Measuring Modern Discipline: A Re-Examination of Type and Variant Indices Using Ceramics from the Monterey Site in the Central Bluegrass Region of Kentucky

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Abstract

Modern discipline encompasses the strategies used under industrial capitalism to regulate work and measure time. E. P. Thompson called them "time routines" and "work discipline." Mark Leone, building on the work of Thompson and Foucault, developed ceramics formulas for measuring the degree of penetration of these ideas in individual households. Our research tests Leone's formulas using the ceramic data from the village of Monterey in central Kentucky and diversity indexing. Families of varying socioeconomic class and ethnicity occupied the three households in our study, including freed African-Americans, an affluent white merchant, and a lower to middle class farmer.

Introduction

Modern discipline encompasses the strategies used under industrial capitalism to regulate work and measure time. E. P. Thompson called them "time routines" and "work discipline." Mark Leone (1999:195) – building on the work of Thompson (1967, 1974) and Foucault (1979) and working collaboratively with Parker Potter (Leone et al. 1987) and Paul Shackel (1993) – postulated that "changing orderliness in ceramics at the table is caused by the advent of the time routines and work disciplines of capitalism" and developed ceramic formulas for measuring the degree of penetration of these ideas within individual households.

We became interested in modern discipline for two primary reasons. First, we agree with Leone that a household's participation in modern discipline should be visible in the material record and can be measured. However, the formulas developed to date seem especially vulnerable to sample size. Therefore, we have undertaken the mathematical challenge of testing this hypothesis and sought another way to measure the segmenting and standardizing aspects of modern discipline.

Second, modern discipline has principally been studied within urban settings. We wanted to understand if, and how, these strategies for regulating work and measuring time were expressed at *rural* domestic sites, specifically along historic Paris Pike in central Kentucky. Our results were compared with domestic sites in Deerfield, Massachusetts, where I conducted my dissertation research. Together these data represented families of varying socioeconomic classes and ethnicities as well as varied geographic regions.

In this paper, we begin by introducing some of the primary literature concerning the ideology of modern discipline. Then we assess whether current formulas are vulnerable to sample size and propose an alternate strategy for measuring modern discipline. Finally, we present some preliminary interpretations of how this ideology was expressed in the various contexts and data sets we examined.

Brief Introduction to the Ideology of Modern Discipline

During the late eighteenth and early nineteenth centuries, the economic system of Kentucky became increasingly focused on cash crops and industry (Kleber et al. 1992:7; McBride and McBride 1990:601). With changes in the economy came new rules of society (Mullins 1995:108). These new etiquettes "reinforced standardizing and segmenting behavior" – behavior that first appeared among wealthy and elite groups, particularly in urban settings (Shackel 1993:5, 8).

With regard to class, however, Leone is quick to point out that his measure of modern discipline is *not* also a measure of class, but rather the indices generated illustrate "the degree to which a household is integrated into the market" (Leone 1999:210). So, for example, according to Leone (1999:208), a low index is not an indicator of poverty; it is "an index to the degree to which [the household's occupants] were outside the pattern of buying with a wage, laboring for a wage, paying rent and interest, and owning property."

Accordingly, Leone and others believe that refined earthenwares are an important dataset or entry point for measuring the emergence of these new rules and ideas. Paul Shackel (1993:5) suggests that

> Greater diversity in plate sizes and growing functional diversity of ceramics in an assemblage [can be] interpreted as an indication of the increasing segmentation found at the dinner table, which helped reinforce a new standardized way of eating. Behavior that standardizes and segments requires one dish per person and a variety of dish sizes for different courses in the meal (e.g., butter dishes, dessert dishes, meat dishes, etc.)

Therefore, according to Shackel, if few types and sizes are present in an assemblage, this lack of variation and segmentation indicates the occupant's non-participation in these new societal rules. Conversely, the presence of few types but many sizes – such as with matched dish sets – indicates a high degree of acceptance and participation. A variety of types and sizes indicates some segmentation and partial participation (Shackel 1993:32).

Mark Leone (1999) modified this model slightly by removing the element of vessel size and focusing solely on type and form. Leone's modified formulas are particularly useful when vessel sizes cannot be determined. Vessel function was broadly defined and included tablewares (such as plates and serving vessels) and teawares (like teabowls, teacups, saucers, and the like). Vessels for food preparation (such as milk pans and crocks) and personal use items (like chamber pots) were categorized separately. Leone (1999:210) argued that it was imperative to look at these various subsets of vessels by function because "different rules, routines, or disciplines were employed for all of these items, which came into play at different times."

