2Cn	1	CW	PLATE, SOUP 8" DIA	CC	1830-1843	1838		1.00		1.00
2Cn	5	PW	PLATE, SOUP, 8" DIA	EDGE	1830-1843	1838		1.29		1.29
2Cn	9	PORC	SAUCER ?	PT PORC	1830-1843	1836			3.70	3.70
2Cn	3	PW	SAUCER 5" DIA	PAINT	1830-1843	1838			1.00	1.00
2Cn	4	PW	TEA CUP 3 1/2" DIA	PAINT	1830-1843	1838			1.50	1.50
						NO	4	3	3	10
						SUM	9.17	5.29	6.20	20.66
						AVE	2.29	1.76	2.07	2.07
							BOWLS	PLATES	TEAS	TOTAL

Table 2.10 Ceramic Vessel Index for Late Fort St. 2Bn

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Bn	26	WW	PLATE, 8" DIA	IRON	1830-1880	1858		2.00		2.00
2Bn	10	PW	SAUCER APP 5" DIA	TP-DkBl	1830-1880	1846			2.45	2.45
						NO	0	1	1	2
						SUM	.00	2.00	2.45	4.45
						AVE	.00	2.00	2.45	2.23
							BOWLS	PLATES	TEAS	TOTAL

Table 2.11 Ceramic Vessel Index for Late Fort St. 2Bs

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Bs	14	IRON	BOWL APP 9" DIA	IRON	1830-1880	1858	2.49			2.49
2Bs	8	WW	BOWL 5" DIA	ENML-PT	1830-1880	1870	3.50			3.50
2Bs	7	PW	BOWL 5" DIA	TP	1830-1880	1855	2.00			2.00
2Bs	17	WW	BOWL 5" DIA	TP	1830-1880	1855	2.00			2.00
2Bs	10	WW	BOWL 5" DIA	UNDEC	1830-1880	1858	2.49			2.49
2Bs	11	IRON	PLATE APP 8" DIA	IRON	1830-1880	1858		2.00		2.00
2Bs	18	WW	SAUCER ?	TP	1830-1880	1848			2.89	2.89
2Bs	12	WW	SAUCER APP 6 " DIA	IRON	1830-1880	1846			2.08	2.08
2Bs	6	PW	SAUCER 5" DIA	TP-DkBl	1830-1880	1846			2.45	2.45
						NO	5	1	3	9
						SUM	12.48	2.00	7.42	21.90
						AVE	2.50	2.00	2.47	2.43
							BOWLS	PLATES	TEAS	TOTAL

Table 2.12 Ceramic Vessel Index for Late Fort St. 2Aw

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Aw	50	WW	BOWL APP 5" DIA	TP-DkBl	1830-1867	1846	2.80			2.80
2Aw	33	WW	PLATE ?	TP	1830-1867	1848		2.72		2.72
2Aw	34	WW	PLATE ?, SMALL	TP	1830-1867	1848		2.74		2.74
2Aw	4	CW	PLATE, SMALL	CC	1830-1867	1848		1.00		1.00
2Aw	21	WW	PLATE, SMALL	EDGE	1830-1867	1848		1.41		1.41
2Aw	13	PW	SAUCER APP 6" DIA	PAINT	1830-1867	1848			1.50	1.50
						NO	1	4	1	6
						SUM	2.80	7.87	1.50	12.17
						AVE	2.80	1.97	1.50	2.03
							BOWLS	PLATES	TEAS	TOTAL

Table 2.13 Ceramic Vessel Index for Late Fort St. 2Ds

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	BOWLS	PLATES	TEAS	TOTAL
2Ds	10	WW	BOWL, SMALL	DIP	1830-1874	1854	1.14			1.14
2Ds	5	PW	PLATE APP. 8" DIA	TP	1830-1867	1848		2.72		2.72
2Ds	16	WW	PLATE 10" DIA	TP	1830-1874	1854		1.86		1.86
2Ds	9	WW ?	PLATE 8" + DIA	EDGE	1830-1874	1853		1.12		1.12
2Ds	11	WW	SAUCER APP 6" DIA	IRON	1830-1874	1846			2.08	2.08
2Ds	12	WW	SAUCER APP 6" DIA	IRON	1830-1874	1846			2.08	2.08
2Ds	13	WW	SAUCER APP 6" DIA	TP	1830-1867	1848			2.89	2.89
2Ds	17	WW	SAUCER, SIZE ?	PAINT	1830-1874	1853			1.23	1.23
2Ds	15	WW	TEA CUP	TP	1830-1867	1848			2.89	2.89
2Ds	7	PORC	TEA CUP OR SAUCER ?	PORC	1830-1874	1871			2.20	2.20
2Ds	14	WW	TEA CUP, FLUTED	TPflt	1830-1867	1846			2.52	2.52
						NO	1	3	7	11
						SUM	1.14	5.70	15.89	22.73
						AVE	1.14	1.90	2.27	2.07
							BOWLS	PLATES	TEAS	TOTAL

Table 2.14 Ceramic Index Totals by Building and Time

	OFFICER'S QUARTERS			ENLISTED QUARTERS			PUBLIC BUILDINGS		
	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS
EARLY FORT									
1An	2	12	15						
	4.40	24.11	27.50						
	2.20	2.01	1.83						
1As	7	20	18						
	16.20	38.95	40.50						
	2.31	1.95	2.25						
1De							4	6	10
							8.20	7.27	16.50
							2.05	1.21	1.65
1Dw							1	3	4
							1.60	3.73	6.50
							1.60	1.24	1.63
MIDDLE FORT									
2Aw				16	15	12			
				33.91	30.35	27.41			
				2.12	2.02	2.28			
2Bn	7	10	11						
	11.88	24.06	25.94						
	1.70	2.41	2.36						
2Bs	1	2	5						
	2.80	4.45	10.50						
	2.80	2.23	2.10						
2Cn	4	3	3						
	9.17	5.29	6.20						
	2.29	1.76	2.07						
LATE FORT									
2AW				1	4	1			
				2.80	7.87	1.50			
				2.80	1.97	1.50			
2Bn	0	1	1						
	.00	2.00	2.45						
	.00	2.00	2.45						
2Bs	5	1	3						
	12.48	2.00	7.42						
	2.50	2.00	2.47						
2Ds	1	3	7						
	1.14	5.70	15.89						
	1.14	1.90	2.27						

Table 2.15 Vessel Form Totals by Building Type and Time

	OFFICER'S QUARTERS			ENLISTED QUARTERS			PUBLIC BUILDINGS		
	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS
EARLY FORT									
	9	32	33				5	9	14
	20.60	63.06	68.00				9.80	11.00	23.00
	2.29	1.97	2.06				1.96	1.22	1.64
MIDDLE FORT									
	12	15	19	16	15	12			
	23.85	33.80	42.64	33.91	30.35	27.41			
	1.99	2.25	2.24	2.12	2.02	2.28			
LATE FORT									
	6	5	11	1	4	1			
	13.62	9.70	25.76	2.80	7.87	1.50			
	2.27	1.94	2.34	2.80	1.97	1.50			
TOTALS									
	27	52	63	17	19	13	5	9	14
	58.07	106.56	136.40	36.71	38.22	28.91	9.80	11.00	23.00
	2.15	2.05	2.17	2.16	2.01	2.22	1.96	1.22	1.64

Table 2.16 Ceramic Index Totals by Building Type and Time

	OFFICER	ENLISTED	PUBLIC
EARLY FORT	74		28
	151.66		43.80
	2.05		1.56
MIDDLE FORT	46	43	
	100.29	91.67	
	2.18	2.13	
LATE FORT	22	6	
	49.08	12.17	
	2.23	2.03	
TOTALS	142	49	28
	301.03	103.84	43.80
	2.12	2.12	1.56

