Formal Classification and the Analysis of Historic Artifacts

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PREFACE

An earlier version of this paper was presented to the Third Annual Meeting of the Society for Historical Archaeology, held in Bethlehem, Pennsylvania, in January of 1970 (Stone 1970a). Since that time, my concept of formal classification and its relevance to the analysis and description of historic artifacts has altered somewhat. Thus, a more comprehensive view of formal classification has resulted, one which was presented in Chapter 3 of my doctoral dissertation, "Archaeological Research at Fort Michilimackinac, an Eighteenth Century Historic Site in Emmet County, Michigan: 1959-1966 Excavations" (Stone 1970b).[1] Formal classification was utilized throughout this dissertation to illustrate an efficient means of describing the large and diverse collection of artifacts from Fort Michilimackinac. The present paper is a combined version of these two earlier descriptions of formal classification; the general discussion of, rational for, and mechanics of formal classification are adapted from the dissertation, while the model for the approach is derived from the original conference paper in which Jew's-harps were formally classified and described.

INTRODUCTION

The Jew's-harp sample to be described was recovered during the 1959-1966 excavations of Fort Michilimackinac. This site was occupied for approximately 66 years; it was controlled first by the French from ca. 1715 until 1761 and then by the British until 1781. During this period the fort was located at the extreme northern tip of the Lower Peninsula of Michigan (Figure 1). The fort was dismantled and re-established on Mackinac Island, located in the Straits of Mackinac, during the winter of 1780 and 1781. The relocated site, known as Fort Mackinac, was controlled by the British from 1780 until 1796 and from 1812 to 1815. American forces held the fort from 1796 to 1812 and from 1815 until 1895. Fort Michilimackinac has been under archaeological investigation by the Mackinac Island State Park Commission and the Michigan State University Museum since 1959; during this time the fort has been partially reconstructed (Figures 2 and 3).

1. This report will be jointly published in the near future by the State of Michigan, Mackinac Island State Park Commission, and The Museum, Michigan State University.

FORMAL CLASSIFICATION: DEFINITION AND THEORETICAL BASE

The analytic approach described below has theoretical relationships to the principles of both biological and archaeological taxonomy. This approach is based on a formally structured taxonomy, termed "formal classification" which, as applied in this study, may be defined as the hierarchical ranking of formal properties on the basis of their relative importance. Formal properties are the physical attributes of artifacts which result from different methods or techniques of manufacture and/or use such as form, shape, color, material, and so on. Relative importance refers to ranked differences in attribute significance as distinguished during manufacture or use. For example, a distinction made on a structural basis is considered to be more important in terms of manufacture and use than are distinctions based on shape, material, or color. Attributes which, during manufacture or use, necessitate a higher level of technical discrimination or decision are assigned to a higher classificatory level. Attributes which necessitate a lower level of technical discrimination or decision are relegated to lower levels of distinction.