The variables he used were (1) V for the total number of vessels present in minimum vessel count; (2) W for the number of ware types further subdivided by the number of primary decorative techniques (i.e., shell-edged pearlware or transfer-printed whiteware); and (3) F for

the number of different vessel forms present. The first formula (V/F x W) measures the Type Variant, while the second (V/W x F) measures the Function Variant. Together, these equations determine how orderly a dining table was at meal time as well as "how such a dining pattern taught people time, etiquette, and the rules of producing labor in a profit-making economy" (Leone 1999:196). The indices illustrate the degree to which households, through their actions and beliefs, were engaged in the culture of modern discipline that accompanied the growth of a capitalist economy (Leone 1999:208).

Modern Discipline and Variant Indices

We began by testing whether sample size, using Leone's method, has an effect on the results generated with these formulas. We calculated type and variant indices for a variety of assemblages (Rotman 2001, 2003; Day 2003). Sample size was then regressed on these indices to determine if a relationship existed. As can be seen in Figure 1, regression analysis indicated that there is a linear relationship between sample size and Leone's indices. A larger sample size results in a higher index. Similar results were obtained using Shackel's formulas. These results indicated to us that another method of examining participation in modern discipline was needed.

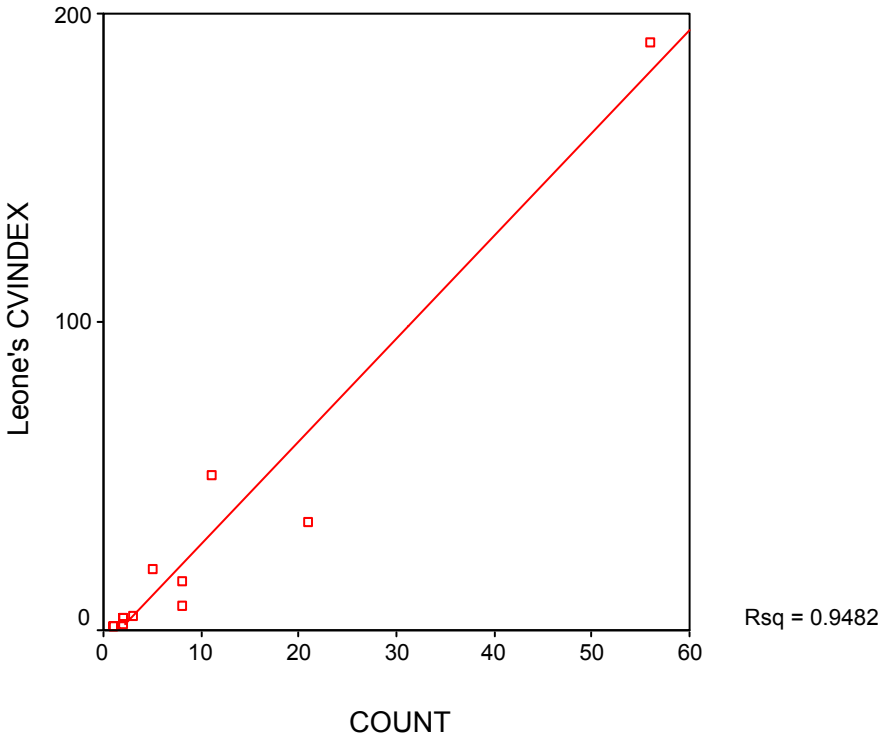

Figure 1. Linear regression of Paris Pike Data using Leone's formulas.

Diversity Indices

In an attempt to get around the issue of sample size influencing measures of variation, we examined the data using diversity analyses. In short, diversity measures how the numbers of specimens are distributed among the various artifact classes under investigation (see Kintigh

1984, 1989 for further discussion concerning the use of diversity analysis in archaeology). Two dimensions of diversity can be computed: (1) richness, which measures the number of different classes present; and (2) evenness, which measures the uniformity of the distribution of relative proportions of classes (Bobrowsky and Ball 1989; Jones and Leonard 1989; Kintigh 1989).

In our analyses, we focus on the richness measure of diversity, since we are interested in measuring segmentation and standardization; that is, whether there were many or few types and functions present in the ceramic assemblages. Richness was calculated here as the number of classes divided by the square root of sample size. Richness values were calculated for both type and function for tablewares and teawares alike.