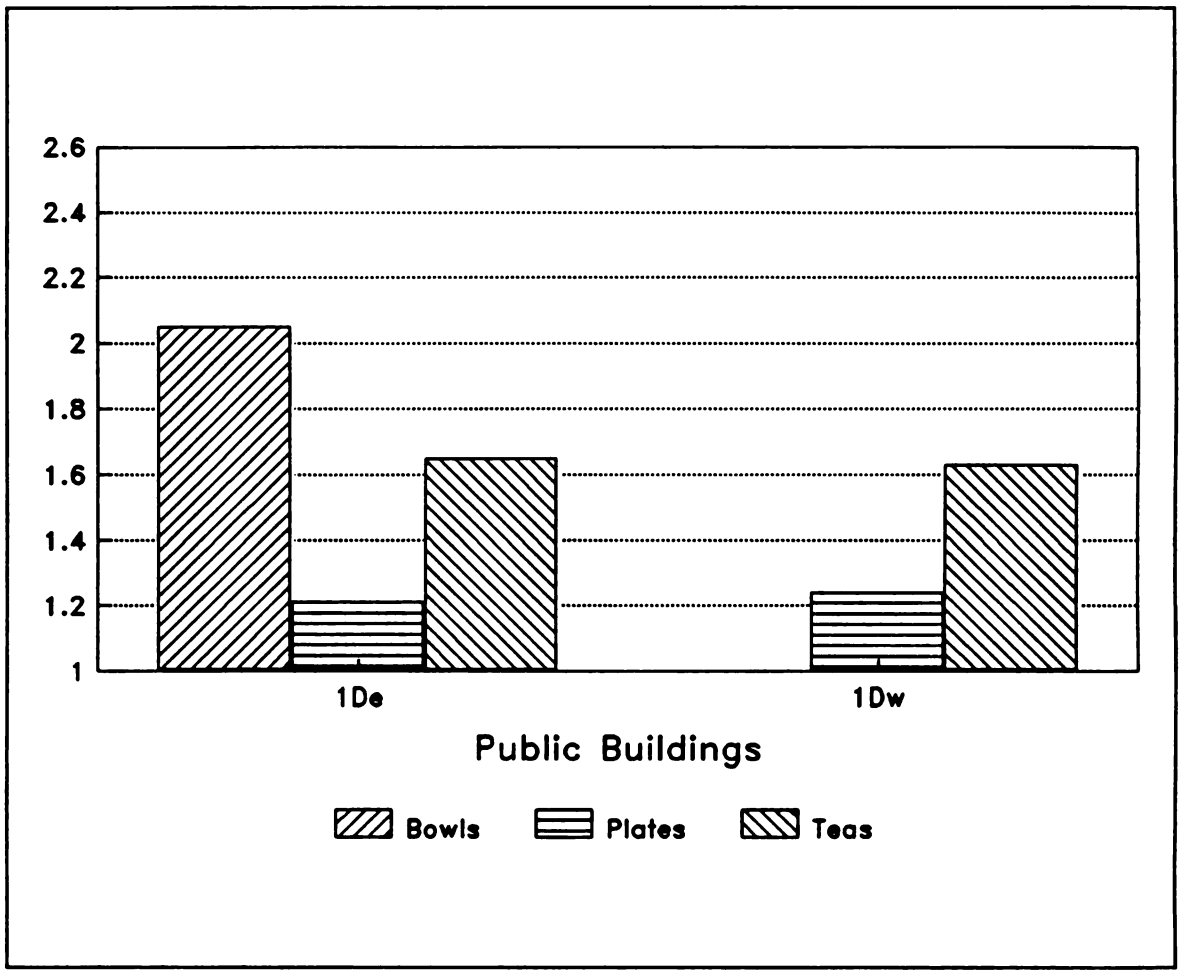


Figure 2.4 Ceramic Values for each Public Building

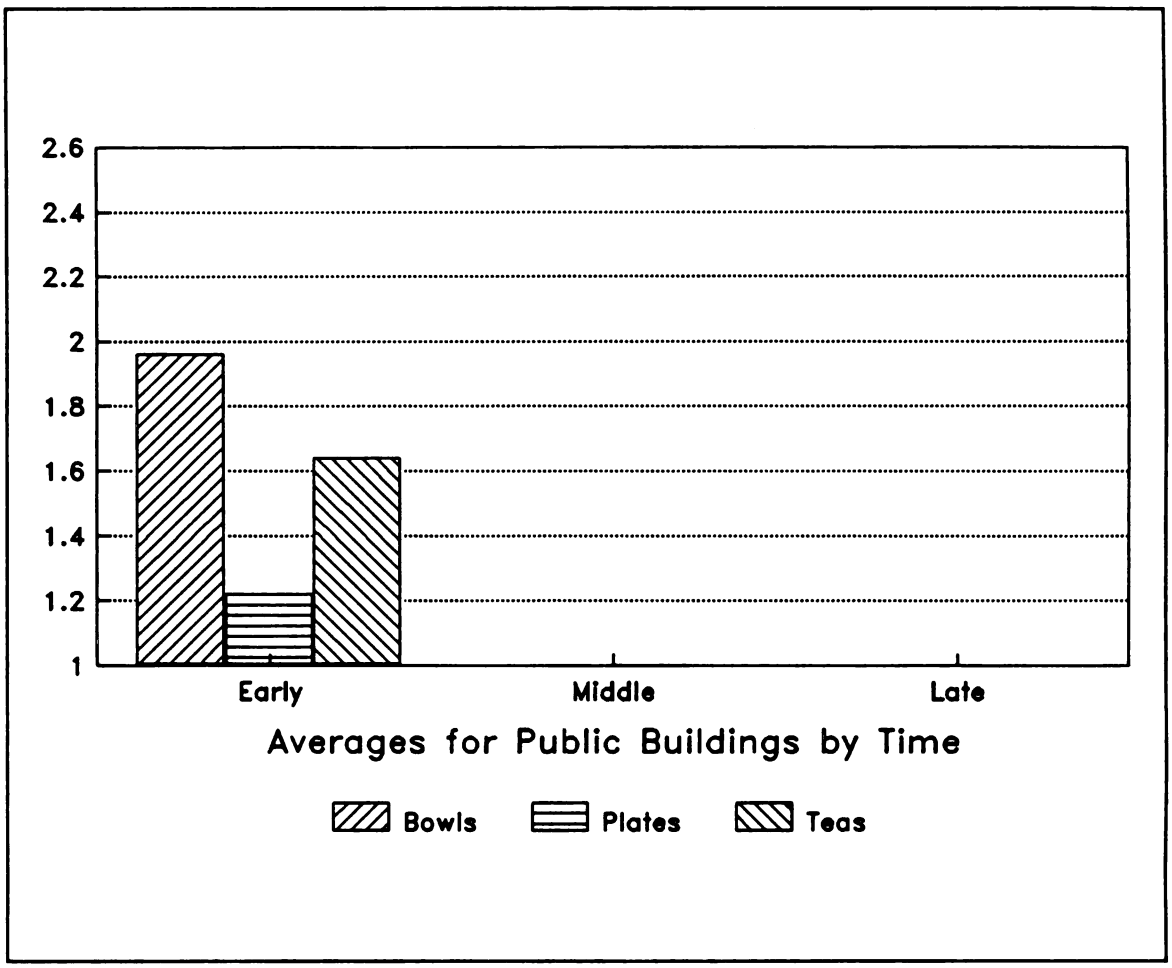


Figure 2.5 Ceramic Averages for Public Buildings by Time

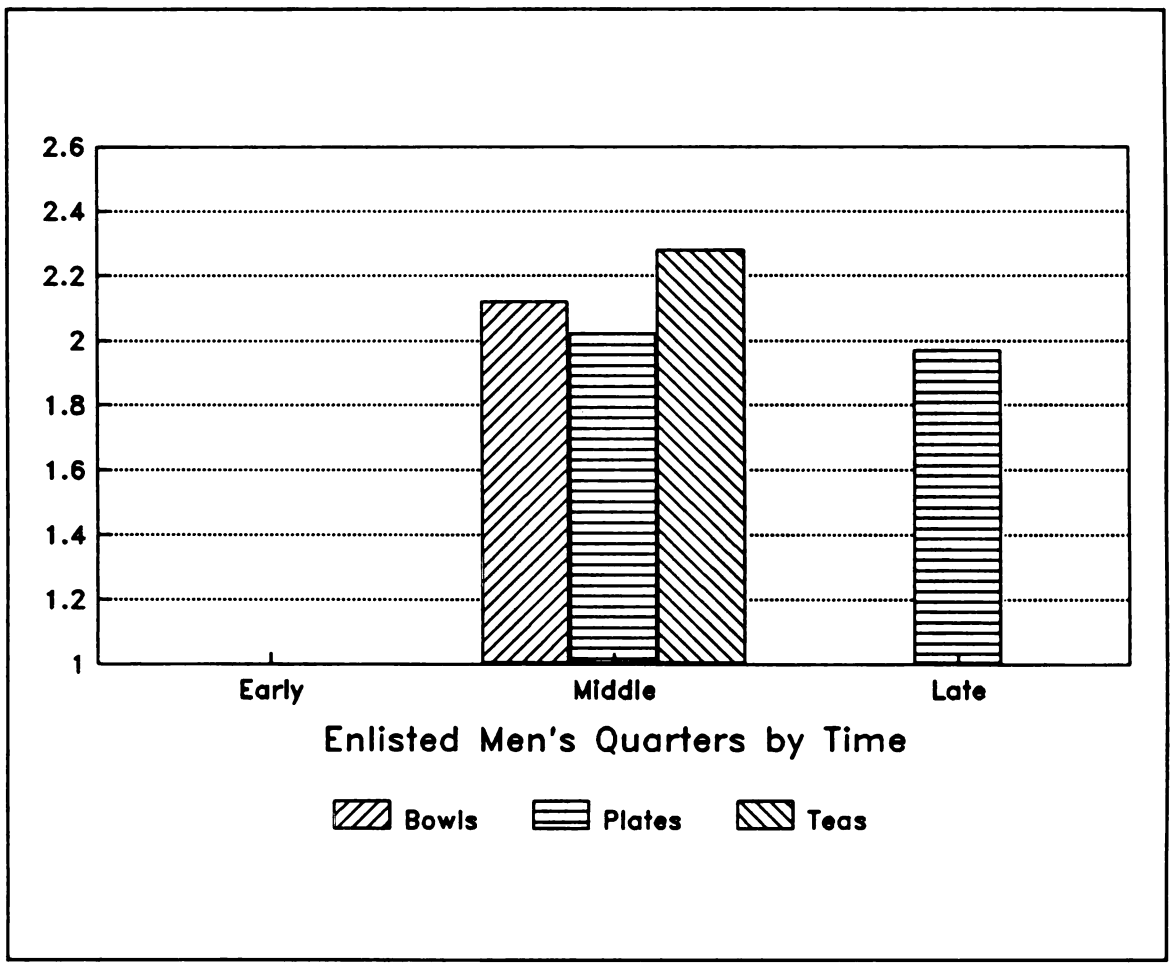


Figure 2.6 Ceramic Values for each Enlisted Men's Quarters

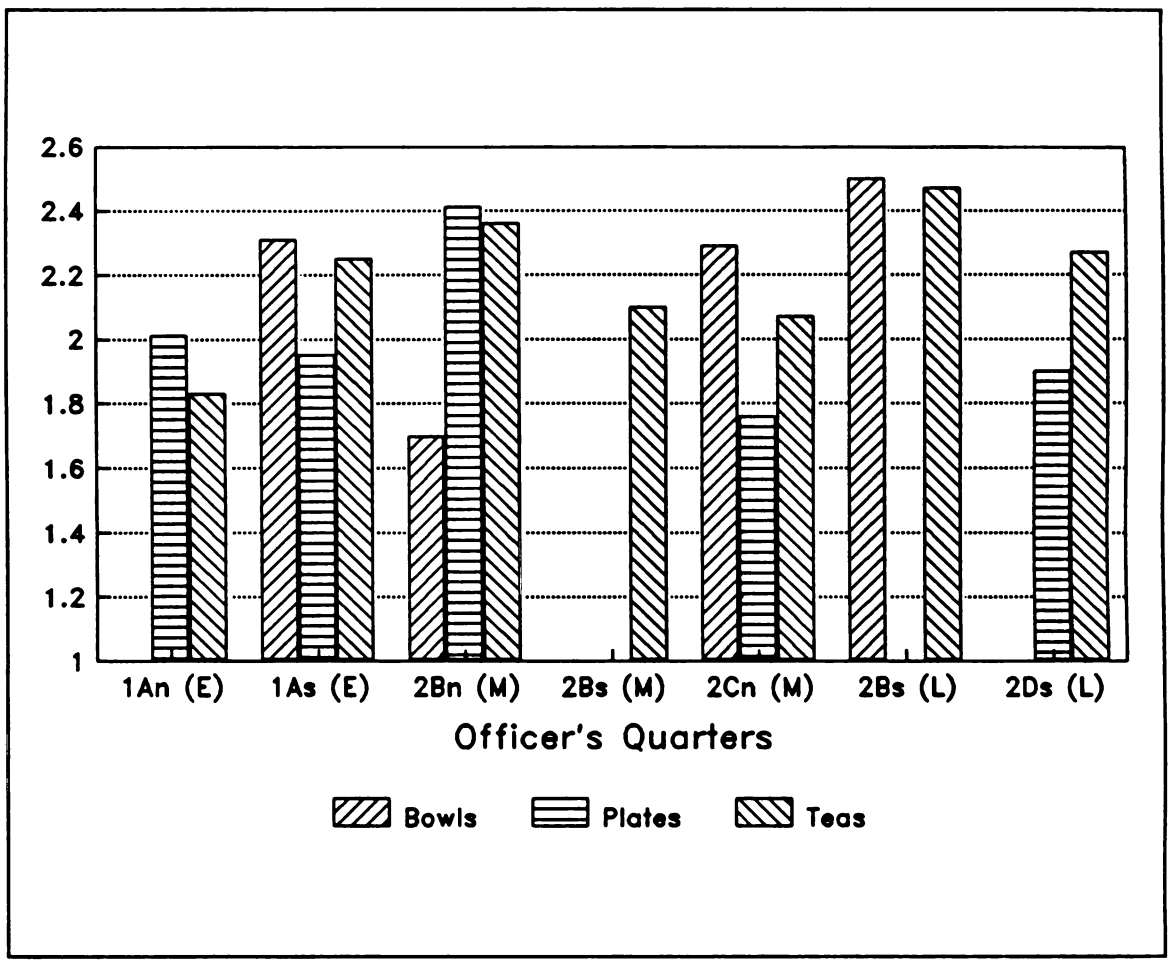


Figure 2.7 Ceramic Values for each Officer's Quarters

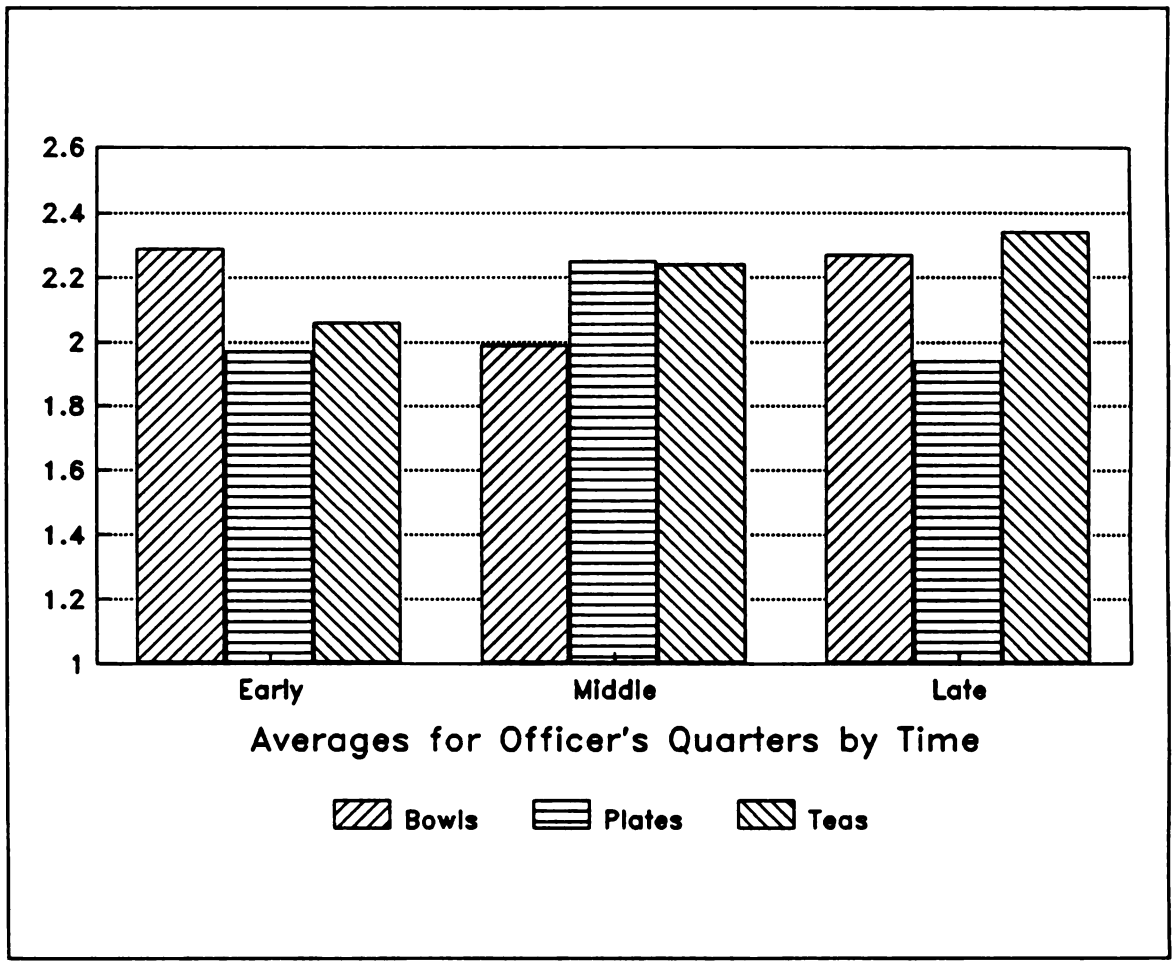


Figure 2.8 Ceramic Values for Officer's Quarters by Time

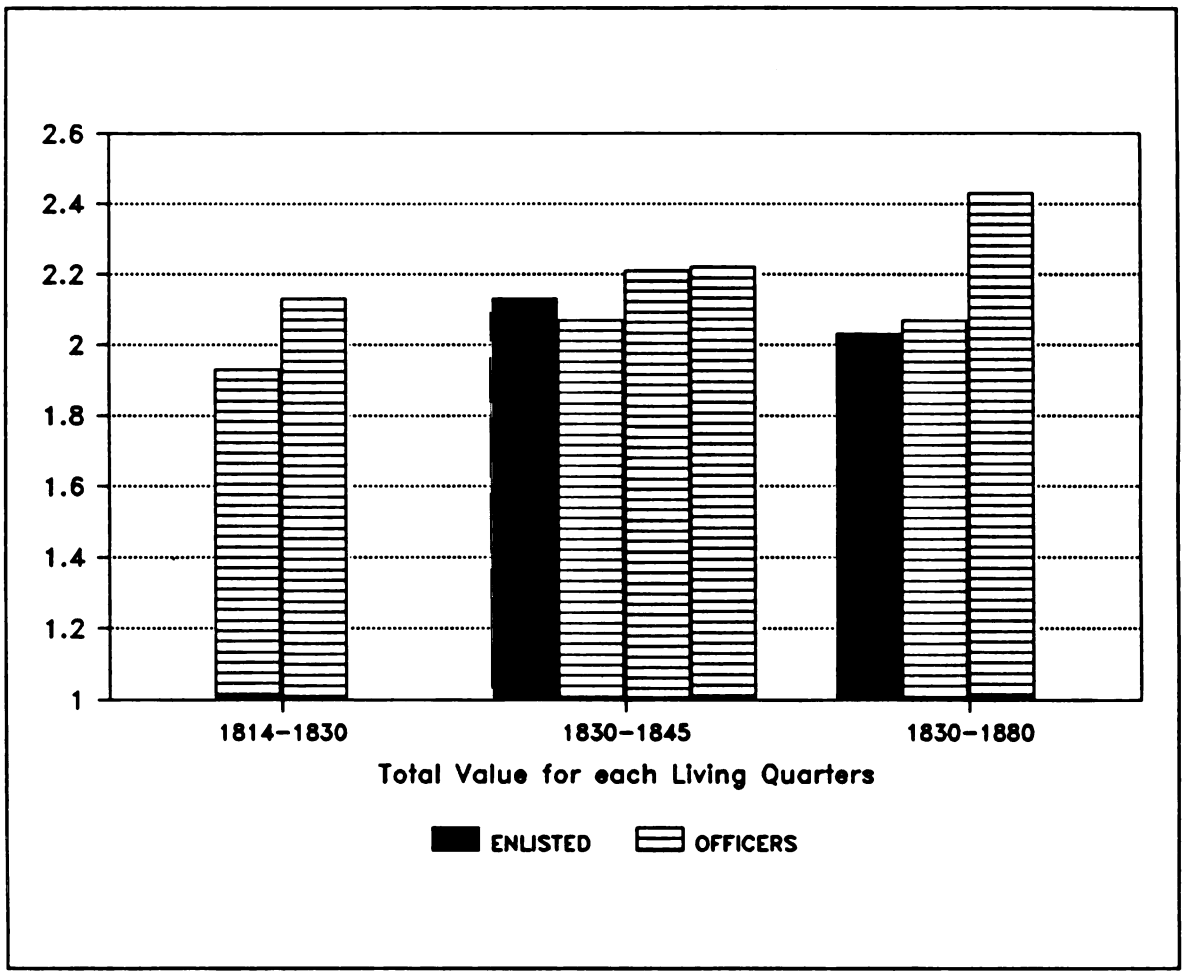


Figure 2.9 Ceramic Totals for Living Quarters by Time

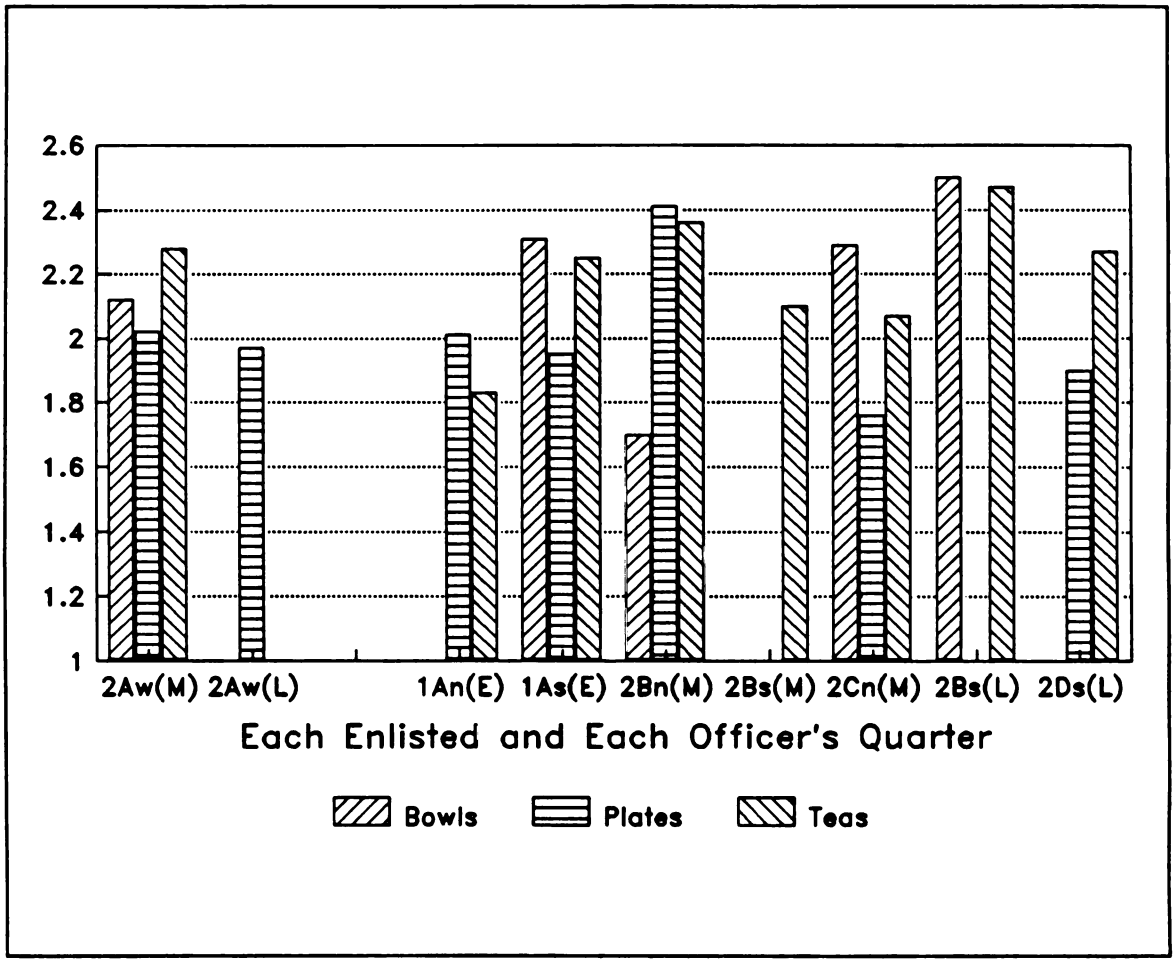


Figure 2.10 Ceramic Values for each Living Quarters

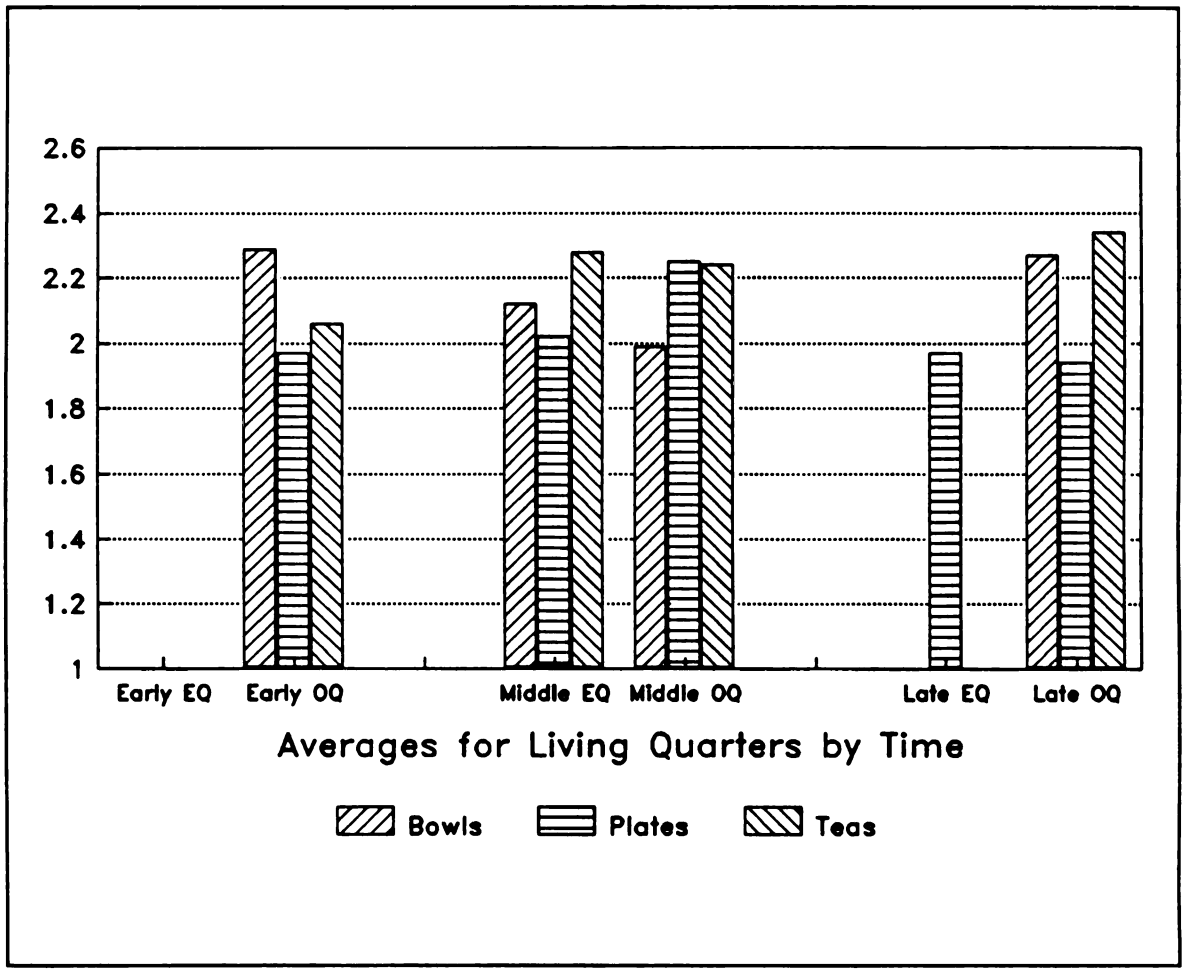


Figure 2.11 Ceramic Averages for Living Quarters by Time

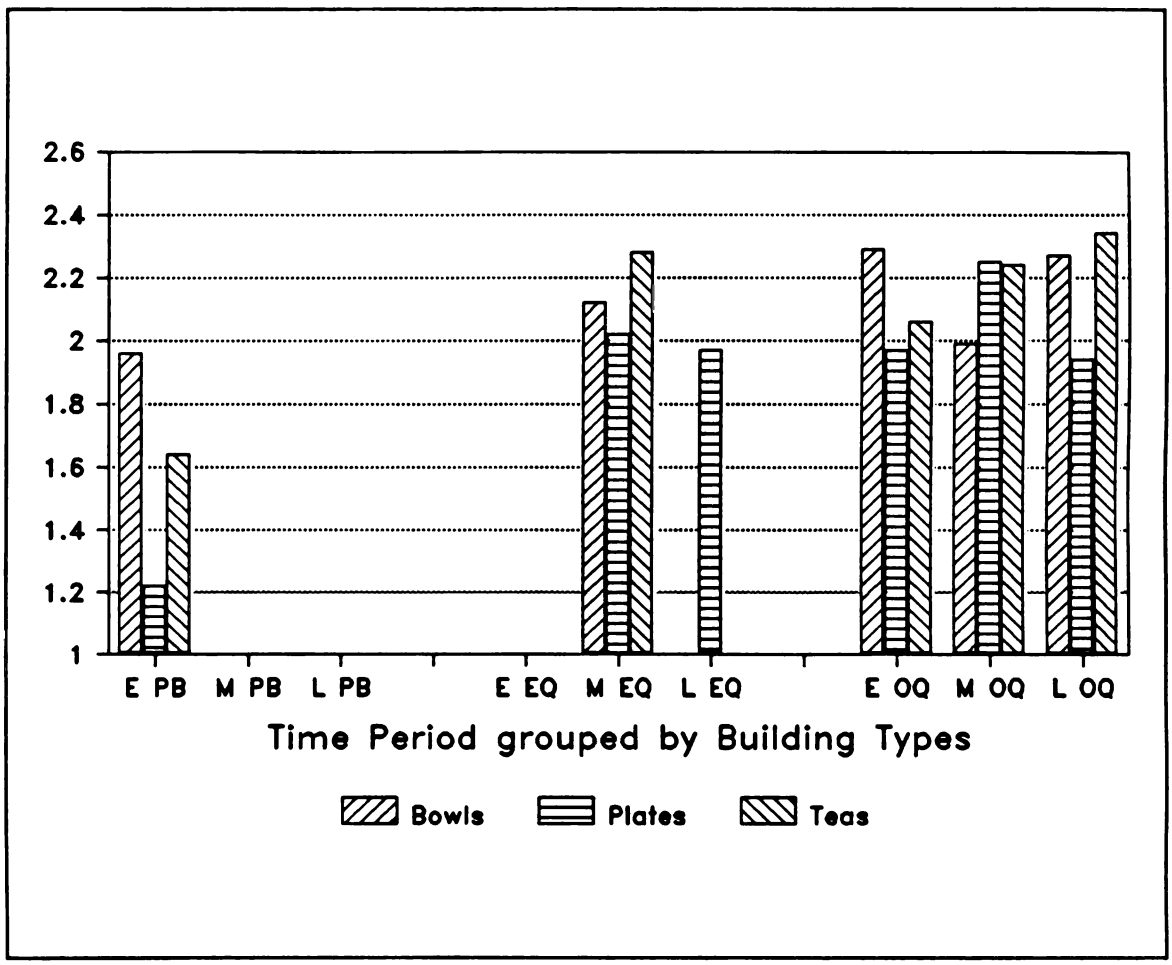


Figure 2.12 Ceramic Averages for Time by Building

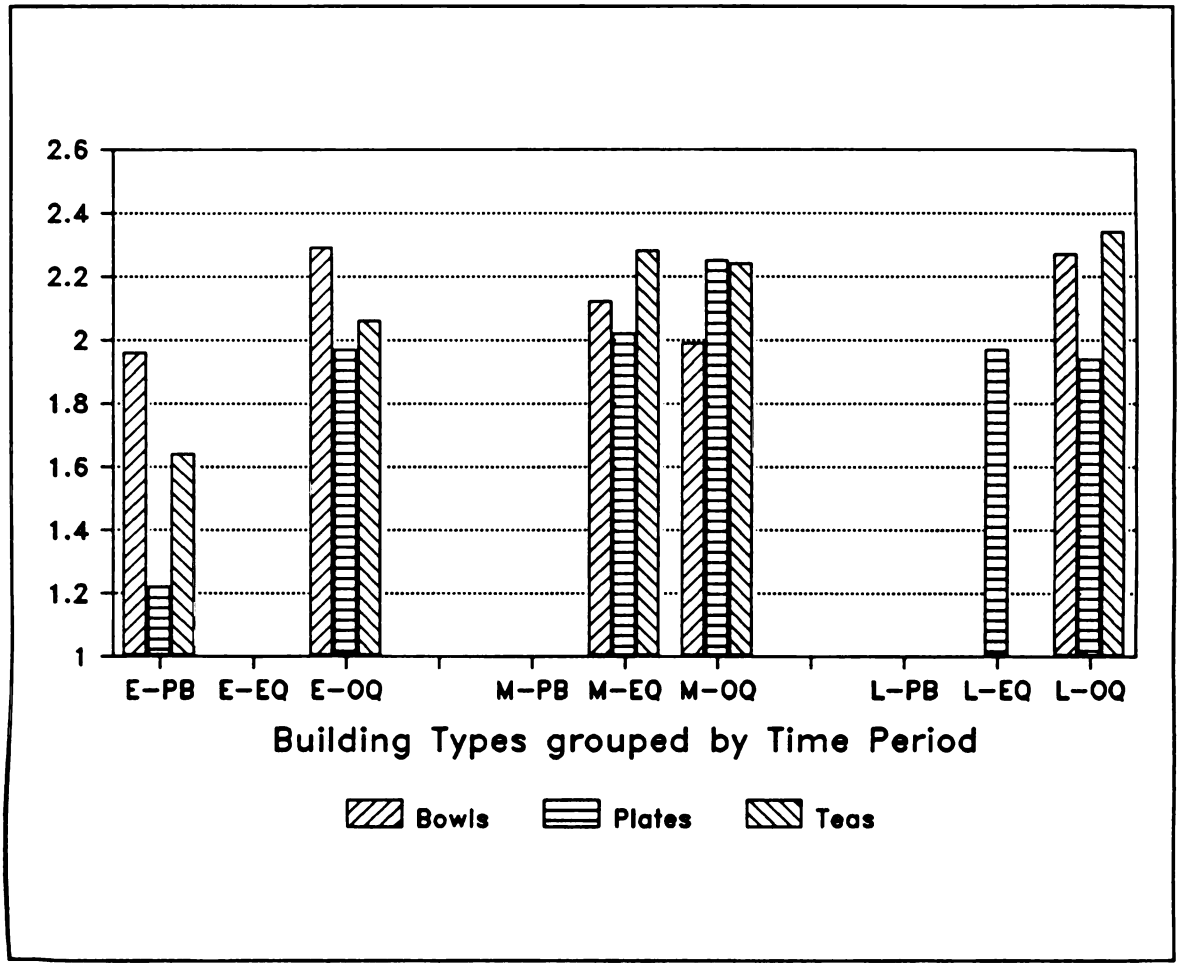


Figure 2.13 Ceramic Averages for Buildings by Time

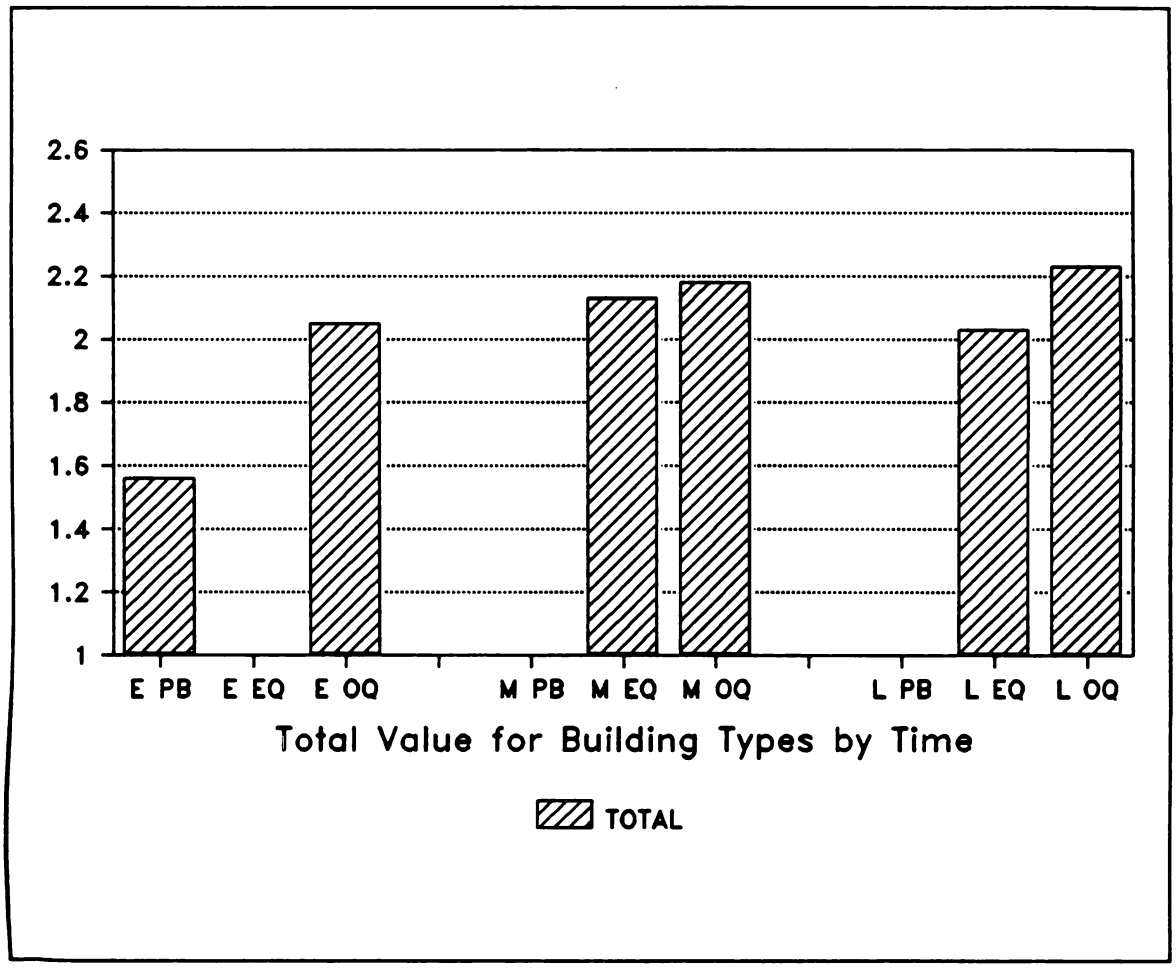


Figure 2.14 Ceramic Totals for Buildings by Time

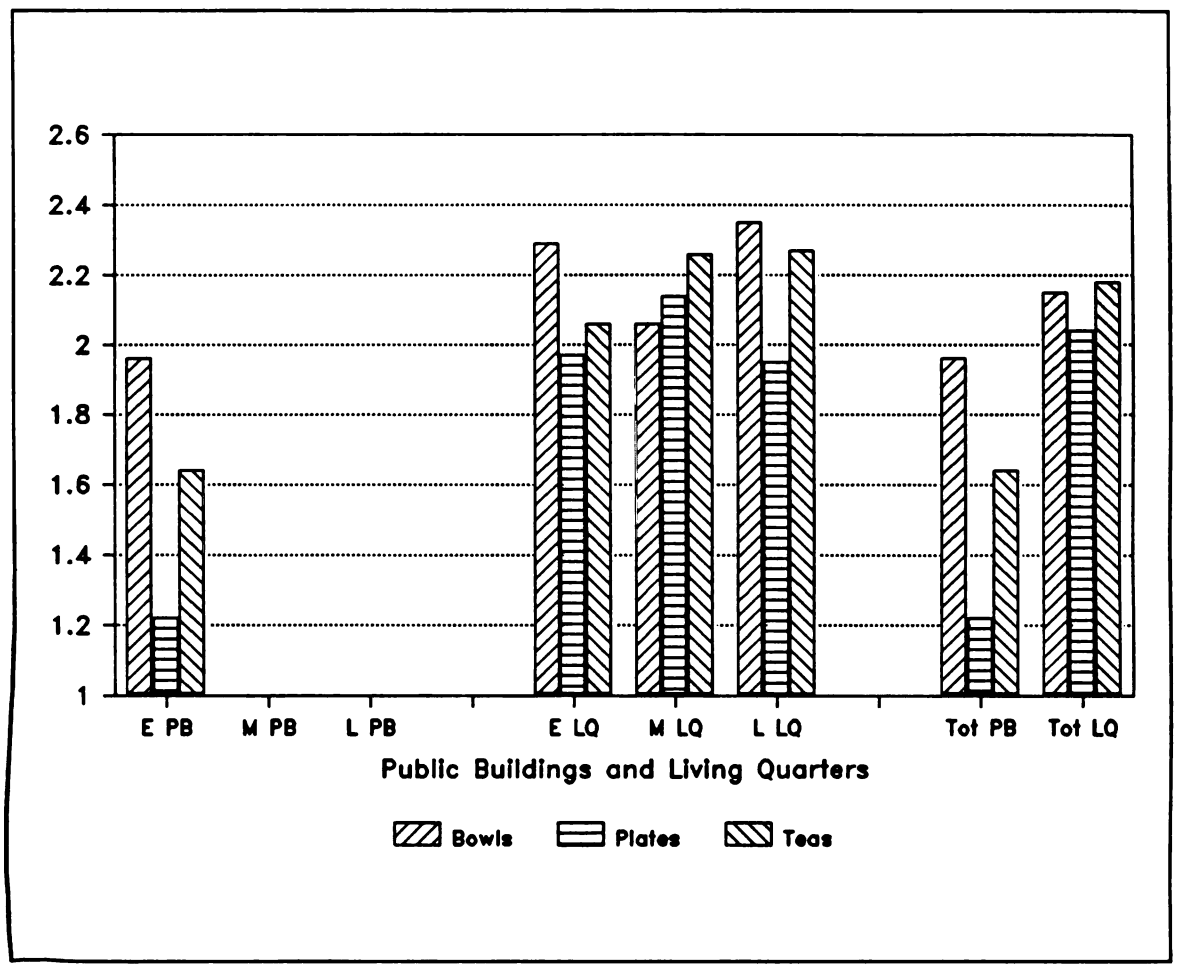


Figure 2.15 Ceramic Averages for Public and Living Quarters

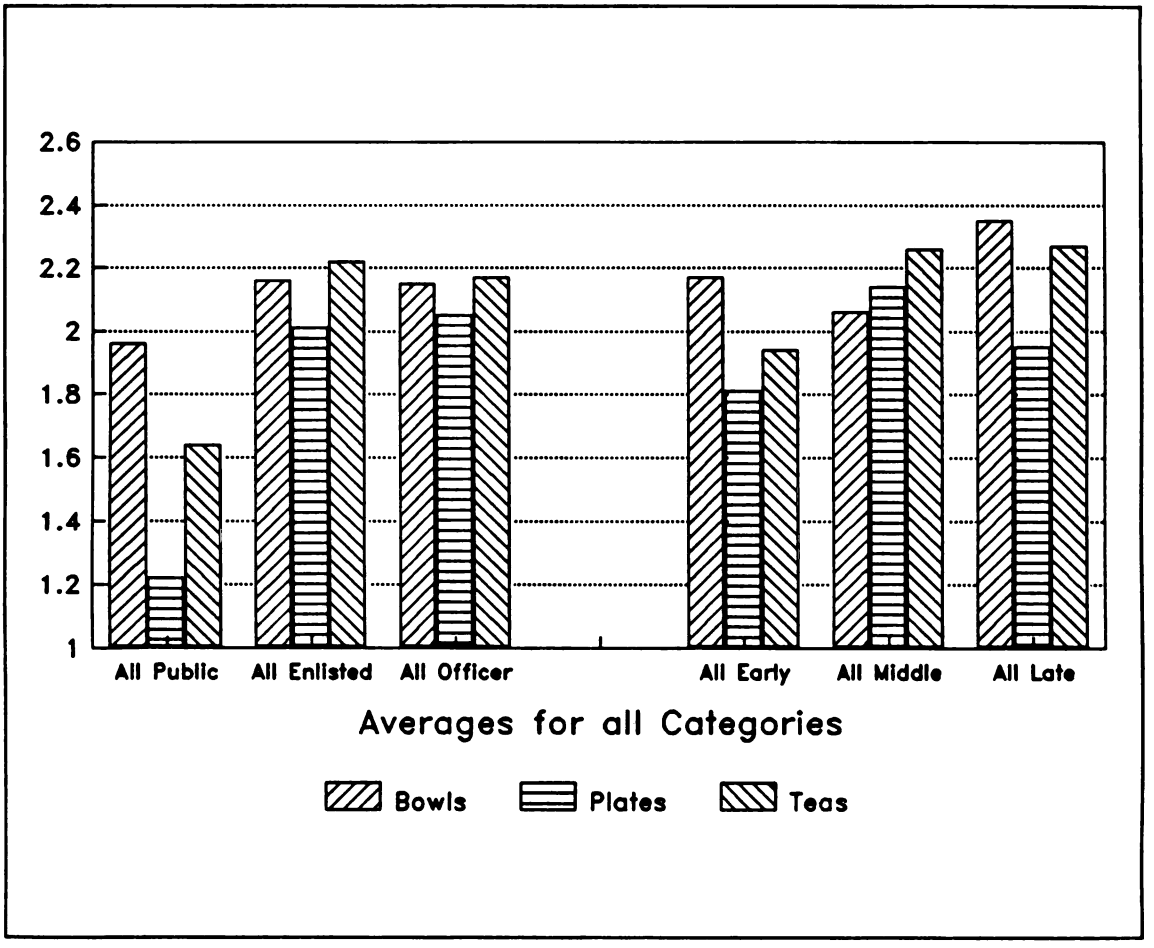


Figure 2.16 Ceramic Averages for All Categories

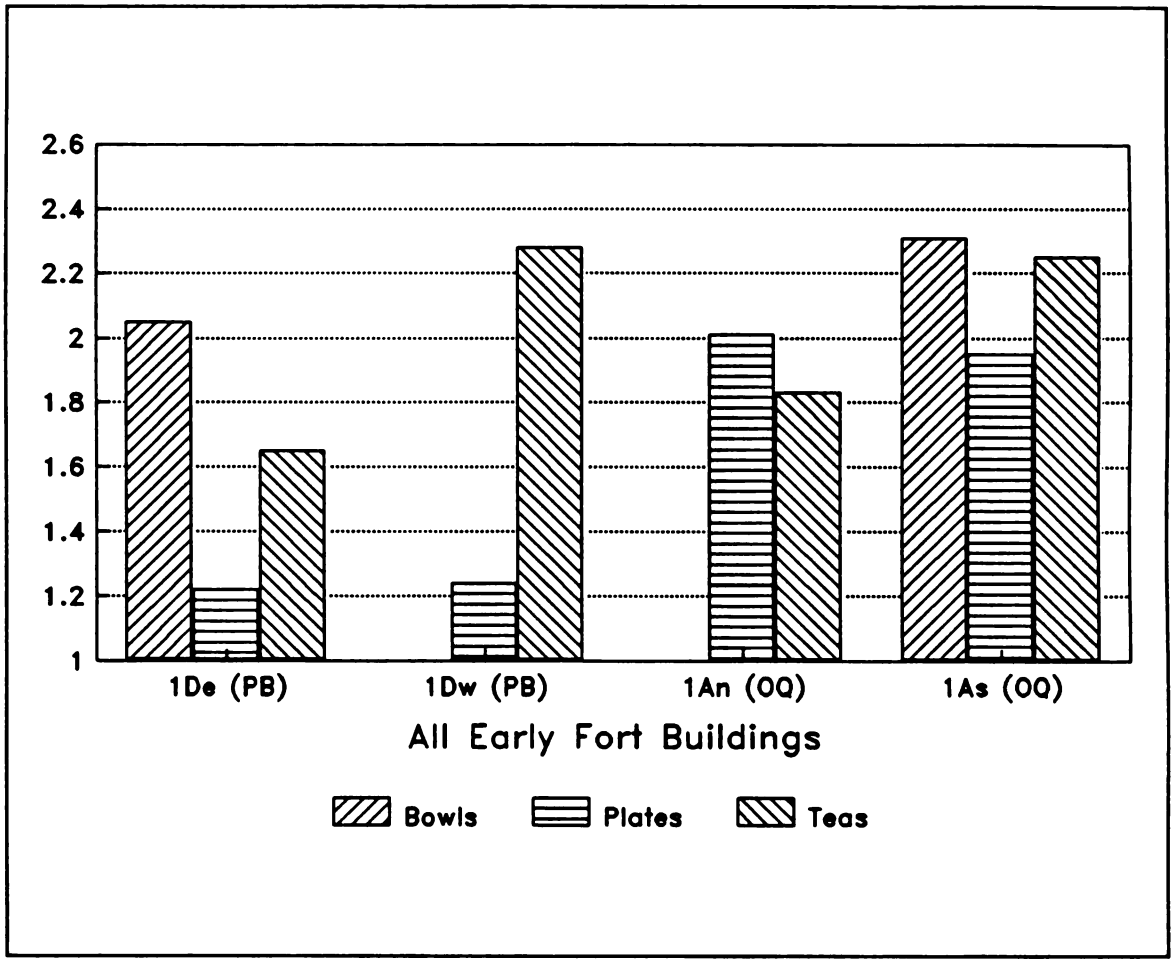


Figure 2.17 Ceramic Values for each Early Fort Building

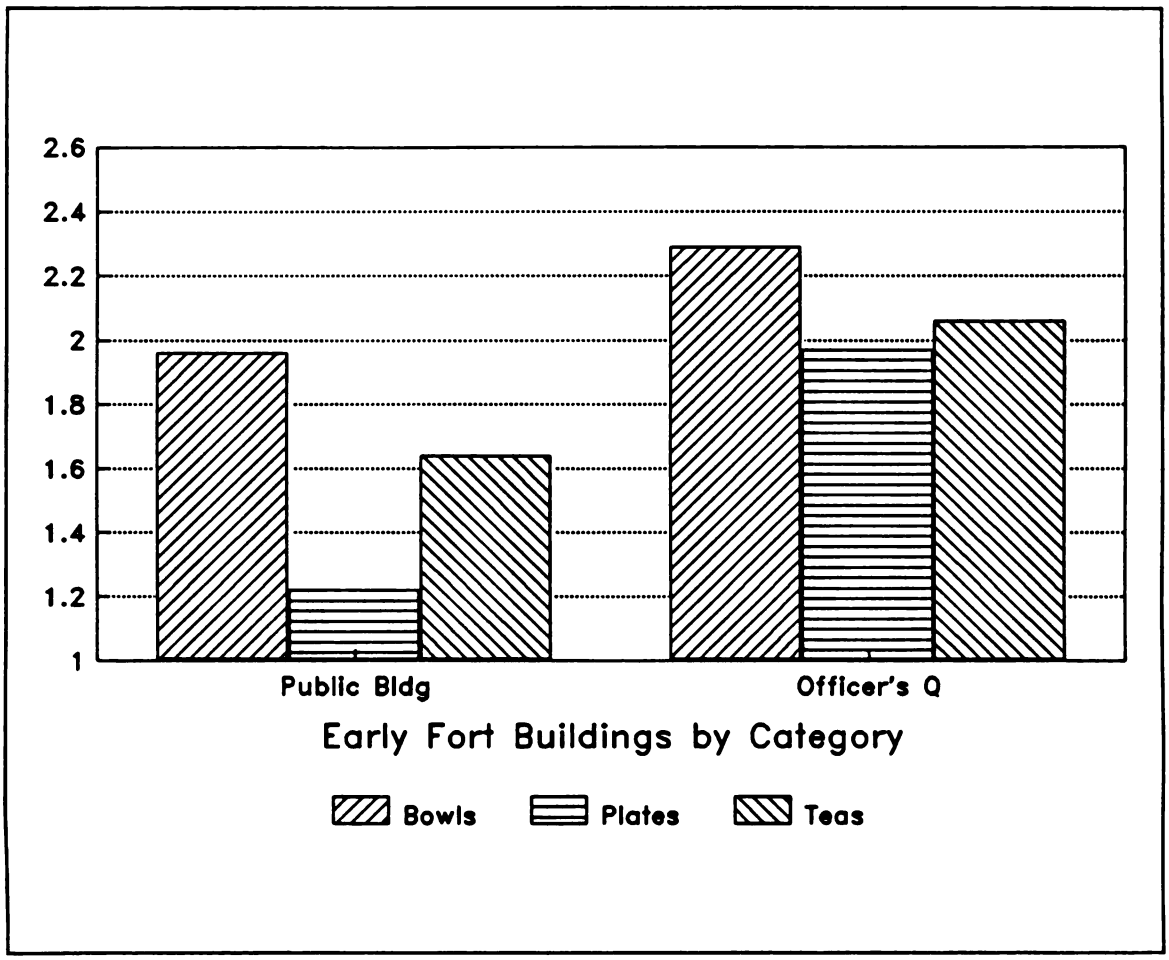


Figure 2.18 Ceramic Averages for Early Fort Contexts

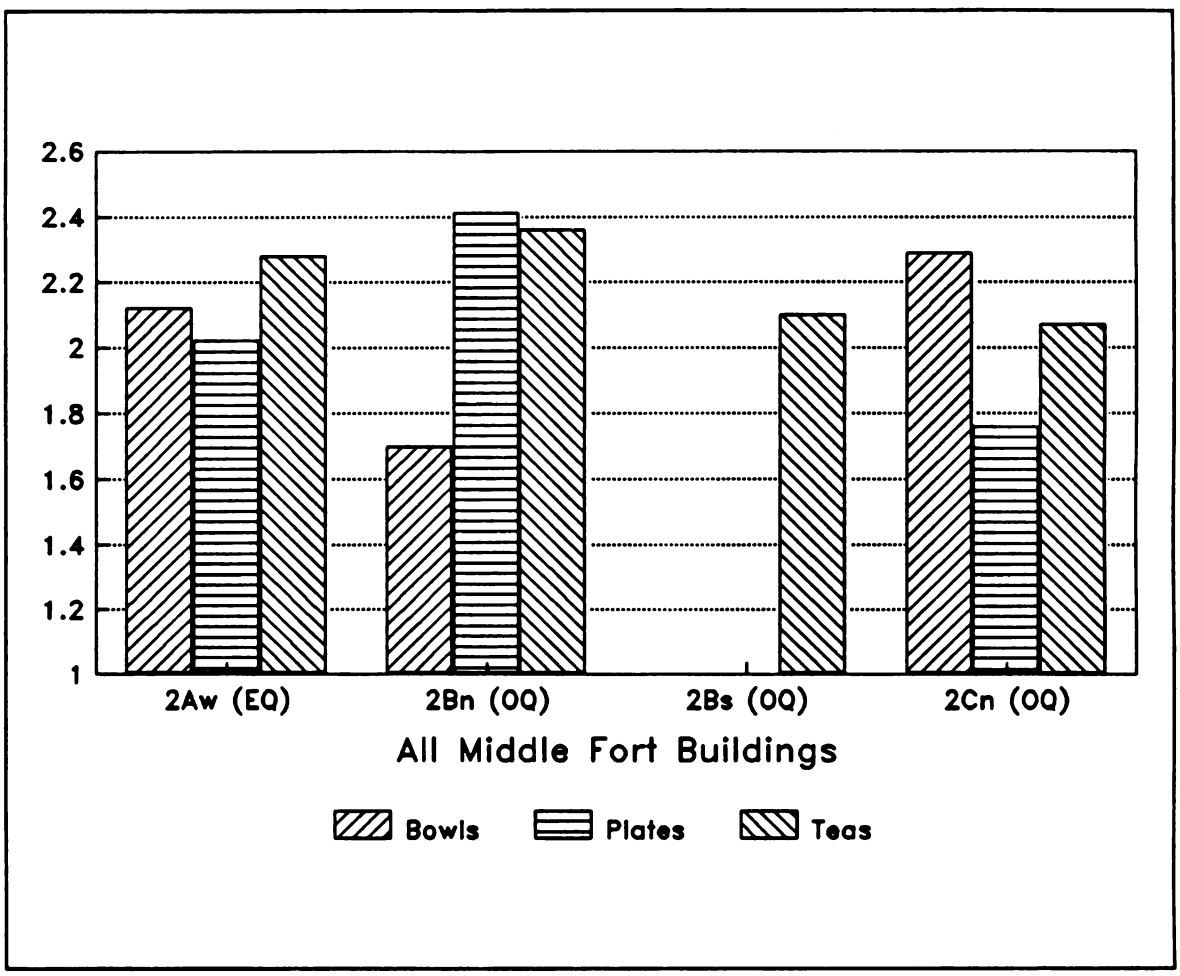


Figure 2.19 Ceramic Values for each Middle Fort Building

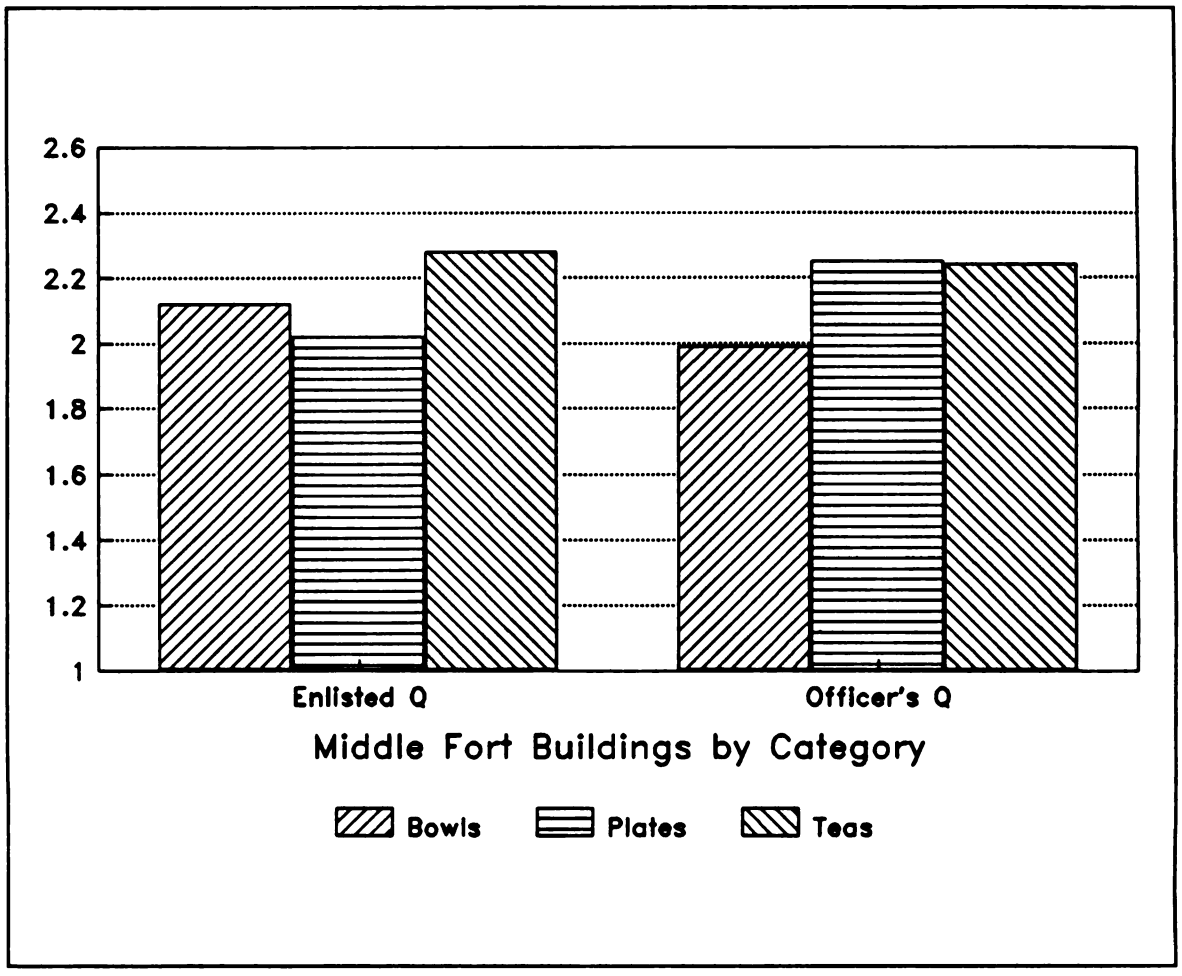


Figure 2.20 Ceramic Averages for Middle Fort Contexts

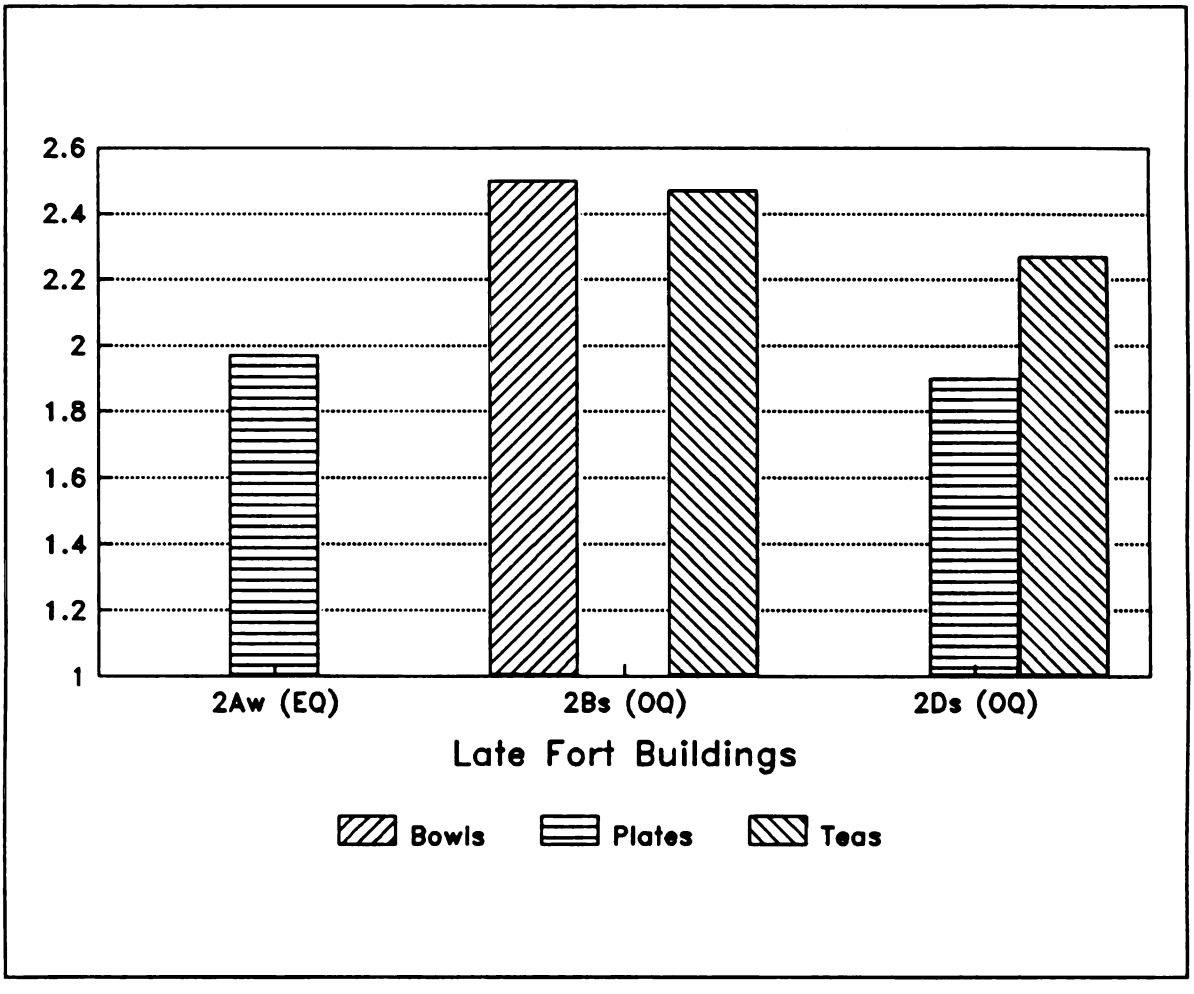


Figure 2.21 Ceramic Values for each Late Fort Building

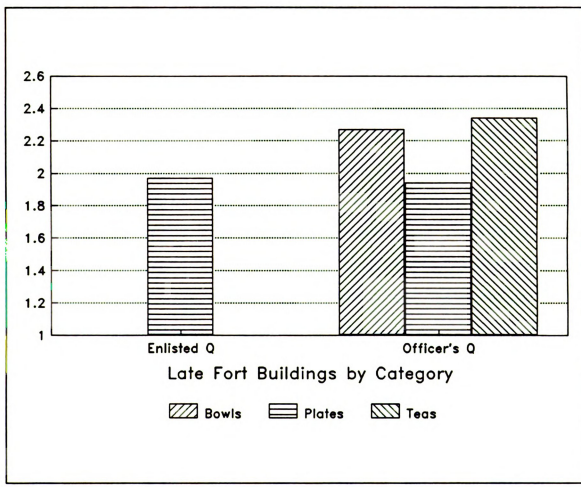


Figure 2.22 Ceramic Averages for Late Fort Contexts

building function, and period. Table 2.15 presents the summary averages for ceramic tableware vessel indexes categorized by vessel form for each building category by period. Table 2.16 presents the total ceramic tableware vessel index values for each building category by period. Figures 2.4 through 2.22 illustrate the relationships between the economic index values for the various ceramic vessel forms, building function categories, and time periods.

The ceramic categories and terminology used herein were defined and described by Miller (1980, 1991) and will not be repeated here. It should be noted that I retained the use of the more traditional term ironstone, instead of converting to white granite, for undecorated hard-paste tableware ceramics from the middle and late nineteenth century. Zero cells and index values based upon either only one or two vessels in Tables 3.14 and 3.15 are not shown on in the accompanying figures. This is because the resulting index values clearly represent observations biased by small sample sizes. The discussion of the analysis below is organized by building function followed by comparisons between building and temporal categories.

Comparisons Within Building Categories

The public building contexts (Tables 2.4 and 2.5; Figures 2.4 and 2.5) at Fort Gratiot were from two parts of

a probable hospital from the first fort (Structure 1D). Not unexpectedly, these figures show that public building teawares were more expensive than plates. Surprisingly, however, bowls with a value of 1.96 were the highest priced category present. Similarly, the early period officer's quarters (Structure 1A) had comparatively expensive bowls (Tables 3.14 and 3.15). This pattern of high priced bowls runs directly counter to the prevalent findings of most other researchers (Miller 1991:5, citing Adams and Boling 1989). In view of each person supplying their own tableware ceramics, the high price probably is related to individuals using decoration to distinguish one's own ceramics from that of others in their mess group.

In both building categories at early Fort Gratiot, bowls were the most infrequent vessel form category. This relative paucity of bowls did not hold true with the middle and late period occupation contexts. At Fort Gratiot the cheapness of the plates was the single characteristic most distinguishing public (hospital) buildings from other building contexts (Table 3.14).

Enlisted men's quarters (Tables 3.6 and 3.12; Figure 2.6) lack an artifact sample from the early period. The middle period ceramic sample (Structure 2Aw) comprises 12-16 vessels per vessel form category. The late period ceramic sample (Structure 2Aw) is small, especially for bowls and teaware. The late period plates, while adequate in number, provided a nearly identical index value as those from the

middle period enlisted quarters contexts. This offers no further development upon the middle period enlisted men's relative rank-order of plates, bowls, and teawares for lowest-to-highest economic value respectively. Among the larger sized building samples (Table 3.14), only the enlisted men's quarters had relatively equal numbers for each of the three vessel forms. And though only by a small amount, bowls were actually the most common vessel form. This contradiction to the pattern of infrequency of bowls at the public buildings and the officer's quarters appears to be the most significant characteristic for distinguishing enlisted men's quarters.