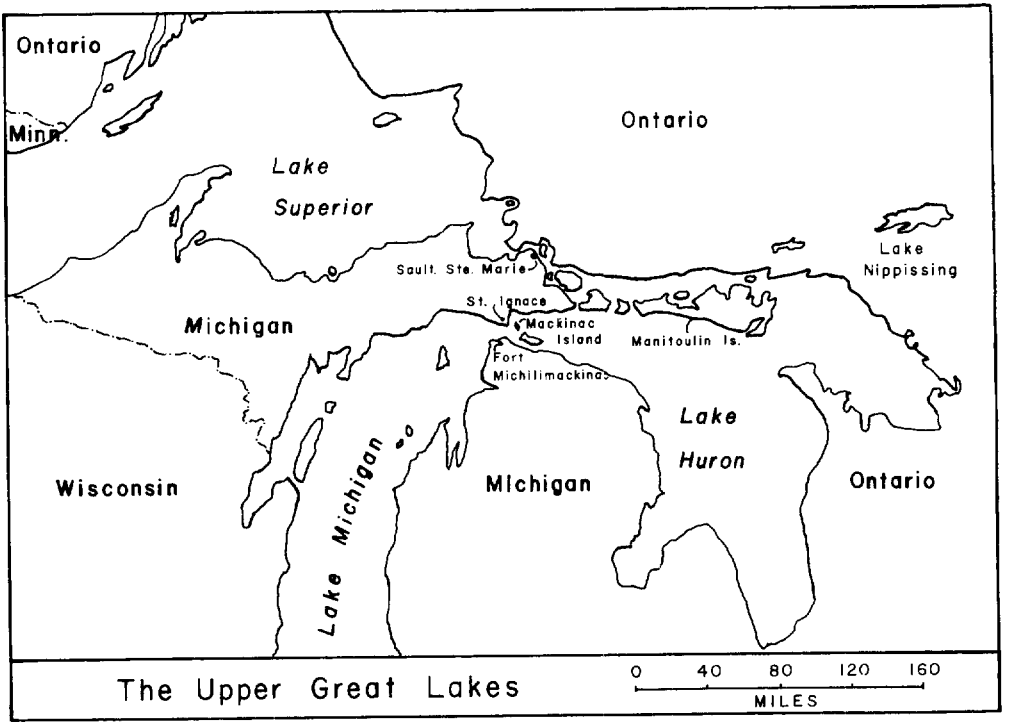


FIGURE 1. *The Upper Great Lakes*

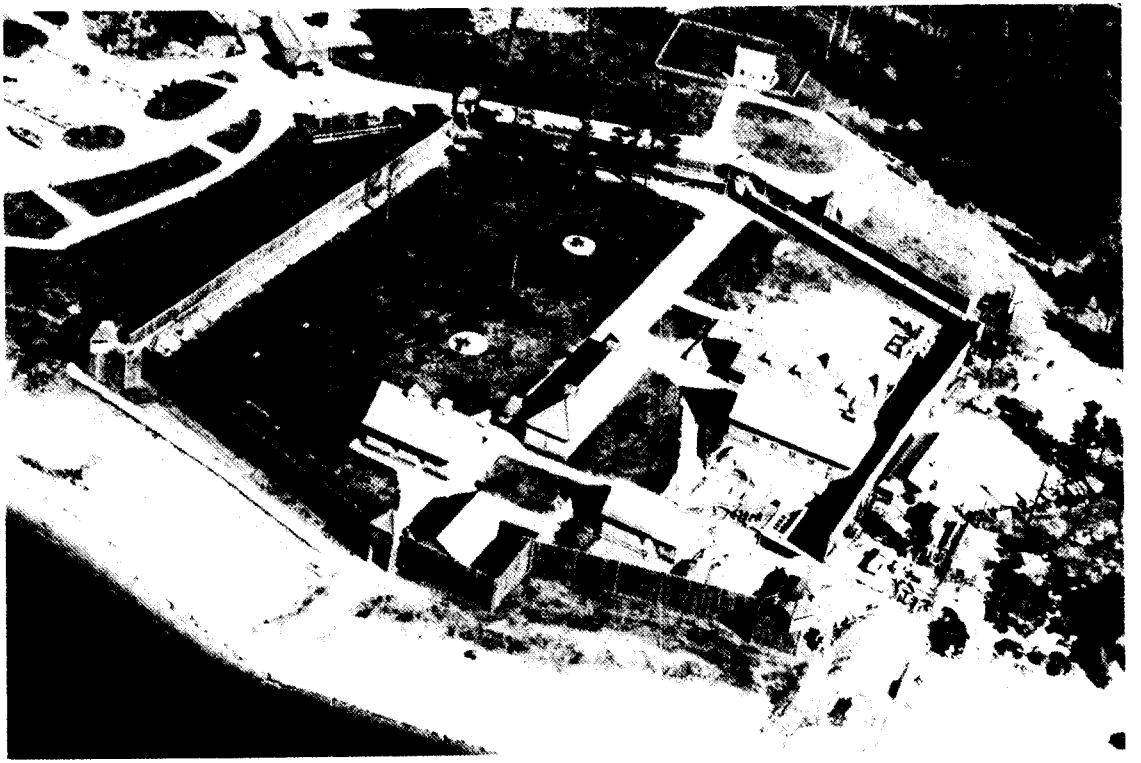


FIGURE 2. *Aerial Photograph of Fort Michilimackinac Reconstruction in 1969*

The formal analytic approach is most closely related to the principles of quantitative analysis commonly used in prehistoric archaeological research (Clarke 1969: 651). A number of authors (Freeman and Brown 1964; Fitting 1965; Sackett 1966; Binford 1963; and Deetz 1965) have recently explicated and illustrated a quantitative approach to artifact analysis which is based on both a maximum discrimination of variable physical properties and a study of co-variation between these variables as a means of interpreting artifacts and their contexts. The concept of ranking these discriminate variables in terms of attribute hierarchy is directly related to the mechanics of biological taxonomy. As such, the advantages of a taxonomic key, which facilitates the identification of taxonomic relationships, are inherent in a formal classification. David L. Clarke, in a discussion of archaeological grammar, describes a syntactic grammar (archaeological syntactics) which condenses regularities in the "relations between artifacts and attributes at every level of their organization" (1969: 649). The theoretical bases for this grammar are very similar to the two views, expressed below, on which formal classification is based. The term "formal," as defined in this report in reference to artifacts, has been used by other authors with essentially the same meaning. Spaulding (1955: 36), for example, refers to the formal dimension of an artifact as "all physical properties of the artifact (shape, weight, chemical composition, etc.)." Deetz (1967: 9) notes that "the formal dimension of archaeological materials consists of their physical appearance." The term "formal" may also be used to define a particular dimension or set of relational characteristics of an archaeological site, as distinct from the spatial or temporal dimensions of a site. In this sense, the formal dimension is defined by the presence of and interrelationships between the physical attributes which characterize a site and which result from human activity.