Before proceeding with interpretation, we assessed whether or not our richness values were dependant on sample size – to be certain that we were not encountering the same problems as Leone's formulas (Figures 2 and 3). As above, we used linear regression analysis to determine if there was a relationship. No relationship between sample size and the values generated using diversity analysis was indicated.

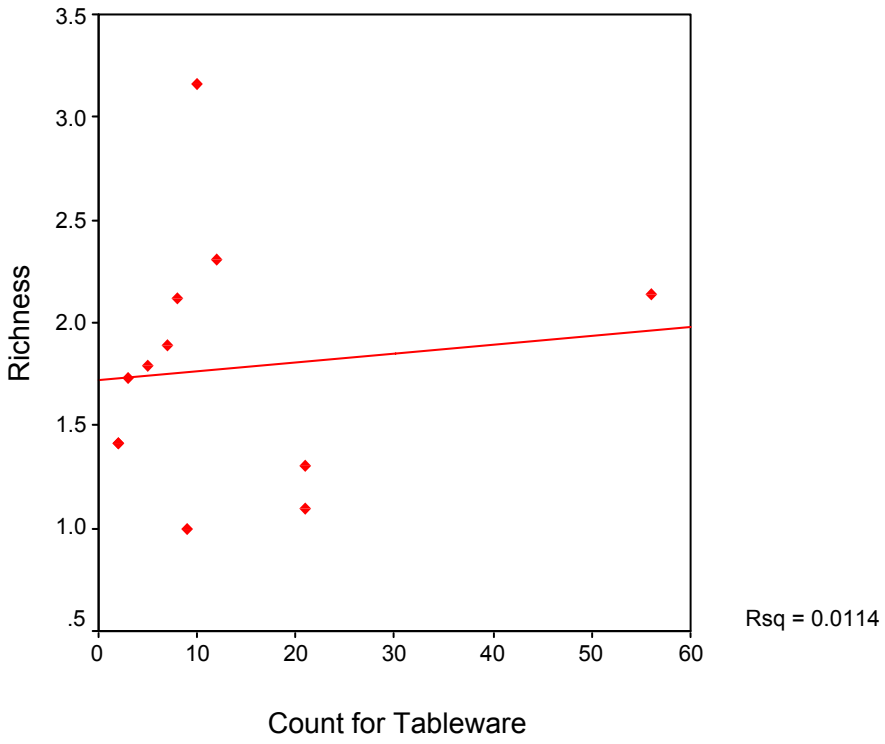

Figure 2. Linear regression of Paris Pike tablewares using diversity analysis.

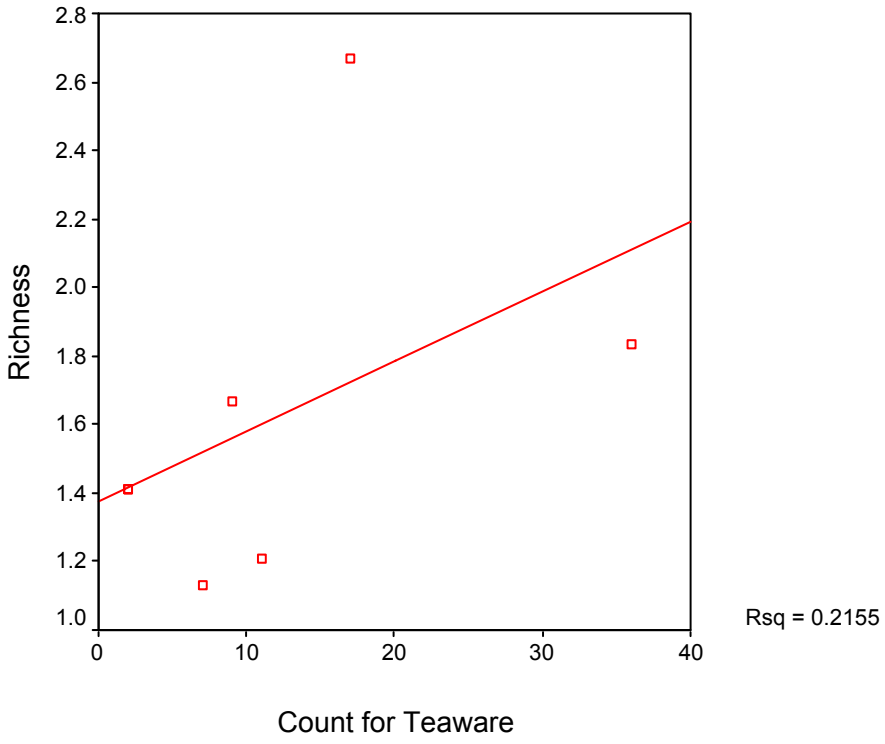

Figure 3. Linear regression of Paris Pike teawares using diversity analysis.