Ceramic assemblages were obtained from parts of eight officer's living quarters (Tables 3.1 - 3.3, 3.7 - 3.11, 3.13; Figures 2.7 - 2.9). Unfortunately, the whole sample from the late period occupation of Structure 2Bn was too small to use. The same was true for the bowl samples from early period Structure 1An, the bowls and plates from middle period Structure 2Bs, the bowls from late period Structure 2Ds, and the plates from late period Structure 2Bs.

Figure 2.7 shows notable variation in the relative proportions of the three vessel form categories among the individual officer's quarters. Figure 2.8, which gives the averages for all officer's quarters from each time period, presents the expected trend of rising value only in teawares. While plates also rise from the early to middle period, their late period value actually dropped below the

early period value. Bowls had similar values in the early and late periods and had a substantially lower value in the middle period. In spite of these differences, a slight trend towards an increase in the total value of tableware ceramics in use at officer's quarters over time is seen in Figure 2.9. This will be discussed later in a section on variability and again in the next chapter. Unlike the other building categories, the officer's quarters did not have a single distinguishing characteristic in either the frequency of vessel forms or value of the ceramics.

Officer's and Enlisted Men's Quarters

A comparison of the living quarters of officers and enlisted men (Tables 3.14 - 3.16; Figures 2.9 - 2.12) shows that the economic values for the vessel form categories were not uniformly higher for officers (Figure 2.10). When the living quarters were averaged and clustered by time period (Figure 2.11), the values for the vessel forms exhibited an only slightly clearer relationship. The officer's quarters did not necessarily have higher values for each category at any given time. Indeed for the vessel form categories that could be compared for the same time periods (Figure 2.11), the values for the enlisted men were higher in three out of four cases. Figure 2.9 presents the total ceramic value for each living quarters building clustered by time period. By period, the officer's quarters tended to have higher total

values than the enlisted men's quarters, but the middle period shows that this was not a necessary circumstance.

The relatively smaller range of variation in the middle period total ceramic values were of interest, especially if this lack of variation can be shown not to be a statistical sampling error after comparing it to a larger sample of living quarters. Dyer (1985:131-132) reports that the importance of the distinction by rank (officer -- enlisted men) is a shared structure among all of the world's military organizations.

If this lack of variation accurately represents the events just at Fort Gratiot, it most likely reflects the presence of fewer total personnel during this period. A situation requiring fewer and less high ranking officers and thus a flatter, less differentiated social hierarchy. However, one other possible cause is referred to by Heintzelman (1830), when he discusses enlisted mens' wives and families living on the post at a time when the only buildings available for married enlisted personnel to live in were recorded as officer's quarters on the official maps. This kind of informal living arrangement, if not just occasioned by the temporary expediences of renovating an old fort, would seriously increase the level of variation among the officer's quarters buildings. It would, of course, also mask any differentiation between ranks.

If, however, the depressed level of variation is more widespread, it, of course, should be interpreted within a

larger spatial framework. In a regional or national context, it may relate to the rise of the American middle class or to attempts to implement purposefully more democratic and egalitarian social and economic conditions during the early nineteenth century (cf. Coffman 1986:42-211, especially 195 and 203; Mathews 1991:3-25; Sarkesian 1984:21-37).

Public Buildings and Living Quarters

Figures 2.12 - 2.15 provide histograms of the differences in distribution among vessel forms between living quarters and public buildings. Figure 2.12 illustrates the change over time to averaged vessel form categories within each type of building. Figure 2.13 reverses the situation, clustering building groups by time periods. Figure 2.14 follows this same format but provides totals for each category rather than averages for vessel forms. Figure 2.15 provides a combined living quarters category to compare with the public buildings, and also totals for both of these categories for all time periods combined. Note the low average and total values for the public building category relative to the officer's, enlisted men's, and combined living quarters' categories in Figures 2.12 - 2.15.

Also note the overall high amount of variability in index values for all vessel form categories and even for