Formal classification is based on two interrelated views which are:

1. That a classification of historic artifacts must be based on observed physical properties, regardless of any presumed analytic or cultural significance of these properties (see also Clarke 1969: 648). Our conception of significance in these terms is notably inadequate, since so few properties of historic artifacts have actually been evaluated in terms of their spatial and temporal variation. It is assumed that once the analytic significance of all variables characteristic of an artifact category (as expressed at different types of sites and in different social contexts) is known, the need for a formal classification would no longer exist, except in a comparative sense. At this not yet attained "ideal" level of knowledge, we will thus be able to organize a classification with a particular problem in mind by selecting variables with proven relevance to the phenomenon or problem under study. Until this level is reached, however, formal classification must be used both to promote rigorous comparative research and as a means of evaluating the analytic significance of variables.

2. Classification is an analytic tool which is useful in evaluating the significance of variation within the spatial, temporal, and formal dimensions of a site. As such, the classes and attribute differences defined need not necessarily correspond to differences recognized by the societies which produced or used them. Classification in this sense is an aid to interpretation, rather than a result of interpretation; therefore, it can only be judged in terms of its relevance and utility to specific interpretative problems, rather than in terms of its representation of reality. A classification of artifacts must permit the identification of variables which have temporal, spatial, or formal significance to the site under study. That these variables correspond to differences recognized by the society which used them is irrelevant; differences which have analytic significance at present may not have been recognized at the time during which the artifacts were manufactured and used (see also Hole and Shaw 1967: 5). Moreover, variables were undoubtedly differentially recognized through time, at different types of sites (such as trading posts, religious centers, military posts, or Indian settlements), and in different social and cultural contexts. Variables which would therefore be recognized as significant in one situation cannot necessarily be interpreted as such in all situations.

A formal classification of the type here described is conceptually and mechanically distinct from classifications structured either on the basis of attributes of taxonomic "convenience" (Hole and Heizer 1969: 170-171) or on supposed functional significance. The "functional" type and "convenient" type approaches limit the comparative and interpretative value of artifact categories identified; a formal classification is more rigorous and more useful in both respects.

The Mechanics of Formal Classification, Illustrated by a Description of Jew's-Harps from Fort Michilimackinac

The mechanics and rules of formal classification duplicate in many respects the principles of binomial nomenclature developed in the biological sciences. The procedure of formal classification consists of the following steps:

Step 1.

Compare all specimens within a given artifact category and note the physical properties which they possess. This results in a list of variable physical properties which characterize an artifact category. For Jew's-harps this list is:

a. File marks—presence and extent, or absence
b. Shape—of shanks and head
c. Cross section shape of brass or iron stock
d. Material of manufacture—iron or brass
e. Size
f. Form of the entire specimen
g. Marks designating size or manufacturer

Step 2.

Evaluate the properties defined and decide which will be used as classificatory attributes and which will be used as descriptive measures. This decision reflects the classifier's concept of property significance and is based on his knowledge of the manufacturing technology and function of the artifact category being studied. The form, material, and shape of Jew's-harps are used as classificatory attributes. In this context form refers to the structure of morphology of an artifact rather than to any attribute such as shape or material of manufacture.

Step 3.

The attributes identified are then ranked in a hierarchy according to their relative formal importance. It should be pointed out that although form consistently receives the highest order of attribution, other attributes may vary in rank depending on the specific artifact category under study. The ranking of Jew's-harps' attributes is:

Highest order discrimination . . . . . Form
Intermediate order discrimination . . . . . Material
Lowest order discrimination . . . . . Shape

An admitted degree of subjectivity characterizes the preceding two steps, since the validity of decisions depends largely on the classifier's comprehension of differences between physical properties. It is felt, however, that this approach to classification is inherently more rigorous than other commonly used approaches and that it may eventually provide a basis upon which a completely objective taxonomic approach is defined.

Step 4.