Preliminary Results of Analyses

Therefore, we continued on: What do these numbers mean? Based on the ideas that Leone has put forth, we would expect that the ceramic assemblages of families who subscribed to the ideology of modern discipline would have a variety of vessel *functions* (illustrating segmentation), but few vessels *types* (illustrating standardization). Such segmentation and standardization in turn illustrates, according to Leone (1999:196), the degree to which a household was integrated into a wage-labor and profit-making economy and, therefore, utilized time routines and work discipline in their daily lives. Furthermore, this ideology was believed to have first appeared among the urban elite (Shackel 1993:8), but again does not necessarily represent a measure of class (Leone 1999:208). As used here, people who subscribed to modern discipline should exhibit high richness for function and low richness for type.

So, what about the rural domestic sites in our study? Would we see the influences of "the participation in wage-labor and profit-making economy"? Or would these forces – these ideals of time routines and work discipline only be visible in urban settings?

Rural America has often been defined in opposition to urban contexts. "Rural" is understood to be simple, homogenous, agricultural, passive, and past, while "urban" is complex, stratified, industrial, active, and future. We challenge these simplistic assessments of "rural," however. We assert that the real lived experiences of nineteenth-century rural Americans consisted of complex social and economic relations – and indeed we observed this complexity in our analysis of rural sites.

The Data Sets

We examined seven data sets from along historic Paris Pike in the central Bluegrass Region of Kentucky. All of these sites were excavated as part of projects conducted by the Kentucky Transportation Cabinet. They are shown in Table 1 in chronological order – spanning from the late eighteenth through the late nineteenth centuries. The Paris Pike was a major transportation corridor, which connected Lexington to Maysville on the Ohio River. Although a few towns were scattered along its length, historic Paris Pike traversed many miles of rural agricultural and pastoral land.

The ceramic assemblages in our study represent first generation Irish immigrants, former slaves, and Euro-American families who had long been resident in the United States. These data sets also included the full spectrum of socioeconomic classes and occupations from lower-middle class laborers to wealthy farmers and merchants.

The data from Paris Pike was compared to five occupations in the nucleated settlement of Deerfield, Massachusetts, whose residents were more homogenous than those from Paris Pike. These data represented only Euro-American individuals, but of varying socioeconomic class.

Table 1. Summary of data sets used in this study.

Location	Occupation	Time Period	Category
Paris Pike	McConnell (MC2)	1790-1823	Wealthy Scotch-Irish Farmer
	Ardery (ar)	1823-1871	Wealthy Scotch-Irish Farmer
	Robison (R3)	1839-1867	Lower-middle class Freed African-American Laborer
	Clovelly (Cl1)	ca. 1850	Upper-middle class Irish farmer/physician
	Martin-Crandall (mc)	1852-1875	Upper-middle class Euro-American merchants
	Anderson-Moore (AMC)	1862-1889	Lower-middle class "Mulatto" blacksmith
	Clovelly (Cl2)	ca. 1877	Upper-middle class Irish farmer/physician
Deerfield	Williams (HN)	ca. 1816	Wealthy Euro-American Farmer
	Tenants (TN)	ca. 1845	Lower-middle class Euro-American farmer
	Moors II (M2)	ca. 1845	Middle class Euro-American minister
	Moors III (M3)	ca. 1848	Middle class Euro-American minister
	Moors IV (M4)	1865-ca. 1882	Middle class Euro-American farmer

The Data

When we compute the richness values for the assemblages in our study, we get some interesting results. In this and the other slides that follow, the seven results on the left are from the Paris Pike sites in Kentucky and the five on the right are from Deerfield.

In an examination of teawares by *type* – we would expect that families who subscribe to the ideology of modern discipline would possess few types, particularly in urban settings (Figure 4). However, four of the seven data sets from rural areas are comparable to that which was

computed for the urban setting. A similar pattern was observed in an analysis of tablewares by type – with all but one of the rural data sets being comparable to the urban results (Figure 5).