buildings and time periods in these figures. The above mentioned high variability in ceramic index values is further illustrated in the category totals given in Figure 2.16, and the building vessel form and building temporal period averages shown in Figures 2.17 - 2.22. All of the Fort Gratiot ceramic value figures demonstrate the existence of a far greater amount of variability than most previous users of Miller's technique have assumed. This is most important in light of the generally small number of site contexts that most previous researchers have employed when using Miller's economic scaling index. In other words, most researchers may not have discovered or demonstrated the high variability due to the use of a small sample of sites.

Discussion of Variability by Time

At Fort Gratiot there was no unobscured trend towards increase in value over time demonstrated by any building category in these figures, except for the slight increase from 2.05 to 2.18 (6.3%) to 2.23 (2.3% and only 8.8% overall) in the total ceramic tableware values from early to middle to late period officer's quarters occupations (Figure 2.14). Even this small increase proves to be illusory in view of the data on discounted sale prices in Miller's (1991:2-4, Figure 2) recent revised article on ceramic economic scaling. The 6.3% increase between the early period (1814-1830) and middle period (1830-1845) officers'

quarters contexts disappears against an average increase in discount prices of 10.7% between these time periods (Miller 1991:3-4).

Miller (1991:4) cautions that comparisons to the post-1845 period are problematic for many reasons. However, it is clear that the 2.3% average increase in the index value from the middle to late periods again is swamped by the 10% higher tariff rate of 30% on ceramics imported into the United States after 1844. Miller (1991:4) says that transfer printed ceramics in particular saw higher discounts after the imposition of this tariff.

This interpretive problem is not isolated to the immediate post-1844 period, as the American ceramic tariff was raised to 35% in 1862 and raised again in 1883 (Guilland 1971:72). This tariff applied specifically to decorated ceramics. Gorely (1978:123) pointed out that before these American tariffs all previous ceramic tariffs, American or otherwise, had been based upon weight. These decorative tariffs were counteracted by a successful British advertising campaign and are highly correlated with the popularity of the undecorated white-paste British manufactured ceramics so common on American residential archeological sites dating from the 1860s to the 1890s. The American ceramic tariff was not reduced until 1894 (Guilland 1971:72). Several factors influenced this change, including the successful establishment of an American ceramic tableware manufacturing industry (cf. Barber 1904; Barber

1909, especially pages 154-272; Gates and Ormerod 1982) and the introduction of the much cheaper to produce "decal" transfer printing technology (Esarey 1982:160).

Another interpretive problem is that contrary to recent decades when inflation has consistently raised prices, general commodity prices remained relatively stable from 1820 until 1860 (Bidwell and Falconer 1973:191). Coffman (1986:49-50) reiterates the same conclusion, and even more stridently states that because of stagnant pay levels, the only way for an officer to increase his standard of living was by obtaining a promotion. This economic documentation affirms interpreting the results of the ceramic analysis as supporting the conclusion that small forts with fewer officers and a lower rank hierarchy should generally manifest less economic differences and thus more variability for the site as a whole in comparison to larger forts.

CHAPTER 3 -- REGIONAL FORTS

The goal of this chapter is to determine if the socio-economic patterning and variation through time and by social categories based upon an analysis of tableware ceramics at Fort Gratiot hold true in a regional database of forts with different sizes and functions. Five building occupation contexts from Forts Brady and Wilkins were the only American period upper Great Lakes forts that met the established ceramic comparative criteria. All other regional American forts (see Appendix A) either had no archeological research conducted at them or had problematic assemblages. These problems included non-building context assemblages, mixed context assemblages, and small sample sizes.

Fort Brady

Fort Brady at Sault Ste. Marie, Michigan was established near the St. Mary's river rapids in 1822 and, as usual, underwent several additions and repairs through the rest of the century. The fort was moved to a site in a different part of town in the early twentieth century, where it was finally decommissioned in 1949. In 1967 Lyle Stone (1971)

conducted the first archeological work at the site. In 1976 and 1977 Lee Minnerly (n.d.) ran MSU's archeological field methods course at the site, excavating portions of the south-west blockhouse and a quartermaster's storehouse. In 1989 a joint MSU-Lake Superior State University (LSSU) field school directed by Susan Branstner investigated a portion of an officer's quarters (Demers 1990). In 1990 another joint MSU-LSSU field school directed by Christine Stephenson (1991) conducted additional testing near the site.

Fort Brady comparative materials come from an officer's quarters building (designated Structure 2A herein) excavated by a joint MSU-Lake Superior State University (LSSU) field school in 1989 (Demers 1990). The officer's quarters apparently is the southernmost of the buildings along the west side of the parade ground. The archeological context consists of several features (Features 57, 58, 62, 63, 65, and 66), to which Demers (1990) assigned an occupation date of the middle 1820s to the middle 1840s. The ceramic vessel forms and CC index values (cf. Miller 1991) from this building are listed in Table 3.1, and the values illustrated in Figure 3.1. The Fort Brady officer's quarters sample had relatively high index values for all categories compared to those from Fort Gratiot, especially for plates. This was largely due to the presence of three porcelain vessels.

Additional comparative material came from the southwest blockhouse building investigated in 1976 and 1977 by MSU (Minnerly n.d.). The blockhouse (designated Structure 2Bh

Table 3.1 Ceramic Values for Ft. Brady Officer's Quarters

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	NDX-V	BOWLS	PLATES	TEAS
2A	4	CW	BOWL	CC	1820s-1840s	1836	1.00	1.00		
2A	23	WW	BOWL	DIP	1820s-1840s	1836	1.20	1.20		
2A	11	PW	BOWL	TP-dkbl	1820s-1840s	1846	2.80	2.80		
2A	15	WW	BOWL 5"	TP	1820s-1840s	1836	3.00	3.00		
2A	18	WW	BOWL 5"	TP	1820s-1840s	1836	3.00	3.00		
2A	9	PW	PLATE	TP	1820s-1840s	1836	2.81		2.81	
2A	19	WW	PLATE ?	TP	1820s-1840s	1836	2.81		2.81	
2A	16	WW	PLATE APP 8"	TP	1820s-1840s	1836	2.81		2.81	
2A	21	WW	PLATE APP 8"	TP	1820s-1840s	1836	2.81		2.81	
2A	8	PW	PLATE 8"+	EDGE	1820s-1840s	1836	1.25		1.25	
2A	10	PW	PLATE 8"+	EDGE	1820s-1840s	1836	1.25		1.25	
2A	14	WW	PLATE 8"+	EDGE	1820s-1840s	1836	1.25		1.25	
2A	3	PORC	PLATE 8"+	FLUTED	1820s-1840s	1836	7.14		7.14	
2A	2	PORC	PLATE, SMALL	PNT CHN	1820s-1840s	1836	7.14		7.14	
2A	17	WW	PLATE, SMALL	TP	1820s-1840s	1836	3.00		3.00	
2A	7	PW	PLATE, SOUP 10"	EDGE	1820s-1840s	1838	1.20		1.20	
2A	13	WW	PLATE, SOUP 10"	EDGE	1820s-1840s	1838	1.20		1.20	
2A	12	WW	SAUCER	PAINT	1820s-1840s	1836	1.50			1.50
2A	5	PW	SAUCER	PNT CHN	1820s-1840s	1836	1.50			1.50
2A	20	WW	SAUCER	TP	1820s-1840s	1836	3.00			3.00
2A	22	WW	SAUCER	TP	1820s-1840s	1836	3.00			3.00
2A	1	PORC	SAUCER 5-6"	UNDEC	1820s-1840s	1835	4.44			4.44
2A	24	WW	TEA CUP	PAINT	1820s-1840s	1836	1.50			1.50
2A	25	WW	TEA CUP ?, SCALLOPED	PAINT	1820s-1840s	1825	1.67			1.67
2A	6	PW	TEA CUP 4"	TP-dkbl	1820s-1840s	1834	3.00			3.00
						NO	25	5	12	8
						SUM	65.28	11.00	34.67	19.61
						AVE	2.61	2.20	2.89	2.45
							TOTAL	BOWLS	PLATES	TEAS

Table 3.2 Ceramic Values for Ft. Brady Blockhouse

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	NDX-V	BOWLS	PLATES	TEAS
Bh	2	WW	BOWL APP. 6"	DIP	1820s-1840s	1836	1.20	1.20		
Bh	3	WW	BOWL 5-6"	DIP	1820s-1840s	1836	1.20	1.20		
Bh	1	WW	BOWL 6"	DIP	1820s-1840s	1836	1.20	1.20		
Bh	4	WW	PLATE APP. 10"	EDGE	1820s-1840s	1838	1.20		1.20	
Bh	13	WW?	PLATE, LARGE ?	TP	1820s-1840s	1838	2.67		2.67	
Bh	9	WW	PLATE, MEDIUM	FLOW-TP	1820s-1840s	1846	3.03		3.03	
Bh	12	WW	PLATE, MEDIUM ?	TP	1820s-1840s	1838	3.00		3.00	
Bh	8	WW	PLATE, SMALL	TP	1820s-1840s	1838	3.00		3.00	
Bh	14	WW	PLATE, SMALL	TP	1820s-1840s	1838	3.00		3.00	
Bh	5	PORC	SAUCER, APP 5"	UNDEC	1820s-1840s	1835	4.44			4.44
Bh	11	IRON	TEA CUP	IRON	1820s-1840s	1846	2.08			2.08
Bh	16	PW?	TEA CUP	TP	1820s-1840s	1836	3.00			3.00
Bh	15	WW	TEA CUP	TP	1820s-1840s	1836	3.00			3.00
Bh	7	WW	TEA CUP 3 1/2"	PAINT	1820s-1840s	1836	1.50			1.50
						NO	14	3	6	5
						TOTAL	33.52	3.60	15.90	14.02
						AVE	2.39	1.20	2.65	2.80
							TOTAL	BOWLS	PLATES	TEAS

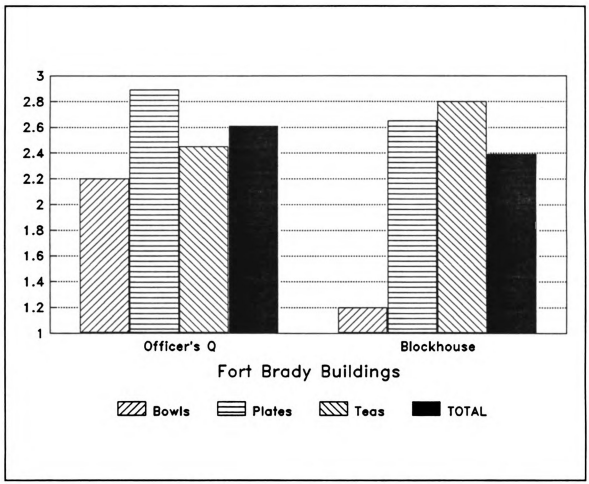


Figure 3.1 Ceramic Values for Ft. Brady Buildings

Table 3.3 Ceramic Values for Ft. Wilkins Structure 3A

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	NDX-V	BOWLS	PLATES	TEAS
3A	2	WW ?	PLATE	SHELL	1844-1846?	1846	1.14		1.14	
3A	3	WW ?	PLATE	SHELL	1844-1846?	1846	1.14		1.14	
3A	4	WW ?	PLATE	SHELL	1844-1846?	1846	1.14		1.14	
3A	8	WW ?	PLATE	TP	1844-1846?	1846	2.11		2.11	
3A	9	WW ?	PLATE	TP	1844-1846?	1846	2.11		2.11	
3A	1	WW ?	PLATTER 12" x 9" OCT	SHELL	1844-1846?	1846	1.57		1.57	
3A	7	WW ?	SAUCER	FLOW-TP	1844-1846?	1846	2.83			2.83
3A	5	WW ?	SAUCER	TP	1844-1846?	1846	2.27			2.27
3A	6	WW ?	SAUCER	TP	1844-1846?	1846	2.27			2.27
3A	12	WW ?	SAUCER 6" DIA	PAINT	1844-1846?	1846	1.23			1.23
3A	14	WW ?	T-MUG ?	DIPT	1844-1846?	1846	1.50			1.50
3A	15	WW ?	T-MUG ?	DIPT	1844-1846?	1846	1.50			1.50
3A	16	WW ?	T-MUG ?	DIPT	1844-1846?	1846	1.50			1.50
3A	17	WW ?	T-MUG ?	DIPT	1844-1846?	1846	1.50			1.50
3A	13	WW ?	TEA CUP	PAINT	1844-1846?	1846	1.23			1.23
3A	10	WW ?	TEA CUP ?	TP	1844-1846?	1846	2.27			2.27
3A	11	WW ?	TEA CUP 4" DIA	PAINT	1844-1846?	1846	1.23			1.23
						NO	17	0	6	11
						TOTAL	28.54	.00	9.21	19.33
						AVE	1.68	.00	1.54	1.76
							TOTAL	BOWLS	PLATES	TEAS

Table 3.4 Ceramic Values for Ft. Wilkins Structure 3Bw

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	NDX-V	BOWLS	PLATES	TEAS
3Bw	11	WG	BOWL TUREEN, MM, OCT	MOLD	1867-1870	1868	2.29	2.29		
3Bw	1	WG	BOWL 6" DIA	MOLD	1867-1870	1868	2.29	2.29		
3Bw	23	WW	NOT LISTED	PAINT	1867-1870					
3Bw	24	WW	NOT LISTED	PAINT	1867-1870					
3Bw	5	WG	PLATE	MOLD	1867-1870	1869	1.11		1.11	
3Bw	22	WW	PLATE ?	EDGED	1867-1870	1871	2.07		2.07	
3Bw	15	WW	SAUCER 5" DIA	TP	1867-1870	1848	2.89			2.89
3Bw	16	WW	SAUCER 5" DIA	TP	1867-1870	1848	2.89			2.89
3Bw	25	PORC	SAUCER 5" DIA	UNDEC	1867-1870	1871	2.20			2.20
3Bw	14	WW	SAUCER 5" DIA, MM	TP	1867-1870	1848	2.89			2.89
3Bw	6	WG	SAUCER 6" DIA, MM	MOLD	1867-1870	1868	2.15			2.15
3Bw	13	WW	SAUCER 6" DIA, MM	TP	1867-1870	1848	2.89			2.89
3Bw	7	PW ?	SAUCER, MM	MOLD	1867-1870	1868	2.15			2.15
3Bw	8	WG	SAUCER, MM	MOLD	1867-1870	1868	2.15			2.15
3Bw	9	WG	SAUCER, MM	MOLD	1867-1870	1868	2.15			2.15
3Bw	12	WW	SAUCER, MM	TP	1867-1870	1848	2.89			2.89
3Bw	10	WG	SAUCER, OCT	FLT-MLD	1867-1870	1846	2.31			2.31
3Bw	21	WW	TEA CUP	FLOW-TP	1867-1870	1846	2.83			2.83
3Bw	2	WG	TEA CUP	FLT-MLD	1867-1870	1846	2.31			2.31
3Bw	4	WG	TEA CUP	MOLD	1867-1870	1868	2.15			2.15
3Bw	20	WW	TEA CUP	TP	1867-1870	1848	2.89			2.89
3Bw	3	WG	TEA CUP 4", HANDLE	MOLD	1867-1870	1871	2.45			2.45
3Bw	19	WW	TEA CUP, HANDLE	TP	1867-1870	1846	2.77			2.77
3Bw	17	WW	TEA CUP, MM	TP	1867-1870	1848	2.89			2.89
3Bw	18	WW	TEA CUP, MM	TP	1867-1870	1848	2.89			2.89
						NO	23	2	2	19
						TOTAL	56.50	4.58	3.18	48.74
						AVE	2.46	2.29	1.59	2.57
							TOTAL	BOWLS	PLATES	TEAS

Table 3.5 Ceramic Values for Ft. Wilkins Structure 3Cn

ST	VSL#	WARE	VESSEL FORM	X-DEC	USE DATES	NDX-D	NDX-V	BOWLS	PLATES	TEAS
3Cn	58	WW ?	BOWL	PAINT	1867-1870	1869	1.17	1.17		
3Cn	48	WW ?	BOWL	TP	1867-1870	1870	2.00	2.00		
3Cn	55	WW ?	BOWL LID 8" OCT, MM	TP	1867-1870	1870	2.00	2.00		
3Cn	14	WW	BOWL 5" dia	DIP	1844-1870	1869	1.17	1.17		
3Cn	33	WW ?	BOWL 5" DIA	MOLDED	1867-1870	1869	2.25	2.25		
3Cn	34	WW ?	BOWL 5" DIA, INC LID	MOLDED	1867-1870	1869	2.25	2.25		
3Cn	54	WW ?	BOWL 5" DIA, MM	TP	1867-1870	1870	2.00	2.00		
3Cn	6	IRON	BOWL 5-6" dia	IRONflt	1844-1870	1868	2.29	2.29		
3Cn	9	WW	BOWL 6" dia	IRON	1844-1870	1868	2.29	2.29		
3Cn	47	WW ?	BOWL 6" DIA, MM	TP	1867-1870	1870	2.00	2.00		
3Cn	43	WW ?	PLATE	TP	1867-1870	1855	1.50		1.50	
3Cn	19	WW ?	PLATE 10" DIA, MM	MOLDED	1867-1870	1871	2.57		2.57	
3Cn	57	WW ?	PLATE 10" DIA, MM	PAINT	1867-1870	1869	1.71		1.71	
3Cn	41	WW ?	PLATE 10" DIA, MM	TP	1867-1870	1855	1.60		1.60	
3Cn	42	WW ?	PLATE 10" DIA, MM	TP	1867-1870	1855	1.60		1.60	
3Cn	13	WW	PLATE 6" dia	TP	1844-1870	1855	1.67		1.67	
3Cn	18	WW ?	PLATE 8" DIA	MOLDED	1867-1870	1871	2.07		2.07	
3Cn	16	WW ?	PLATE 8" DIA, MM	MOLDED	1867-1870	1871	2.07		2.07	
3Cn	17	WW ?	PLATE 8" DIA, MM	MOLDED	1867-1870	1871	2.07		2.07	
3Cn	37	WW ?	PLATE 8" DIA, MM	TP	1867-1870	1855	1.50		1.50	
3Cn	39	WW ?	PLATE 8" DIA, MM	TP	1867-1870	1855	1.50		1.50	
3Cn	3	IRON	PLATE 8", MARKED	IRONflt	1844-1870	1871	2.07		2.07	
3Cn	2	IRON	PLATE 8-10", MARKED	IRON	1844-1870	1871	2.07		2.07	
3Cn	1	IRON	PLATE 8-10", MARKED	IRON	1852-1882	1871	2.07		2.07	
3Cn	38	WW ?	PLATE 9" DIA, MM	TP	1867-1870	1855	1.60		1.60	
3Cn	40	WW ?	PLATE 9" DIA, MM	TP	1867-1870	1855	1.60		1.60	
3Cn	20	WW ?	PLATTER 10" BY 8",MM	MOLDED	1867-1870	1871	2.57		2.57	
3Cn	11	IRON	PLATTER, HEX RIM	FLOW	1844-1870	1855	2.75		2.75	
3Cn	56	WW ?	SAUCER	PAINT	1867-1870	1869	1.17			1.17
3Cn	4	WW	SAUCER 4" dia	UNDEC	1844-1870	1866	1.00			1.00
3Cn	22	WW ?	SAUCER 5" DIA, MM	MOLDED	1867-1870	1868	2.15			2.15
3Cn	45	WW ?	SAUCER 5" DIA, MM	TP	1867-1870	1848	2.89			2.89
3Cn	8	WW	SAUCER 5-6" dia	IRON	1844-1870	1868	2.15			2.15
3Cn	21	WW ?	SAUCER 6" DIA, MM	MOLDED	1867-1870	1868	2.15			2.15
3Cn	44	WW ?	SAUCER 6" DIA, MM	TP	1867-1870	1848	2.89			2.89
3Cn	46	WW ?	SAUCER 6" DIA, MM	TP	1867-1870	1848	2.89			2.89
3Cn	32	WW ?	T-MUG 3" DIA, HANDLE	MOLDED	1867-1870	1871	2.45			2.45
3Cn	26	WW ?	TEA CUP	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	27	WW ?	TEA CUP	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	28	WW ?	TEA CUP	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	29	WW ?	TEA CUP	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	5	IRON	TEA CUP 3 1/2"	IRONflt	1844-1870	1846	2.31			2.31
3Cn	12	WW	TEA CUP 3 1/2"	PAINT	1844-1870	1869	1.17			1.17
3Cn	15	WW	TEA CUP 3 1/2"	PAINT	1844-1870	1869	1.17			1.17
3Cn	23	WW ?	TEA CUP 3 1/2" DIA	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	30	WW ?	TEA CUP 3 1/2" DIA	MOLDED	1867-1870	1868	2.15			2.15
3Cn	49	WW ?	TEA CUP 3 1/2", MM	TP	1867-1870	1848	2.89			2.89
3Cn	53	WW ?	TEA CUP 3 1/2", MM	TP	1867-1870	1848	2.89			2.89
3Cn	24	WW ?	TEA CUP 4" DIA	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	25	WW ?	TEA CUP 4" DIA	FLT-MLD	1867-1870	1846	2.31			2.31
3Cn	31	WW ?	TEA CUP 4" DIA,HANDL	MOLDED	1867-1870	1871	2.45			2.45
3Cn	50	WW ?	TEA CUP, MM	TP	1867-1870	1848	2.89			2.89
3Cn	51	WW ?	TEA CUP, MM	TP	1867-1870	1848	2.89			2.89
3Cn	52	WW ?	TEA CUP, MM	TP	1867-1870	1848	2.89			2.89
						NO	54	10	18	26
						TOTAL	113.62	19.42	34.59	59.61
						AVE	2.10	1.94	1.92	2.29
							TOTAL	BOWLS	PLATES	TEAS

Vessels 1-15 from building cellar (Martin 1985), Vessels 16-58 from privy (Stone 1978)

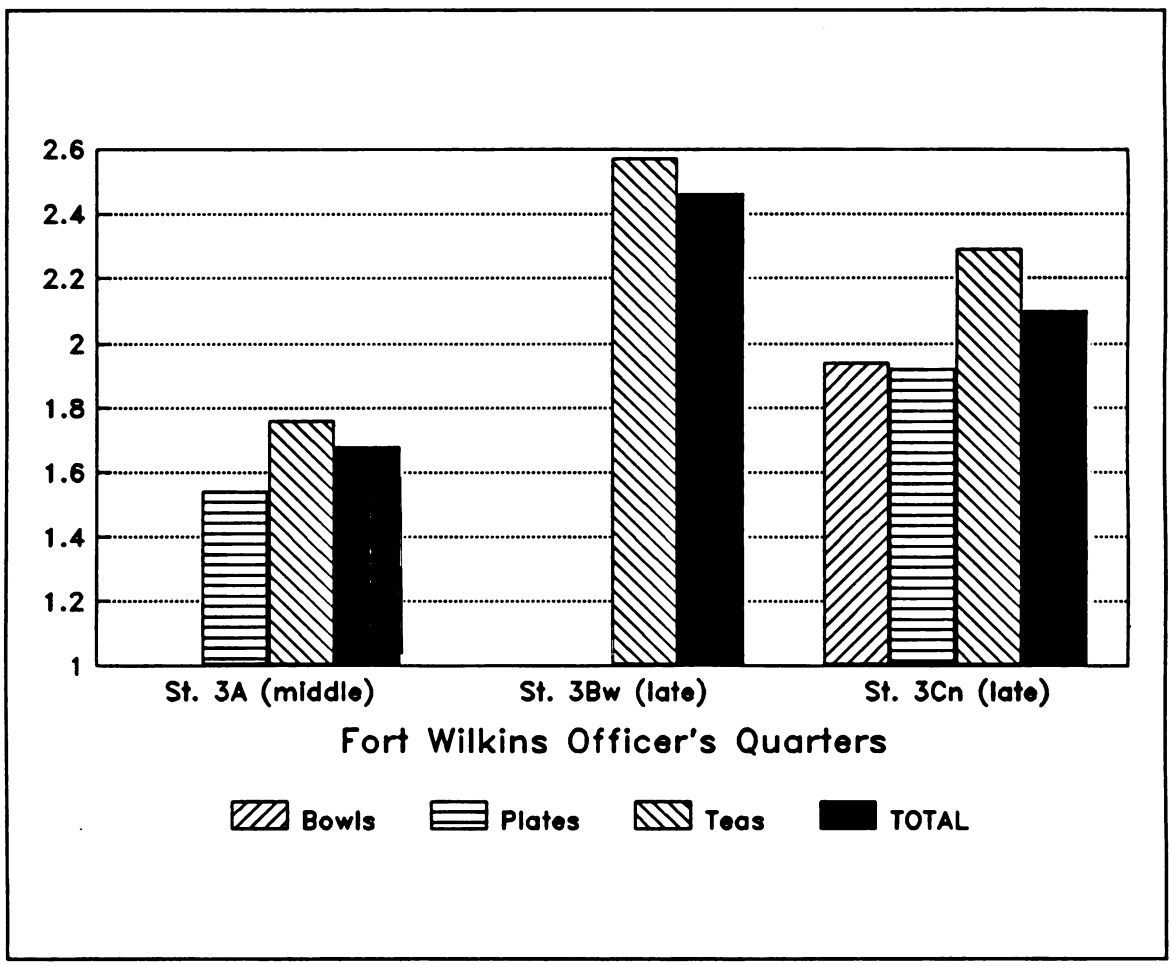


Figure 3.2 Ceramic Values for Ft. Wilkins Buildings

herein) occupation also dates from the 1820s to the 1840s. The ceramic vessel forms and CC index values (cf. Miller 1991) from the blockhouse building are given in Table 3.2, and the values illustrated in Figure 3.1. The blockhouse from Fort Brady had very cheap bowls, relatively expensive plates, and high-priced teawares compared to the public buildings at Fort Gratiot, which were parts of a hospital.