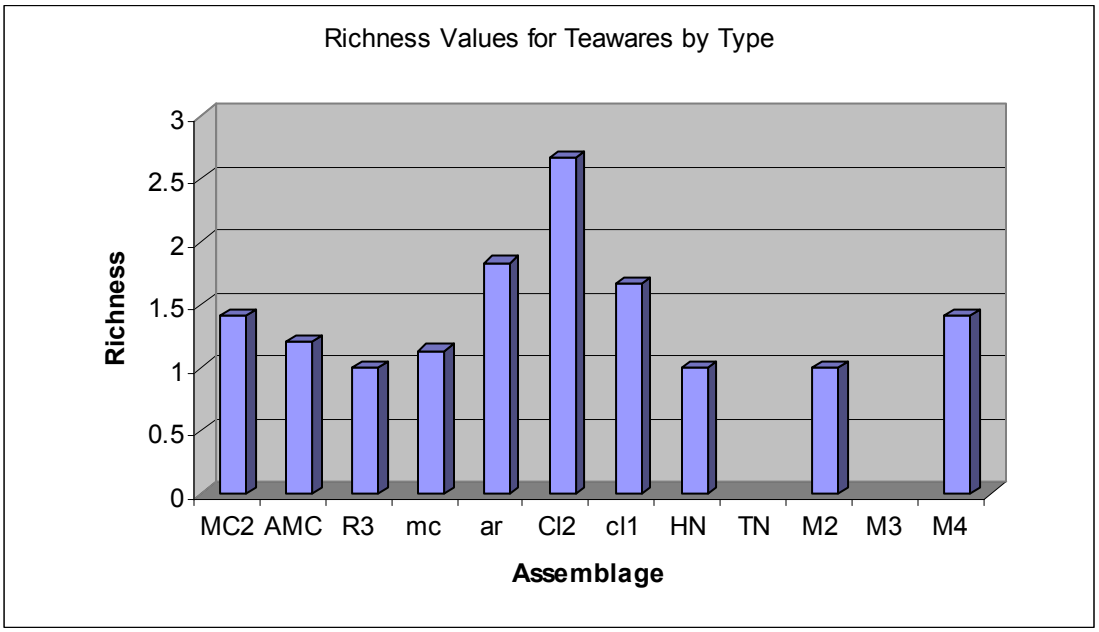

Figure 4. Richness values for teawares by type.

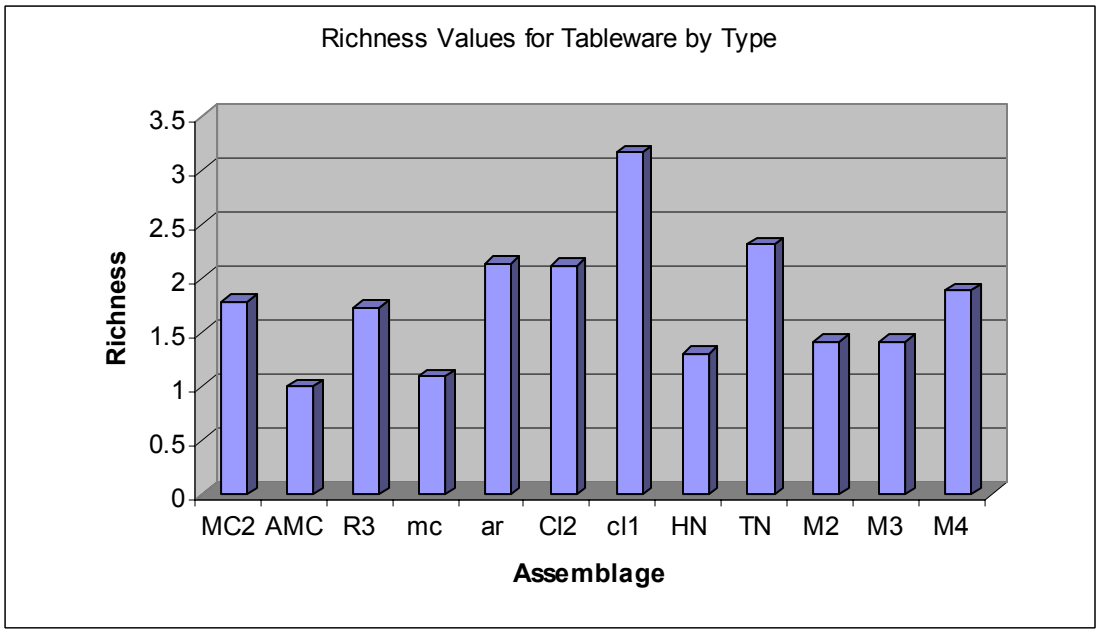

Figure 5. Richness values for tablewares by type.