Fort Wilkins

Fort Wilkins at Copper Harbor, Michigan on Lake Superior was occupied from 1844 to 1846 and again from 1867 to 1870 (Martin 1985, 1986; Stone 1978). During his excavations at Fort Wilkins in 1977, Stone (1978) investigated and reported on remnants of three privies associated with officer's quarters. Other features that he investigated including the foundation of one of the laundresses quarters, an ice house, and another privy.

Stone numbered all of the structures at Fort Wilkins. He designated the officer's buildings as Structures 3A, 3B, and 3C. Each officer's building had two or three quarters, which Stone designated by direction. For example, Structure 3Bw identifies the west living quarters of Structure 3B. Stone recovered relatively large tableware ceramic assemblages from the officer's quarters privies. His provenience inventories describe these ceramics by vessel (Stone 1978:Appendixes A-C). Using these data, the CC index

values (cf. Miller 1991) were calculated for each of the privies (Tables 3.3 - 3.5 and Figure 3.2).

Martin (1985) obtained officer's quarters artifact assemblages from the cellars of Structures 3Bw, 3Cn, and 3Cs. However, most of the ceramics from Structures 3Bw and 3Cs post-date the fort's occupation. Structure 3Cn had the smallest amount of post-military disturbance. In this structure's cellar the post-fort artifacts lay on the surface, while the fort occupation material was in subsurface deposits. Only 5 of the tableware sherds came from the surface deposit (Martin 1985), these vessels were deleted. The ceramics from the Structure 3Cn cellar were added to the CC index value table from the Structure 3Cn privy (Table 3.5 and Figure 3.2).

Martin later investigated the Fort Wilkins guardhouse. It had a ceramic assemblage of only seven vessels, nearly all of which post-date the military occupation (Martin 1986, and personal communication May 1991).

REGIONAL CERAMIC COMPARISONS

The regional comparative ceramic assemblages from Forts Brady, Gratiot, and Wilkins consist of 17 building contexts. There are two early, five middle, and five late period officers' quarters contexts, one middle and one late period enlisted men's quarters, two early period hospital contexts,

and one middle period blockhouse. Tables 2.14 - 2.15 present the ceramic values for all early period regional fort building contexts. Tables 3.6 - 3.7 present the ceramic values for all regional fort building contexts for the middle and late periods. Table 3.8 gives the vessel form averages for each building category grouped by fort for each time period. Table 3.9 provides the total value of tableware ceramics for each building category for each fort by time period.

Where figures from Chapter 2 (see Figures 2.6 and 2.17) were not changed due to the absence of new data, they are not repeated below. Figures 3.3 - 3.6 illustrate the relationships between the ceramic index economic values by vessel form and building categories by time period. Figure 3.7 shows the total ceramic index values by building category and by time period. Figure 3.8 provides data concerning the frequency of occurrence of vessel forms for each officer's quarters. Figure 3.9 does the same, except the results are grouped by time period. Figure 3.10 depicts the frequency of vessel forms grouped by time for each building category.

Public Buildings

Regional public buildings comprise two hospital building contexts (Structures 1De and 1Dw) from the early period at Fort Gratiot and a middle period blockhouse

Table 3.6 Ceramic Values for 1830-1845 Regional Buildings

	OFFICER'S QUARTERS			ENLISTED QUARTERS			PUBLIC BUILDINGS		
	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS
FtG-2Aw				16	15	12			
				33.91	30.35	27.41			
				2.12	2.02	2.28			
FtG-2Bn	7	10	11						
	11.88	24.06	25.94						
	1.70	2.41	2.36						
FtG-2Bs	1	2	5						
	2.80	4.45	10.50						
	2.80	2.23	2.10						
FtG-2Cn	4	3	3						
	9.17	5.29	6.20						
	2.29	1.76	2.07						
FtB-2A	5	12	8						
	11.00	34.67	19.61						
	2.20	2.89	2.45						
FtB-2Bh							3	6	5
							3.60	15.90	14.02
							1.20	2.65	2.80
FtW-3A	0	6	11						
	.00	9.21	19.33						
	.00	1.54	1.76						
VESSEL FORM TOTALS									
No.	17	33	38	16	15	12	3	6	5
Sum	34.85	77.68	81.58	33.91	30.35	27.41	3.60	15.90	14.02
Ave.	2.05	2.35	2.15	2.12	2.02	2.28	1.20	2.65	2.80

Table 3.7 Ceramic Values for 1860-1880 Regional Buildings

	OFFICER'S QUARTERS			ENLISTED QUARTERS			PUBLIC BUILDINGS		
	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS
FtG-2Aw				1	4	1			
				2.80	7.87	1.50			
				2.80	1.97	1.50			
FtG-2Bn	0	1	1						
	.00	2.00	2.45						
	.00	2.00	2.45						
FtG-2Bs	5	1	3						
	12.48	2.00	7.42						
	2.50	2.00	2.47						
FtG-2Ds	1	3	7						
	1.14	5.70	15.89						
	1.14	1.90	2.27						
FtW-3Bw	2	2	19						
	4.58	3.18	48.74						
	2.29	1.59	2.57						
FtW-3Cn	10	18	26						
	19.42	34.59	59.61						
	2.10	1.92	2.29						
VESSEL FORM TOTALS									
No.	18	25	56	1	4	1	0	0	0
Sum	37.62	47.47	134.11	2.80	7.87	1.50	.00	.00	.00
Ave.	2.09	1.90	2.39	2.80	1.97	1.50	.00	.00	.00

Table 3.8 Ceramic Regional Totals by Fort and Period

	OFFICER'S QUARTERS			ENLISTED QUARTERS			PUBLIC BUILDINGS		
	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS	BOWLS	PLATES	TEAS
FEATURES SEALED 1814 to 1830									
Gratiot	9	32	33				5	9	14
	20.60	63.06	68.00				9.80	11.00	23.00
	2.29	1.97	2.06				1.96	1.22	1.64
FEATURES SEALED 1830 to 1845									
Gratiot	12	15	19	16	15	12			
	23.85	33.80	42.64	33.91	30.35	27.41			
	1.99	2.25	2.24	2.12	2.02	2.28			
Brady	5	12	8				3	6	5
	11.00	34.67	19.61				3.60	15.90	14.02
	2.20	2.89	2.45				1.20	2.65	2.80
Wilkins	0	6.00	11.00						
	.00	9.21	19.33						
	.00	1.54	1.76						
FEATURES SEALED 1860 to 1880									
Gratiot	6	5	11	1	4	1			
	13.62	9.70	25.76	2.80	7.87	1.50			
	2.27	1.94	2.34	2.80	1.97	1.50			
Wilkins	12	20	45						
	24.00	37.77	108.35						
	2.00	1.89	2.41						
WHOLE REGION COMPOSITE VESSEL FORM TOTALS BY BUILDING CATEGORY									
No.	44	90	127	17	19	13	8	15	19
Sum	93.07	188.21	283.69	36.71	38.22	28.91	13.40	26.47	37.02
Ave.	2.12	2.09	2.23	2.16	2.01	2.22	1.68	1.76	1.95

Table 3.9 Ceramic Regional Totals by Building and Period

	OFFICER	ENLISTED	PUBLIC
FEATURES SEALED 1814-1830			
Gratiot	74		28
	151.66		43.80
	2.05		1.56
FEATURES SEALED 1830-1845			
Wilkins	17		
	28.54		
	1.68		
Gratiot	46	43	
	100.29	91.67	
	2.18	2.13	
Brady	25		15
	65.28		34.52
	2.61		2.30
FEATURES SEALED 1860-1880			
Wilkins	77		
	170.12		
	2.21		
Gratiot	22	6	
	49.08	12.17	
	2.23	2.03	
REGIONAL BUILDING CATEGORY COMPOSITE TOTALS			
No.	261	49	43
Sum	564.97	103.84	77.89
Ave.	2.16	2.12	1.81

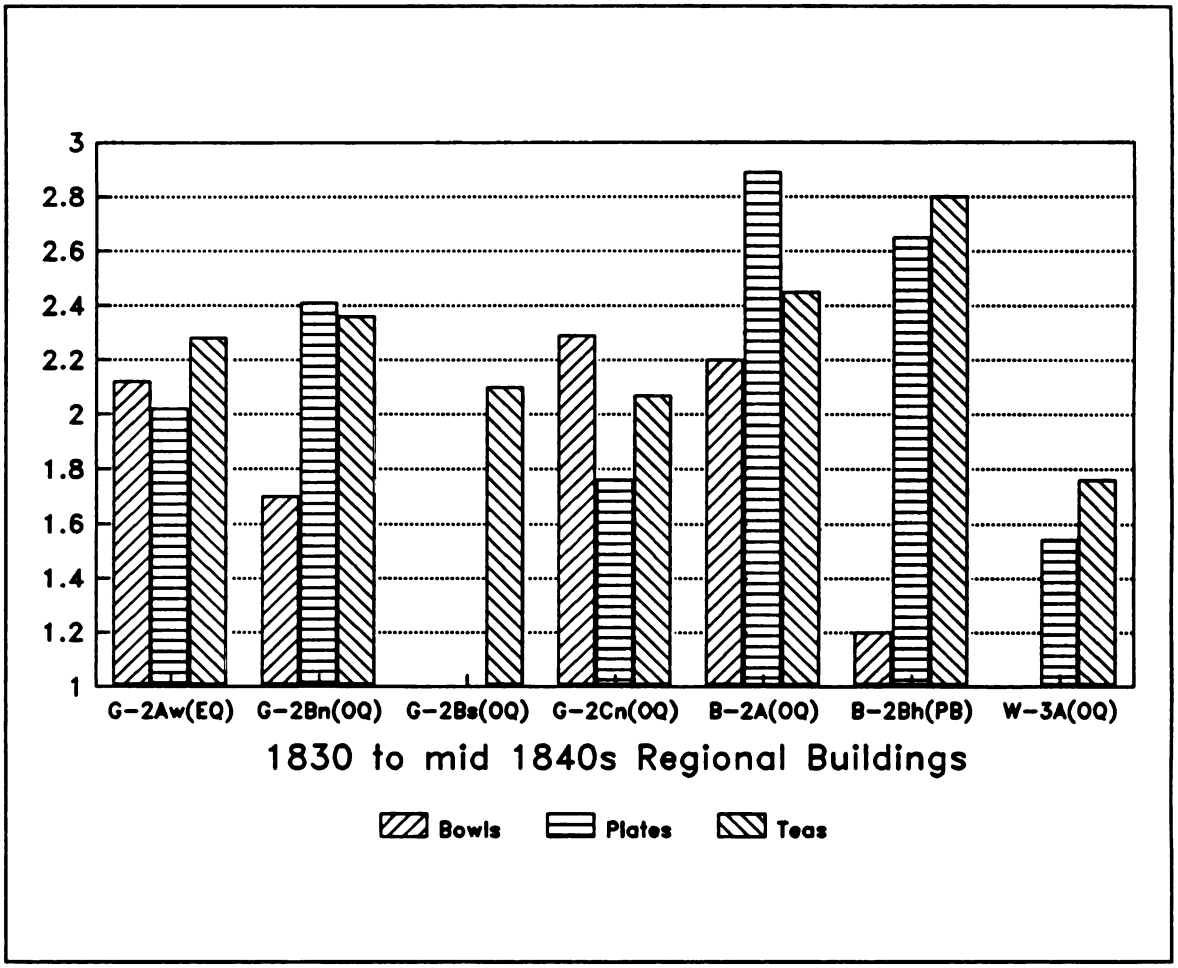


Figure 3.3 Ceramic Values for Regional 1830-1845 Buildings

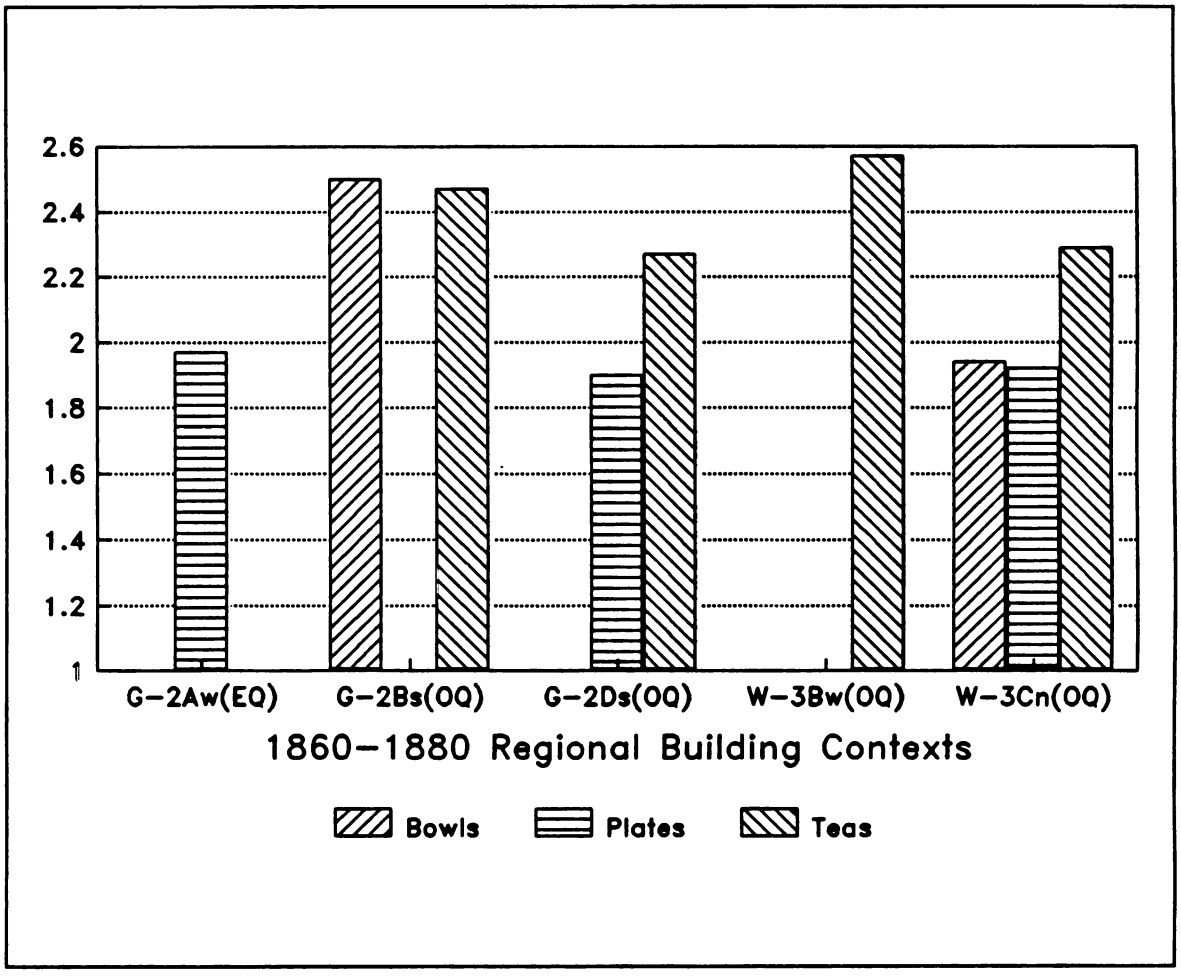


Figure 3.4 Ceramic Values for Regional 1860-1880 Buildings

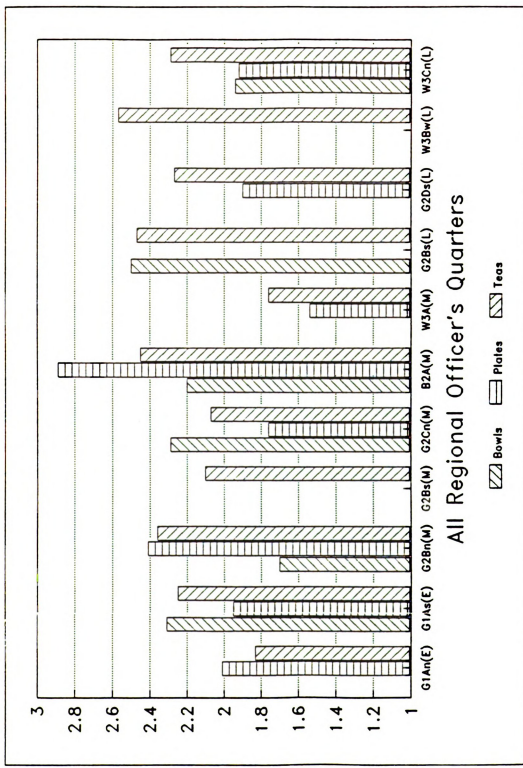


Figure 3.5 Ceramic Values for All Regional Officer's Quarters

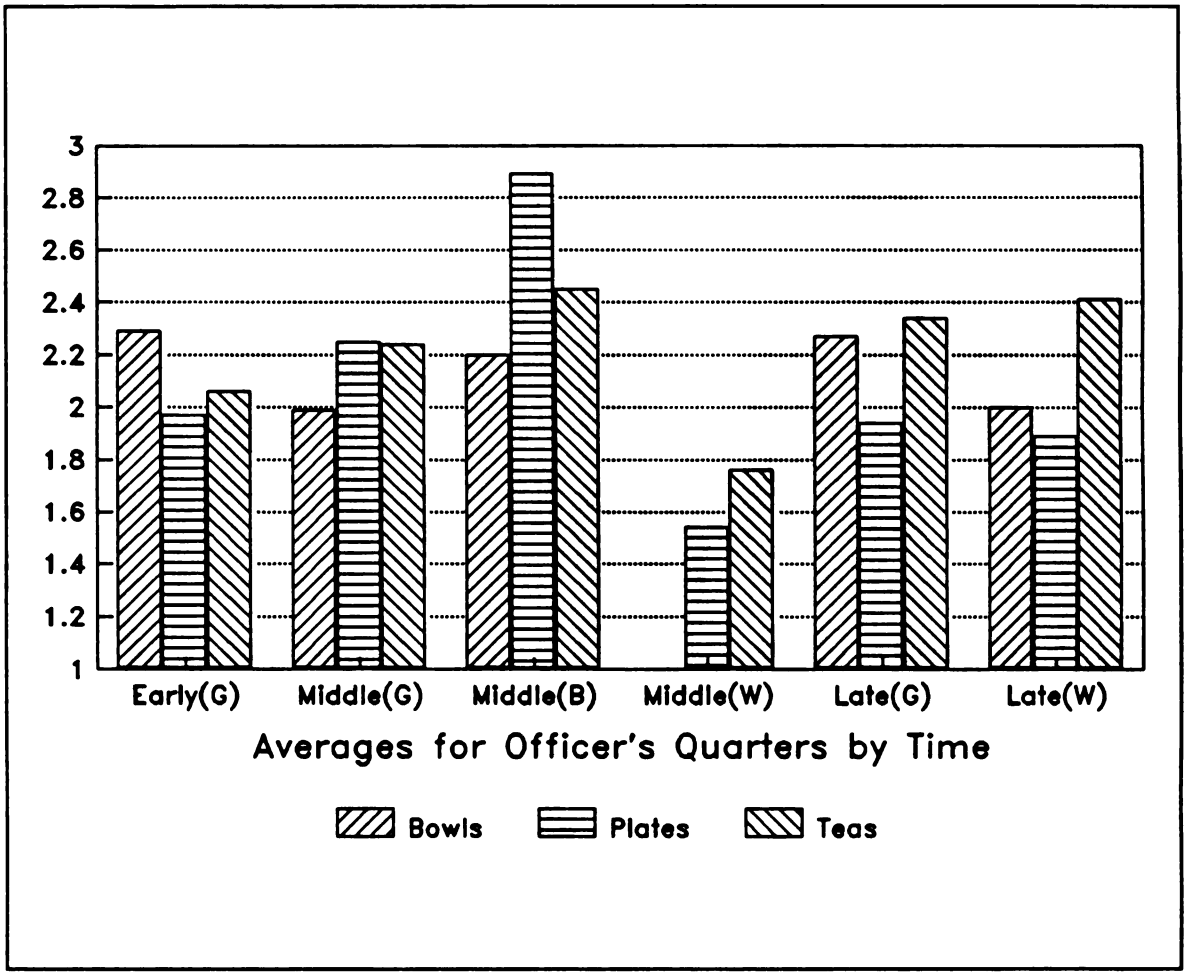


Figure 3.6 Average Values for Regional Officer's Quarters

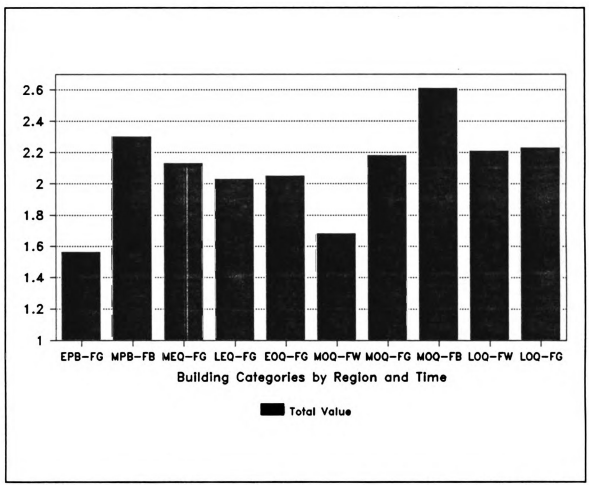


Figure 3.7 Totals for Regional Building Categories

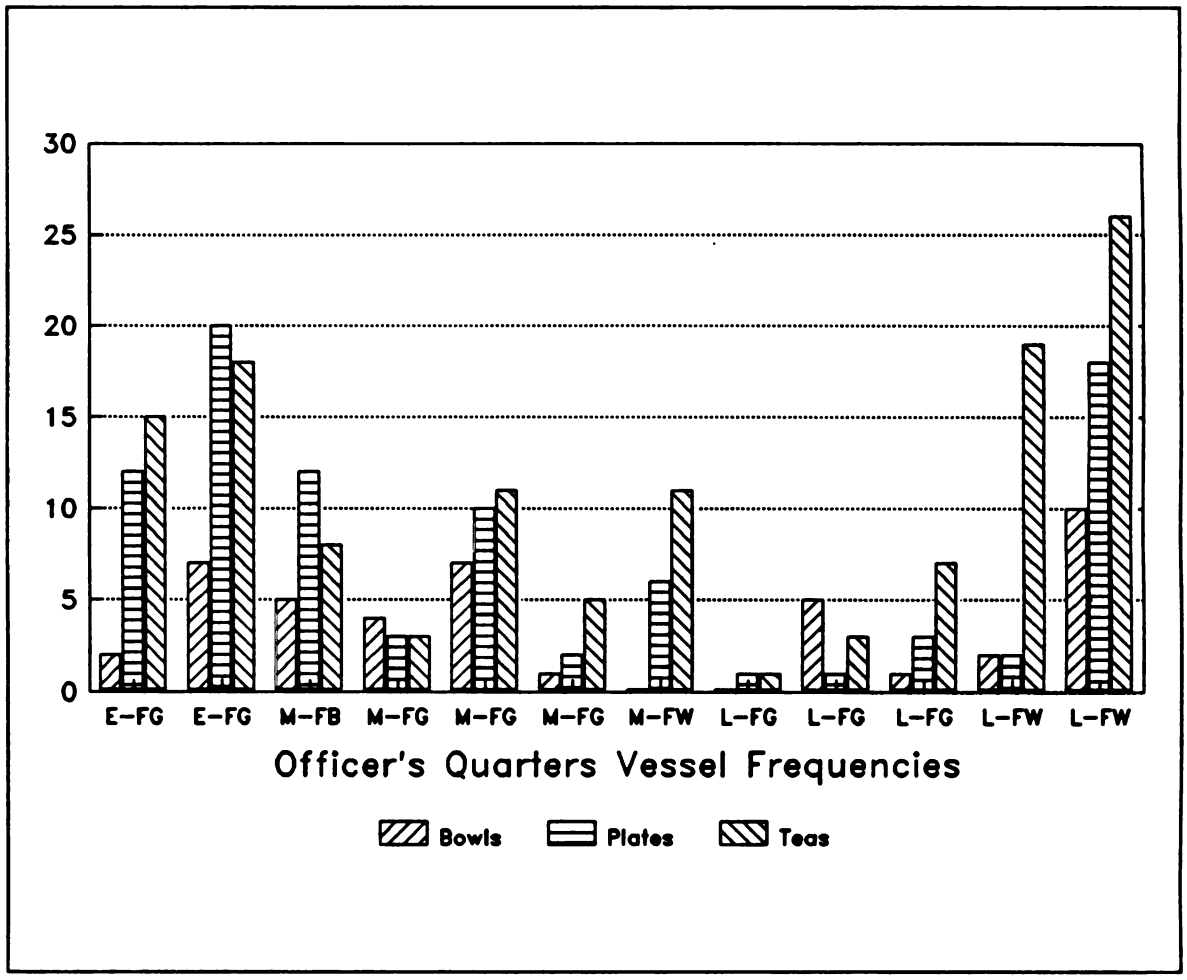


Figure 3.8 Frequency of Vessel Forms for Officer's Quarters

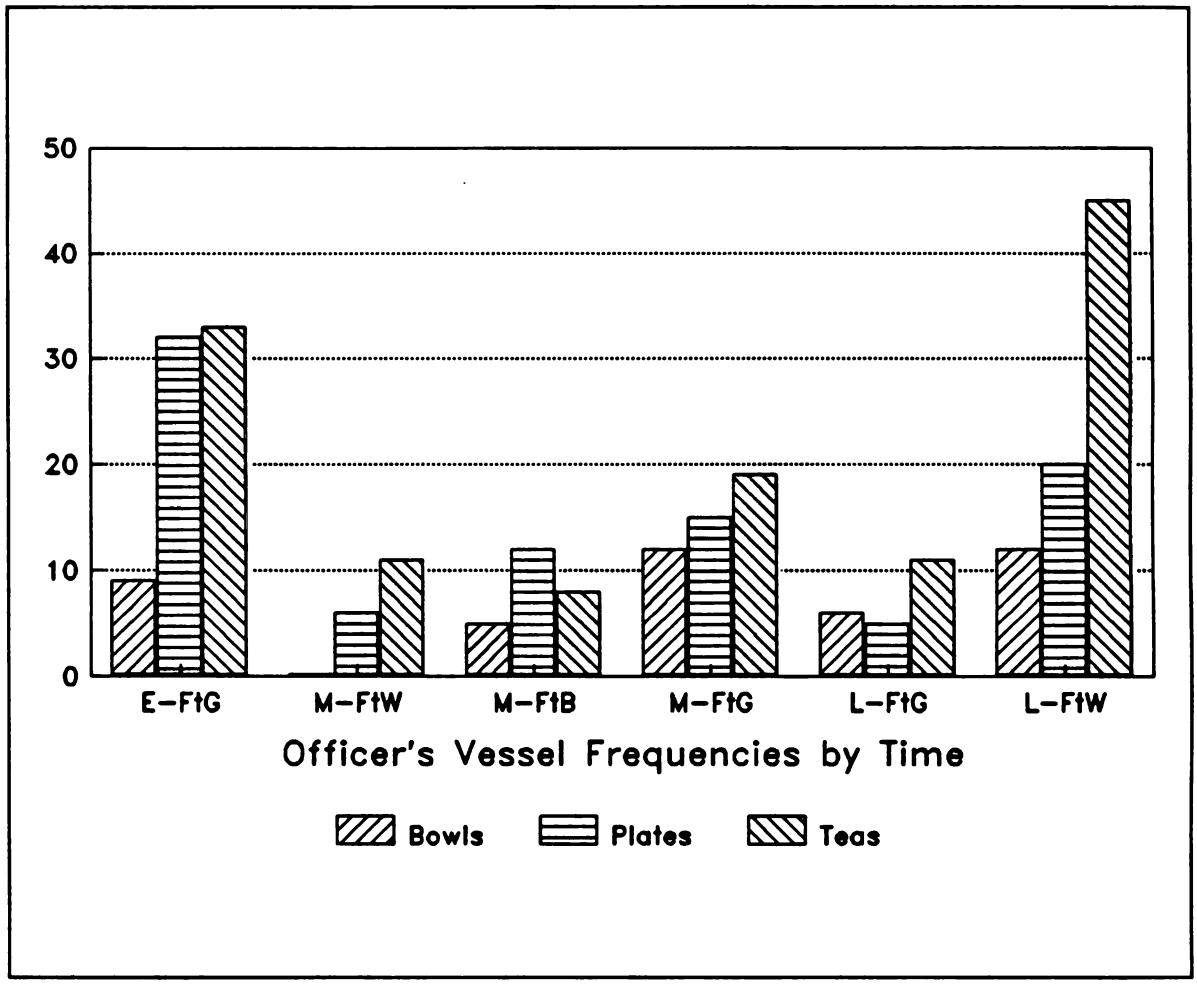


Figure 3.9 Frequency of Vessel Forms for Officers by Time

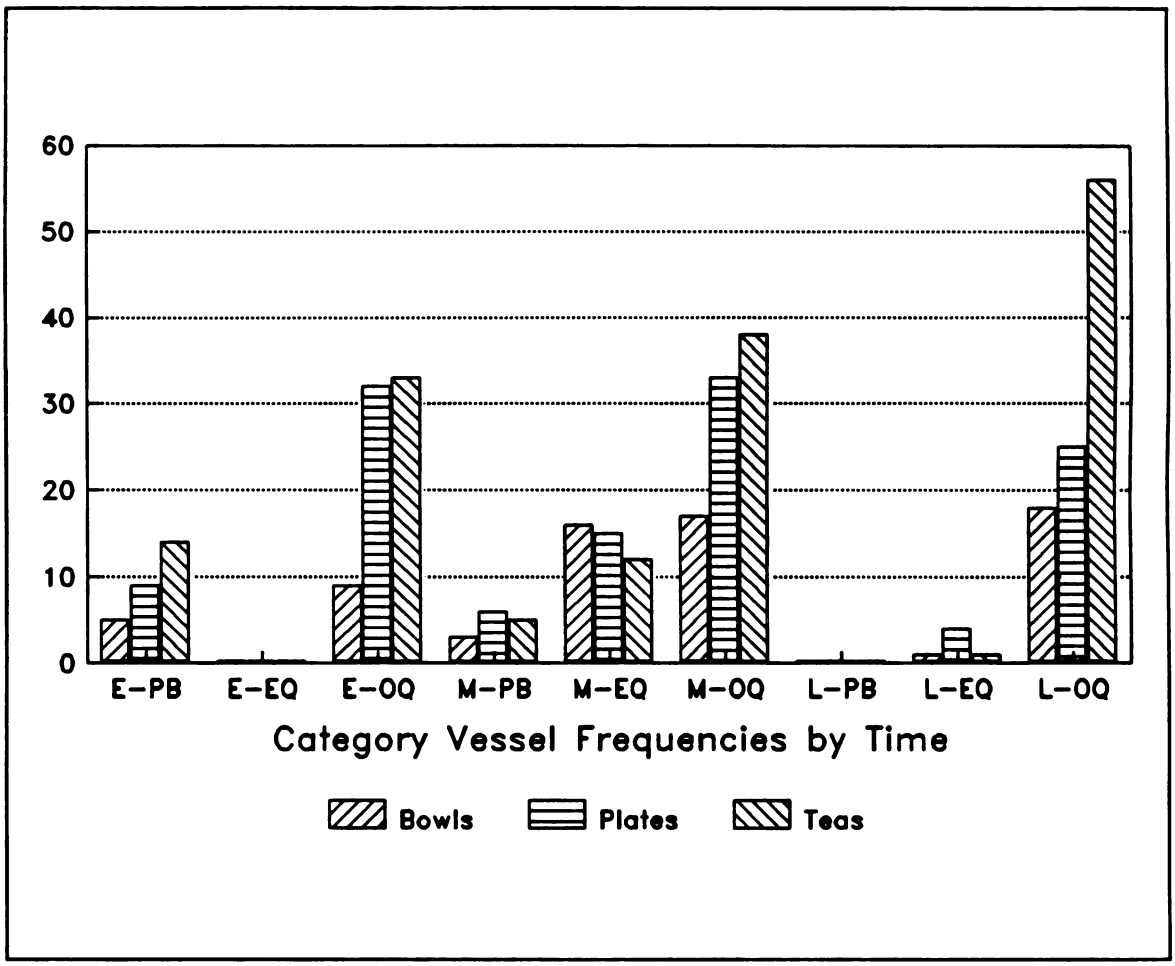


Figure 3.10 Frequency of Vessel Forms by Building Category

(Structure 2Bh) from Fort Brady. Below is a brief summary for the Fort Gratiot hospital contexts followed by a discussion of similarities and differences with the blockhouse.

Surprisingly, bowls were the highest priced category present in the early Fort Gratiot hospital. Similarly, the early Fort Gratiot officer's quarters had comparatively expensive bowls (Figure 2.17). This pattern of high priced bowls runs directly counter to the prevalent findings of most other researchers (cf. Miller 1991:5, citing the results of an analysis of 45 sites by Adams and Boling 1989). To me it seems most likely that the high priced bowls correlate with groups of unmarried individuals eating together. Individuals that must supply their own accoutrements in a mess group probably choose tableware ceramics with as unique of decorative pattern as they could afford, in order to distinguish their ceramics from that of their messmates. Importantly for this study, the general rule is the more unique the decoration, the more expensive the ceramics.

Bowls were the most infrequent vessel form category in the early period contexts (Tables 2.14 and 2.15). This may appear to be skewed by the lack of an early period enlisted men's sample. However, the relative paucity of bowls still holds true for all but two of the middle and late period regional non-enlisted men's occupation contexts (cf. Tables

3.6 and 3.7; Figures 3.8 and 3.10), and these two contexts had relatively small sample sizes.

Not unexpectedly, the early period hospital building teawares were more expensive than the plates (Figure 2.6). At Fort Gratiot the extreme cheapness of the whole hospital ceramic assemblage distinguishes it from all other building contexts (Tables 2.14 - 2.16). While plates were the cheapest vessel form category in many other contexts, generally the difference was much smaller (Tables 2.17 and 3.6 - 3.7). The hospital was the cheapest overall building category (Figure 3.7). The relative proportions of vessels by form categories at the early Fort Gratiot hospital mimicked that found at many of the officers quarters, with teas most frequent and bowls least frequent (Figures 3.8 - 3.10).

The middle period Fort Brady blockhouse also had a low frequency of bowls (Table 3.6). In contrast to the early period Fort Gratiot hospital contexts (Tables 2.14 - 2.15), the blockhouse bowls were quite cheap. However, the only more expensive plates from any building context in the entire region were from the middle period officer's quarters at Fort Brady (Table 3.6). The blockhouse teawares were the most costly for any provenience in the region (Tables 2.14, 3.6, 3.7). Oddly enough, the only building context with a congruent distribution of vessel forms was an officer's quarters also from the middle period at Fort Brady (Figure 3.10).

Tables 2.14 and 3.6 show just how different the hospital and blockhouse ceramic assemblages are from each other. They are disparate in nearly every way, the only characteristic they share is the relative infrequence of bowls. The concept of a public building category apparently is invalid; it requires further subdivision by specific function. However, sample sizes will be a problem for anyone attempting to do analysis based on more specific categories, as there usually was only one building of each of these more specific categories at each fort site. Also public buildings seem to be the category suffering the most frequent changes in function through time at these sites. Therefore, the assemblages are much more likely to be a problem to analyze due to mixing.

Enlisted Men's Quarters

The only two regional fort enlisted men's living quarters contexts were from Fort Gratiot. These were discussed in Chapter 2 herein; a brief summary follows. There was no sample from the early period. The middle period Fort Gratiot (Structure 2Aw) enlisted men's quarters had a unique relative rank-order of plates, bowls, and teawares for lowest-to-highest economic value respectively (Table 3.6). It also had relatively equal numbers for each of the three vessel forms. Bowls were the most common vessel form (Table 3.6). This contradiction to the pattern

of infrequency of bowls at all other building categories with large sample sizes appears to be the most significant characteristic for distinguishing enlisted men's quarters (Tables 2.14, 3.6, 3.7 and Figures 3.8 and 3.10). The late period Fort Gratiot (Structure 2Aw) ceramic sample (Table 3.7) is small, especially for bowls and teaware. The late period plates, while adequate in number, provided a nearly identical index value as those from the middle period enlisted men's quarters contexts (Tables 3.6 - 3.7).

Officer's Quarters

The regional basis adds two new middle and two new late period officer's quarters to the seven usable Fort Gratiot samples. The additional middle period samples come from Fort Brady and Fort Wilkins (Tables 3.1 and 3.3), while both of the new late period samples were from Fort Wilkins (Tables 3.4 - 3.5).

Tables 2.14 and 3.6 - 3.7 and Figures 3.5 - 3.6 show notable variation in the relative proportions of the three vessel form categories among the individual officer's quarters. Figure 3.5 in particular exhibits a large amount of variability with no clear trend among any vessel form category. Indeed, even Figure 3.6, which shows averages for each fort, rather than individual building contexts, is still predominately characterized by a large amount of variability, not only among vessel forms but also over time.

In Chapter 2 a slight trend towards an increase in the total value of tableware ceramics over time was seen among the Fort Gratiot officer's quarters in Figure 2.9. However, the addition of the higher priced ceramics from Fort Brady and the relatively cheaper late ceramics from Fort Wilkins destroys this generalization (Figures 3.7 - 3.8). One pattern that does hold for officer's quarters, when large samples are present, is the relative order of the frequency of distribution of vessel forms, with teas most common and bowls least common (Figures 3.8 - 3.10). However, this distribution was not particular to officer's quarters.

I think that all of the ceramic value figures for the regional forts demonstrate the existence of a far greater amount of variability than assumed by most previous users of Miller's (1980, 1991) technique, excepting Adams and Boling 1989) whose analysis also showed a similar degree of variability. However, the situation concerning the variation in officers' quarters ceramic assemblages in this study clearly can not be just dismissed due to sampling or other procedural problems.

Concerning this economic variation among officers quarters, one factor was that at small posts like Forts Gratiot and Wilkins, there were fewer men and consequently fewer officers. Thus, there were fewer strata of hierarchy among the officers, and these were at lower levels of rank overall. During Heintzelman's (1828-1831) tour at Fort Gratiot there were usually two or three Lieutenants, one

Captain, and one Major, who served as post commander (also cf. Post Returns 1815-1879). At larger posts like Forts Brady and Mackinac, there were more levels present in the hierarchy of officers.

Furthermore, while the differences in pay between the enlisted men and the lieutenants were substantial enough, the married enlisted men's wives often worked at or near the forts (cf. Heintzelman 1828-1831), which would have made their household income nearly equivalent to that of unmarried lieutenants. Lieutenants were often in their early to middle twenties, and many were not yet married. Promotion in the military is at least partially age graded (based upon length of service), in addition to merit. Thus the older officers were more likely to be married, and they often had their families live with them in their living quarters on the post grounds.

One other item of undeniable importance to this variability was the social and economic background of the officer's themselves. Individuals such as Samuel Heintzelman (1828-1831) came from lower middle class backgrounds, while others such as Charles Gratiot, Jr. came from much more influential and well-to-do circumstances (cf. Crackel 1987:173-179; Mitts 1968:48-64; and Reynolds 1887:304-310, 419-423). The lack of a clear single distinguishing characteristic in either the frequency of vessel forms or value of the ceramics among the officers' quarters is understandable in light of their concurrent

in-group hierarchy in grade and pay and their more variable social backgrounds.

DISCUSSION OF VARIABILITY AND SITE SAMPLING

In my discussion of enlisted men and officers in the previous chapter, the relatively smaller range of variation in the middle period total ceramic values was of interest, but it could not be determined if this was due to a statistical sampling error. However, the pattern was not similar during the middle period at Forts Brady and Wilkins (Tables 3.6 - 3.7). Since it was not widespread regionally, it probably reflected fewer men at Fort Gratiot, and thus less economic variation and a flatter, less stratified social hierarchy during this period, as discussed in Chapter 2.

The officer's quarters did not necessarily have higher economic values for each vessel form category at any given time. When the living quarters were averaged and clustered by time period, the values for the vessel forms exhibited are still mixed (Tables 3.8 - 3.9; Figures 3.6 - 3.7). For the vessel form categories when compared for the same time periods (Tables 3.6 - 3.8), the values for the enlisted men were not consistently lower for any vessel category in the cases where the samples are large enough to compare. For the middle period (Figures 2.9 and 3.7), the enlisted men's

quarters actually had a higher total economic value than two of the five officer's quarters.

A review of the number of enlisted men's quarters versus officer's quarters among the regional building proveniences assembled for this study brings sharply to mind the common charge that historic documents are biased in that they predominately view the scene from the point of view of the officers. At first sight with a twelve to two proportion of officers' to enlisted mens' contexts, this study seems to have repeated the same problem. However, archeologists must of necessity deal with sites in terms of the actual counts and distributions of buildings that existed there.

Maps from nineteenth century American forts, as well as from other more spatially or temporally distant categories of military sites, show that the number of officers' quarters at military sites outnumbers enlisted mens' quarters often by three, four, or five to one. While the company quarters building (Structure 2A) housing the enlisted men at Fort Gratiot was built for about 50 individuals (two companies during Heintzelman's tour), the four coeval officer's quarters buildings generally housed only one or two officers each (cf. Heintzelman 1828-1831).

This difference in total number of buildings used for a particular function goes far to explain the proportions of them in archeological samples. However, archeologists also must contend with other sampling problems, such as policies

restricting fieldwork on the part of agencies or landowners, multiple agencies or landowners with control over access to a single site, prior destruction of parts of sites, adaptive reuse or salvaging of buildings, better preservation of some structures and their remains due to larger size or better construction, and commonly being in a position where the interpretative or scheduling priorities are established or heavily influenced by others.

These problems do not make local or regional comparisons impossible for archeologists to perform. It just makes it much more difficult to acquire access to the kinds of comparative contexts one needs in order to have adequate numbers and sizes of samples to study any particular problem. This is especially true for social, more than technological, problems.