With regard to richness values for function, we would expect that participants in modern discipline would possess many, varied vessel functions. Yet for teawares, again, the results from four of the seven rural sites were comparable to the urban occupations (Figure 6). Our results were identical for tablewares. In fact, for both teawares and tablewares, the greatest variety in vessel function was observed at a rural site (Figure 7). These data were assessed with an ANOVA test. No significant differences were found (F: 0.367, DF: 2, 10, p = 0.702).

Clearly, from the data we have presented here – living in a rural or urban environment does not seem to be a factor in whether or not a person subscribes to modern discipline. It is also interesting to note that there was indeed *not* a strong relationship with class. In fact, the data sets that clearly illustrated non-participation or perhaps partial participation were consistently among the wealthiest occupants, which was contrary to our expectations. Furthermore, there was no significant difference between geographical regions with families engaging in modern discipline (or not engaging as the case might be) in both the central Bluegrass Region of Kentucky and in the Connecticut River Valley of western Massachusetts.

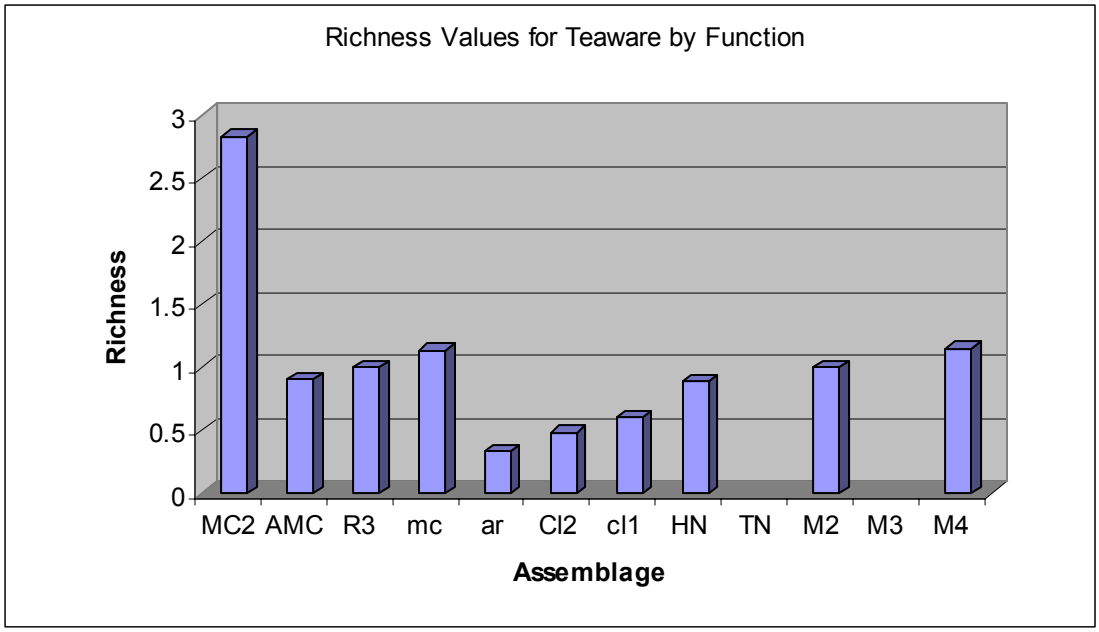

Figure 6. Richness values for teawares by function.

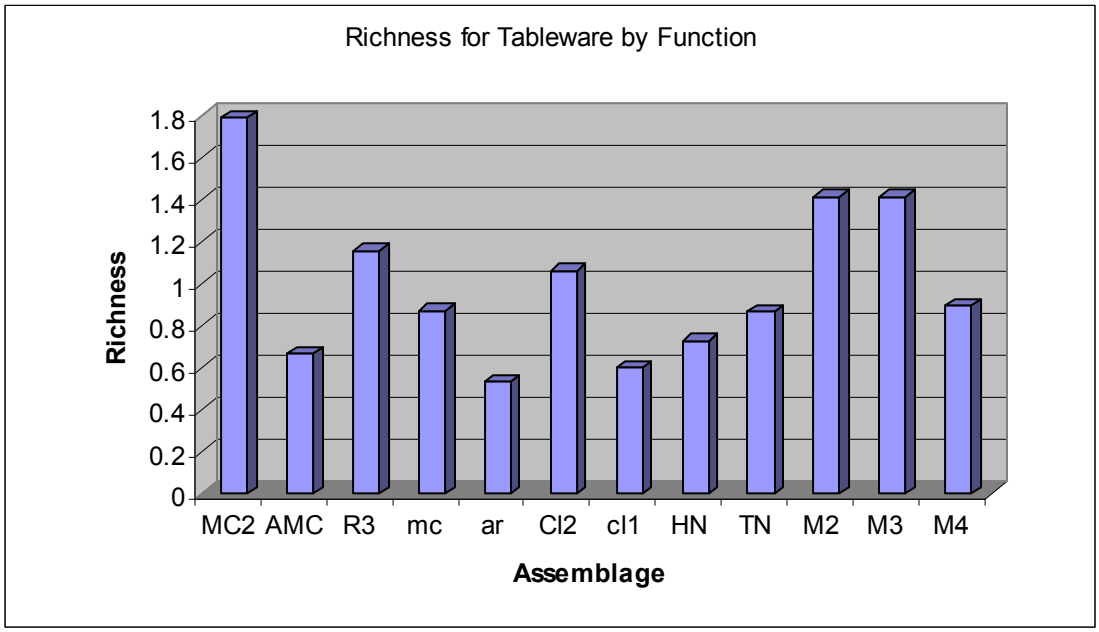

Figure 7. Richness values for tablewares by function.

Discussion

So, our study indicates that the degree to which a household participates in modern discipline does not have a one-to-one correlation with class. Nor can it be attributed to a rural or urban setting. Nor is it unique to a particular region of the country. How then can these differences be explained?

The key appears to be in Leone's hypothesis in which he states that his measure of modern discipline illustrates "the degree to which a household is integrated into the market" (Leone 1999:210). So, for our sites in central Kentucky, historic Paris Pike undoubtedly connected these rural domestic sites to broader economic markets and allowed households access to goods and ideas from urban areas. Furthermore, the forces that were shaping labor and productivity in the factories of urban settings also affected rural households and can be seen in such things as scientific management principles being applied to increase agricultural production (McMurry 1988).

As we proceed with future analyses, we intend to pursue two particular lines of inquiry. Leone (1999:205) further argued that explanations for variation among assemblages "is likely to come from the economic history of the family living in the house and their relation to the [local] economy." So, first, as we continue to interpret and attempt to understand the material assemblages for the occupations along Paris Pike, we will take these unique economic histories into consideration – and undoubtedly, their location along this significant transportation corridor played an important role. And, second, we will explore how "time routines" and "work discipline" were employed within the context of rural and agricultural occupations.

Conclusions

Our analysis of modern discipline thus far has yielded several important results:

First, the formulas developed by Leone (1999) and his colleagues (Leone et al. 1987; Shackel 1993) are very vulnerable to sample size – the larger the sample, the higher the index. Diversity analyses – and, specifically, richness values – are equally easy to calculate. Furthermore, linear regression analyses have illustrated that the results of diversity analysis are not dependent upon sample size. So as we explore modern discipline in historic archaeological assemblages, diversity analysis is a more statistically sound tool than the formulas put forth by Leone and Shackel.

Second, segmentation and standardization in ceramics are not uniquely urban phenomena, as Leone and others have suggested. Indeed, many of the assemblages from our rural contexts exhibited similar degrees of variation in type and function as that which was observed in an urban setting. Nor is this change in ceramics unique to a particular class or geographic region.

As we proceed with our analyses, we will examine the unique economic histories of our domestic sites to understand variation within and between assemblages. The data sets in our study exhibited various degrees of segmentation and standardization of ceramics. We will seek to understand why some families chose to participate in the ideology of modern discipline while other households in close proximity of time and space did not. Furthermore, we will explore whether there are other reasons – in addition to or perhaps instead of modern discipline – that may elucidate why ceramics on dining room tables became increasingly standardized and segmented during the nineteenth century.

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