CHAPTER 4 -- SUMMARY AND CONCLUSIONS

This study investigated the economic relationships between the social ranks of military personnel stationed at American forts in the upper Great Lakes in the nineteenth century. One site -- Fort Gratiot -- was treated in a regional context. Fort Gratiot and the rest of the American upper Great Lakes forts existed near the periphery of a centrally and hierarchically controlled supply network in a socially and economically remote hinterland along a political border.

The goal of the investigation was to examine and compare economic differentiation and variation between ranked military personnel, specifically investigating socio-economic patterning synchronically in military social hierarchy, diachronic changes in socio-economic patterning, and socio-economic patterning and variation regionally. The results of the ceramic economic analysis were interpreted against a backdrop of historical, spatial, social, and political information. The highly varied economic patterns discovered in the analysis reflected adaptation to local circumstances, such as living in small social groups, the sites' isolation from the social and economic mainstream of

the developing nation, and the presence of the political border separating the United States and Canada.

Although the sites in this study are quite recent in comparison to the specific military cases mentioned in the review of literature concerning military on North American colonial frontiers, one of the same categories of data from Fort Gratiot provided clear evidence of a temporary frontier transition. The analyses of floral and faunal dietary materials showed a higher frequency of use of local and wild resources during the early occupation of Fort Gratiot than in the later occupations.

Archeologically recovered ceramics were chosen as my primary source of economic data because of well known biases in documentation that relate to the social class and economic status of people who keep records. Archeological data can, optimally, provide more objective evidence of the day to day activities of individuals from all categories of people at sites with residentially segregated groups. Enlisted men and officers alike left artifactual evidence about their diets and personal activities.

The structural proveniences necessary for the analysis of the Fort Gratiot materials were established from historical maps and journals. These were discussed in Chapter 2 (also see Esarey 1988, 1989, 1991). After reading the summaries concerning the other regional nineteenth century American forts in Chapter 3 and Appendix A, one can appreciate what a unique data base the Fort Gratiot

excavations provided for this type of analysis. The regional comparative ceramic assemblages from Forts Brady, Gratiot, and Wilkins consisted of 17 building contexts. There were two early period hospital contexts, and one middle period blockhouse, one middle and one late period enlisted men's quarters, two early, five middle, and five late period officers' quarters.

The analysis was conducted utilizing tableware ceramics as primary indicator of economic status. Other artifact categories were not useful or available for economic analysis due to sampling or analytical problems, such as the absence of price data. Historic archeologists have established that ceramics can demonstrate quantifiable economic differences between social categories.

Ceramic artifact samples were organized by structural proveniences to assure comparable data. Criteria such as the functions and dates of deposition for each structure had to be known, and there had to be adequate sample sizes of ceramic vessel categories. The means of calculating the economic index values (cf. Miller 1991) for each ceramic vessel were related in Chapter 2. The patterns in the distribution of the values were compared by building, ceramic vessel form, and time period. This comparison demonstrated differences in distribution in time, space, and by social group. These differences made it possible to interpret time trends, as well as local and regional variability in the assemblage.

Regional public buildings comprise two hospital building contexts from the early period at Fort Gratiot and a middle period blockhouse from Fort Brady. Surprisingly, bowls were the highest priced category present in the combined hospital assemblage. Similarly, several Fort Gratiot officer's quarters had comparatively expensive bowls. The significance of this will be discussed later in the section on officer's quarters.

Not unexpectedly, the early period hospital building teawares were more expensive than the plates. At Fort Gratiot the extreme cheapness of the plates was the only characteristic clearly distinguishing the hospital from other building contexts. Hospital contexts have been shown by other archeologists to have relatively cheap ceramic assemblages (cf. Coleman 1990:258-260; Lees and Kimery-Lees 1984).

Similar to the Fort Gratiot hospital, the middle period Fort Brady blockhouse also had a low frequency of bowls. However, in contrast to the early period Fort Gratiot hospital contexts, the bowls were quite cheap. The blockhouse teawares were the most costly for any provenience among the fort sites compared. The only more expensive plates from any building context in the entire region were those from the one excavated officer's quarters at Fort Brady. In order to account for the expensive blockhouse teawares, I believe that there must have been an additional use for this building, perhaps a formal meeting location.

The hospital and blockhouse ceramics were disparate in nearly every way. The only characteristic they shared was that bowls were relatively infrequent. A general public building category apparently is not a valid analytical unit. Thus, if adequate sample sizes can be obtained, public building categories should be subdivided for analysis by specific function. However, as seen in the documentation concerning Fort Mackinac in Appendix A, public buildings suffer frequent changes in function through time, and therefore often have mixed assemblages.

The only two regional fort enlisted men's living quarters contexts were from the middle and late periods at Fort Gratiot. They had relatively equal frequencies for each of the three vessel form categories. Bowls were the most common vessel form by a small margin. This contrast to the pattern of paucity of bowls among the region-wide public buildings and officer's quarters was the most significant characteristic for distinguishing enlisted men's quarters. This infrequence of bowls probably relates to these buildings being used by fewer number of personnel, but perhaps also could relate to the types of food or style of preparation of foods consumed by the occupants.

The middle period enlisted men's quarters had a relative rank-order of teawares, bowls, and plates for highest-to-lowest economic values, respectively. The late period Fort Gratiot enlisted men's ceramic sample was only large enough to use for plates. This sample provided a

nearly identical total index value to that obtained from the middle period enlisted men's quarters.

There were twelve regional officer's quarters samples, with one derived from Fort Brady and three from Fort Wilkins. They exhibited a large range of variation in the relative proportions of the three vessel form categories among the individual building contexts. There was no clear economic trend among any vessel form category or by building totals. A slight trend towards an increase in the total value of tableware ceramics over time at the Fort Gratiot officer's quarters was not corroborated at the other regional officer's quarters sites.

In region-wide non-enlisted men's building contexts, bowls were the most infrequent vessel form category for all three periods. However, bowls were the most costly vessel form category at several Fort Gratiot building contexts, including four of the officer's quarters. According to Miller (1991:5), most other researchers found that bowls were usually the least expensive vessel forms.

Miller's (1991:5) source for this generalization concerning the price of bowls was Adams and Boling (1989), who compared a sample of 45 late eighteenth to middle nineteenth century sites from the southern and eastern United States. However, their Table 7 (Adams and Boling 1989:83-84) contains six sites (13.3%) where bowls were the most costly vessel form. Adams and Boling (1989:82, 86) noted that teawares and bowls had an inverse price

relationship at many of the sites in their comparison. Furthermore, this relationship cross-cut social group distinctions, such as between southern planters, slaves, and Mid-Atlantic farmers.

Adams and Boling's six sites with more expensive bowls were a small planter's kitchen from Georgia (total value = 2.03), two farms from New Jersey (total values = 1.86 and 2.14), and three slave cabins (total values = 1.57, 1.84, and 2.02) from the Kings Bay Plantation in Georgia, where a task, rather than gang, labor system was used. At task labor plantations slaves purchased their own tablewares and other personal use items, rather than having these kinds of things provided for them (Adams and Boling 1989:94). All six of the sites with the expensive bowls fell in the upper and middle economic groups in their analysis. Adams and Boling's (1989:90) upper economic group had total index values above 2.0, while the lower group had total values of less than 1.5. These economic groupings are not to be confused or simplistically correlated with upper-middle-lower class social statuses.

The Fort Gratiot hospital (St. 1De) and four of the seven usable officer's quarters building contexts (St. 1An, 1As, 2Cn, and late 2Bs) had bowls as the most expensive category of vessel (Tables 2.2, 2.3, 2.4, 2.9, and 2.11). These also fell within the upper and middle economic groups according to Adams and Boling's categories. At the analyzed forts, the presence of high priced bowls at officer's

quarters may correlate with unmarried men eating together in mess groups. Each officer and enlisted man supplied their own tableware ceramics. Individuals who must supply their own accoutrements in a mess group probably choose tableware ceramics with as unique a decorative pattern as they could afford. This would be in order to more easily distinguish their ceramics from those belonging to their messmates. The general rule is the more unique the decoration, the more expensive the ceramics. Thus, the high price of bowls apparently correlates with the use of decoration to distinguish one's own ceramics from that of others in situations where people live and eat together in fluid non-family groups.

In each period the officer's quarters tended to have slightly higher total values than the enlisted men's quarters. When comparing the values for vessel form categories, however, the enlisted men did not have consistently lower values for any vessel category in the four cases where the samples were large enough to compare for the same period.

Alternately, the high variation among officer's quarters vessel form and total values seems to correlate with the multi-tiered socio-economic hierarchy among the officers. The likely causes for this were: differences in the social and economic backgrounds of the officers, differences in the size of posts, and differences in pay, which was primarily based on length of service. Larger

forts, such as Forts Brady and Mackinac, had more and higher ranking officers. Among the individual officers discussed in this study, many such as Samuel Heintzelman came from lower middle class backgrounds. Others such as Charles Gratiot came from much more influential and well-to-do circumstances.

The middle period had a relatively smaller range of variation in total ceramic values at Fort Gratiot. This pattern did not hold true for Fort Brady, and therefore was not a uniform regional or national phenomenon. The lower level of variation at Fort Gratiot probably reflects the presence of fewer men due to the downsizing of the fort in this period. This correlates with a concurrent, flatter social hierarchy among the officers at Fort Gratiot. One other possible reason may be the social informality present at small scale forts. The flat hierarchy should be seen as a local deviation from military behavior expected in more formal circumstances. Heintzelman made a few indirect observations about such occurrences in his journal, especially in reference to the practice of married enlisted men's families living in buildings on the post. The late period Fort Wilkins officer's quarters ceramics had relatively low and variable economic values similar to those at Fort Gratiot, probably for the same reasons.

There was only one unobscured trend towards increase in value over time demonstrated by any vessel form or building category in these comparisons. This was the slight increase

in the total ceramic tableware values from early to middle to late period officer's quarters occupations, and it was present only at Fort Gratiot. Even this small increase proved illusory in view of the price discounting data Miller (1991) provided in his recent revised article on ceramic scaling, and additional data on middle and late nineteenth century American import tariffs on ceramics provided at the end of Chapter 2.

Overall, the ceramic values for the regional forts demonstrated the existence of a far greater amount of variation within socio-economic groups than most previous users of Miller's (1980, 1991) technique have assumed in the common use of the technique to establish a relative economic status for an individual site. Much of the variability found in this study was due to local, and possibly temporary, expedient behavior in the face of day to day life among people in a small group living in relative social and economic isolation.

Heintzelman's (1828-1831) omnipresent sense of social isolation at Fort Gratiot is primarily attributable to its physical remoteness from American urban society in an everyday socio-economic sense. This sense of isolation at Fort Gratiot and other "frontier" locations elsewhere created a need to adapt to local conditions, including ecological, social, economic, and political aspects. This need was not innate in the frontier <u>qua</u> land, but primarily resulted from the shear lack of scale of human society. It

was the small size of social groups that necessitated or allowed the relaxed informal social atmosphere and sense of self-sufficiency commonly imputed to the frontier as a physical region, rather than correctly to frontiers as marginal social spaces, a la Shields (1991).

The current situation of the upper Great Lakes as vacation mecca also better fits Shield's definition of marginality in the sense of a space where traditional social rules do not apply. Such places are known as locations for rites of passage, temporary social escapades, or as places to escape to nature for psychological renewal. The importance of Shields' (1991) concept of marginality for the people at these frontier forts lies in the fact that the experience of social and economic marginality was an all day every day one for the early Euro-American population, rather than a temporary and controllable situation.

What created the circumstances that made the area a marginal economic and social space? A location at a rapids along one of the major natural economic transportation corridors on the whole North American continent is not what one usually thinks of as a marginal, isolated place. However, during the colonial period, a political border disrupted the natural economic navigation corridor of the St. Lawrence river and the Great Lakes. This border transformed the waterway into an artificial social and economic barrier by imposing political controls that altered the direction of the flow of goods and the economies of

scale of the transportation corridor for the entire region. Essentially two parallel dendritic economic transportation networks had to be developed -- one on each side of the border. This problem was particularly important prior to the introduction of cross-border railroads and open shipping on the St. Lawrence river in the middle nineteenth century.

Fort Gratiot was built primarily for protection of this political border, not for protection of, or access to, a frontier in any other sense. In this study it appears that the social behaviors discussed herein, which are sometimes attributed to frontiers, are primarily due to two other causes. One is simply the expedient informality of small scale social groups, especially when the situation is understood as temporary by the inhabitants. The second is the artificial economic and social marginalization of the region because of its location along a political boundary.

This study has been the first step in integrating multi-disciplinary source data pertaining to the many different kinds of frontiers within the holistic theoretical framework traditionally attempted in anthropology. The kinds of frontiers combined herein concerned cultural interaction, political borders, logistical networks, economic development integration, and social and economic margins.

The regularities and variability in behavior observed in the results of the analysis produced expectations about adaptation to these type of circumstances that should be

testable in situations or contexts where some or all of these variables are involved. The behavioral implications of this study should be able to be used to generate expectations for broader applications in social science, including situations investigating the effects of political boundaries on social and economic behavior, people living in temporary non-kin residential units, people living with regular cross-cultural interaction, people living in locations undergoing economic development transitions, people from predominately urban societies living for what they know will be short periods of time in small scale groups, and people temporarily living in locations considered so socially distant that they can not maintain their customary day to day routines.

APPENDIX

APPENDIX A

FORTS NOT USED IN REGIONAL COMPARISON

The forts in the early and middle nineteenth century American military upper Great Lakes regional supply network (Figure 1.1) and the dates of their American occupations (cf. Prucha 1953, 1964) were: Fort Brady at Sault Ste. Marie from 1822 to 1945; Fort Dearborn at Chicago from 1803 to 1836; Fort Gratiot at Port Huron from 1814 to 1879; Fort Howard at Green Bay from 1816 to 1852; Fort Mackinac (also Fort Holmes, 1815-1817) at the straits since American occupation began in 1796 until 1894, except during the War of 1812; Forts Malden and Covington at Amherstburg in Ontario during the War of 1812; Fort Meigs at Toledo in 1813-1815; Fort Miami near Toledo from 1796 to 1799; Fort Saginaw at Saginaw from 1822-1824; Fort Wayne at Fort Wayne, Indiana from 1795 to 1819; Fort Wilkins on Michigan's Keweenaw Peninsula of Lake Superior from 1844 to 1846 and again from 1867 to 1870; Fort Winnebago at the portage between the Fox and Wisconsin rivers in Wisconsin from 1828 to 1845; as well as Fort Lernoult-Detroit-Shelby (1796-1825) at Detroit and Fort Wayne (1840s-1949) at Detroit.

The only usable ceramic comparative data from building occupations at American period upper Great Lakes were from Forts Brady and Wilkins. Several other American forts never had any archeological research conducted at them. Field investigations were conducted at the remaining forts. However, there were problems, including artifact assemblages that were not large enough, mixed occupation assemblages, and assemblages obtained from non-building contexts.

Ft. Dearborn at Chicago

Tom Wolforth (personal communication 1991) of the Illinois Historic Preservation Office told me that he knew of no work at Fort Dearborn. He referred me to David Keene, an archeologist at Loyola University in Chicago. Keene (personal communication 1991) told me that the site is under a street along the side of the Chicago River and no archeological work had ever been done. I also contacted Lee Minnerly, an archeology graduate student at Michigan State University currently residing in Evanston, Illinois. He

(Minnerly, personal communication 1991) said that site of Ft. Dearborn was at the north edge of the Loop under the intersection of Michigan and Wacker streets at the south side of the bridge over the Chicago River. He agreed with Keene and Wolforth that no archeological work has ever been conducted there.

Ft. Howard at Green Bay

Joan Freeman (personal communication 1991), archeologist with the State Historic Preservation Office at the Wisconsin State Historical Society, told me that no one has ever done any archeological work at the site of Ft. Howard. It is under a railroad and apparently destroyed.

Fort Lernoult-Detroit-Shelby at Detroit

Arnold Pilling (personal communication 1991), archeologist at Wayne State University, provided me with the following information from his research about the building context proveniences and related ceramic assemblages from American occupations at Fort Lernoult-Detroit-Shelby at Detroit. The British built Ft. Lernoult during the American Revolutionary War. The US Army took control of it in 1796 after the Jay Treaty. It was renamed Ft. Detroit in 1805. Ft. Shelby is the name the US Army gave to the fort, when they reoccupied it during the War of 1812. Pilling said that a contract was let in 1826 to demolish remains of Ft. Shelby, but that no standing buildings were mentioned in the contract. Archeological data are available from British occupied buildings (pre-1796), but not from buildings for the American occupation. Pilling investigated an American occupation defensive ditch. It was repaired during the War of 1812, because the soldiers took the pickets out for firewood the previous winter.

Forts Mackinac and Holmes on Mackinac Island

At the 1991 Society for Historical Archeology meeting I spoke with Roger Grange, archeologist with the University of South Florida, who worked on several projects for the Mackinac Island State Park Commission. He said that no American period building that was strictly a living quarters had been excavated there. The closest thing to a living quarters occupation was a midden assemblage from an area of the fort adjacent to a living quarters. This midden area later had another structure built over it (Grange, personal communication 1991).

As far as non-living quarters buildings, one was excavated and reported by Grange (1987). This structure was

brought over from Ft. Michilimackinac by the British in 1780. After the American occupation began in 1796, it continued in use as a provision storehouse. The British took the fort during the War of 1812 and apparently continued use of the building as a provision storehouse. However, when the Americans reoccupied the fort after the war, in 1815 they converted it into a barracks. In the middle 1820s it's functions were described as hospital, sutler's shop, and mess room for the company. It was dismantled in 1827 and a new hospital begun using some of the old foundation. This building burned before it was completed, and was replaced by another hospital building the next summer (Grange 1987:27-52, 206-276, 434-483).

In spite of how well this building was researched, I did not attempt to use it in my analysis. This is because of the mixed and redeposited British materials in American deposits. Furthermore, the building had multiple functions -- provision storehouse, barracks, sutler's shop, hospital, and company mess room.

Forts Malden and Covington at Amherstburg, Ontario

The United States Army occupied Ft. Malden from September 1813 to July 1815, during and shortly after the War of 1812. Bob Garcia (personal communication 1991) of the Ft. Malden Historic Park told me that there were no excavations that relate specifically to the American occupation of the site. He also told me that just south of Amherstburg there was a site known as Fort Covington that was built by the Americans during the War of 1812. The only record the Fort Malden Park has concerning Ft. Covington is a sketch map a former curator drew from childhood memories of the ruins.

Ft. Meigs at Toledo

I contacted John Nass, who wrote a Master's Thesis (1980) at Western Michigan University on artifacts recovered from a midden at Ft. Meigs. He sent me several articles and papers presented at meetings about his analysis of the site (Kochan and Nass 1985; Nass 1981, 1983). He also sent copies of reports about the archeological work at the site in the 1970s by Defiance College, Ohio (Buchman 1973, 1974, 1975, 1977, 1978). Also, Larry Nelson at the Ft. Meigs State Memorial provided me with an article (Nelson 1986) about building architecture at Ft. Meigs. No ceramic samples from building contexts are available from any of this research.

Ft. Miami near Toledo

Mike Pratt, an Archeologist with Heidelberg College at Tiffin, Ohio worked at the site in the 1970s. According to Pratt (personal communication 1991), the artifacts that he recovered represent a mixed assemblage from the British (1794-96) and American (1796-1799) occupations. Most of the assemblage is from the floor of one building and from middens. The artifacts from the building are generally small items that fell through floor boards. Pratt attributes these mainly to the British occupation. He said minimum ceramic vessel counts would be very difficult to do because of the small size of the sherds.

Ft. Saginaw at Saginaw

Earl Prahl, an archeologist formerly with the University of Michigan-Flint campus, has conducted a great deal of research in the Saginaw - Bay City region. He (personal communication 1991) was not aware of anyone ever conducted any archeological research at Ft. Saginaw.

Ft. Wayne at Ft. Wayne, Indiana

Michael Hawfield (personal communication 1991), the Director of the Ft. Wayne - Allen County Historical Society at Ft. Wayne, Indiana told me that the site is under some buildings and that there are no known archeological remains of the fort.

Ft. Wayne at Detroit

Gordon Grosscup (personal communication 1991), archeologist at Wayne State University, Detroit provided me with the following information about the building context proveniences and related ceramic assemblages at Fort Wayne from his research there. He found: 1) a water cistern with only a few artifacts, 2) a mortar mill again with just a hand full of artifacts (he thinks the fort was heavily policed), and 3) an enlisted men's latrine which had a fair amount of 1840s items, including ceramics, but also much discarded ammunition from a nearby powder magazine that dates to about 1910. Grosscup thinks that this is not a good social or temporal context. Also, he said that the latrine was not a privy, as it had a pipe that ran to a sewer system.

Jim Conway (personal communication 1991) at the Historic Fort Wayne Park told me that Sharon Pisacreta of New York University wrote a Master's thesis in the late 1980s about the excavation of an 1850s officer's quarters.

Conway said that the building burned down before it was occupied, and the area was filled in. I did not use this building in my comparative analysis, because the artifacts did not derive from an occupation of the building.

Ft. Winnebago at Portage, Wisconsin

Joan Freeman (personal communication 1991), an archeologist with the State Historic Preservation Office at the Wisconsin State Historical Society, told me that a small number of test units placed in the site; however, only a handful of artifacts were obtained.

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