Name the different ranked levels and describe the attributes upon which their distinctions are based. The terms *class, series, type,* and *variety* are used here in descending order of formal importance. Each of these need not be present in any given classification; additional levels may also be added if necessary. For example, we may have an artifact category containing specimens which differ in only one property: shape. If there are three shapes and no other differences, we will have three types. Variety level distinctions are often missing in certain artifact classifications where low-level physical differences are not present or are not recognized as such. For Jew's-harps, series are based on differences in form. Two series have been defined: Series A includes specimens which exhibit a marked flattening on the frame head and shanks which are parallel to each other. Series B consists of specimens which exhibit a square to diamond-shaped cross section throughout the length of the object and shanks which taper inward towards the shank ends. Types within Series A and Series B are defined by differences in the material of manufacture. Series A, Type 1 specimens are made of iron. Series A, Type 2 specimens are made of brass. Series B, Type 1 specimens are made of brass. Series B, Type 2 specimens are made of iron. Varieties are defined for both Series B types on the basis of shape differences. Series B, Type 1, Variety a specimens exhibit a triangular-shaped frame head. The same variety distinctions serve for Series B, Type 2, Varieties a and b.

Step 5.

Sort and tabulate artifacts according to the classificatory levels defined. Descriptive *categories* which include incomplete artifacts or those which do not exhibit all physical properties necessary for formal classification are added at this point. For example, we may have a specimen which only exhibits the attribute necessary for class level placement. In this case, the specimen would be assigned to a *category* of that class, with no further distinction as to series, type, or variety. At this point, we must also check the resultant classi-

fication against three rules which govern the reliability of any scientific classification (see, for example, Powell 1962). These are:

a. Only one basis of attribution can be used on each level; however, several attributes may be used at the same time if a functional relationship can be positively demonstrated.

b. Levels must permit the placement of artifacts into mutually exclusive groupings. Any given specimen can only fit into one level.

Step 6.

Measure all specimens; note any metric relationships between variables and types, and test for the presence of dimensional categories. The basic metric data for Jew's-harps are listed in Table 2.

Step 7.

Evaluate the derived classes and classificatory attributes in terms of contextual (distributional), comparative, and historical evidence. This permits the identification of classes and attributes which have temporal, spatial, or formal significance and thus provides a basis for final site interpretation. The distributional, comparative, and historical evidence for as well as the interpretation of Jew's-harps follows.

TABLE 1. *Formal Classification of Jew's-Harps*

Classification and Attributes	Brief Identification	Frequency
Form / Material: Series A	Flattened frame head, parallel shanks	
Form / Material: Type 1	Iron	4
Form / Material: Type 2	Brass	8
Form: Series B	Square to diamond-shaped frame head, tapered shanks	
Type 1	Brass	
Shape: Variety a	Round frame head	70
Shape: Variety b	Triangular frame head	1
Type 2	Iron	
Variety a	Round frame head	24
Variety b	Triangular frame head	15

c. Classes must be exhaustive or capable of including all specimens. This is often difficult in dealing with archaeological remains because of the presence of badly preserved or fragmentary specimens, although the problem is partially solved with the use of *category* distinctions described above.

The resultant classification of Jew's-harps is presented in Table 1.

Classification is completed at this point. Three additional steps are then necessary to permit artifact comparisons, interpretations, and analysis of the derived data in terms of the temporal, spatial, and formal dimensions of the site.

Distributional Evidence

Series B, Type 2, Varieties a and b Jew's-harps have been combined into one comparative category since the analysis of individual varieties did not produce significant results. The fact that these two varieties differ only in shape of the frame head justifies this combination. Three samples will thus be compared in the following discussion: Series A; Series B, Type 1; and Series B, Type 2.

The distribution of Series A specimens within the site appears to be random; there is no observable concentration or association between this category and any specific structure or artifact types.

TABLE 2. *Fort Michilimackinac Jew's-Harps Measurements*

Toxonomic Designation	Description	Frequency	Percent of Totals	Total Measured	Width Range	Width Mean	Width SD	Length Range	Length Mean	Length SD	A	CC
Series A												
Type 1	Iron, flat head	4	3.27	4	25.1-33.3			35.3-43.3				
Type 2	Brass, flat head	8	6.55	7	22.8-29.2	25.0		36.6-39.4	37.6		45%	
Series B												
Type 1												
Variety a	Brass, round head	70	57.3	57	23.0-30.0	25.8	1.87	38.5-66.0	55.0	6.83	67%	.75
Variety b	Brass, triangular head	1	.85	1	28.4			51.3 E				
Type 2												
Variety a	Iron, round head	24	19.67	18	22.5-37.3	30.3	4.3	52.0-66.7	59.7	4.63	61%	.85
Variety b	Iron, triangular head	15	12.29	15	34.0-42.5	38.5		51.7-62.0	56.4		52%	
	TOTAL	122	100									

A—Average percent of frame length represented by shank length
CC—Correlation coefficient between length and width
SD—Standard deviation
E—Indicates an estimated or approximate measurement

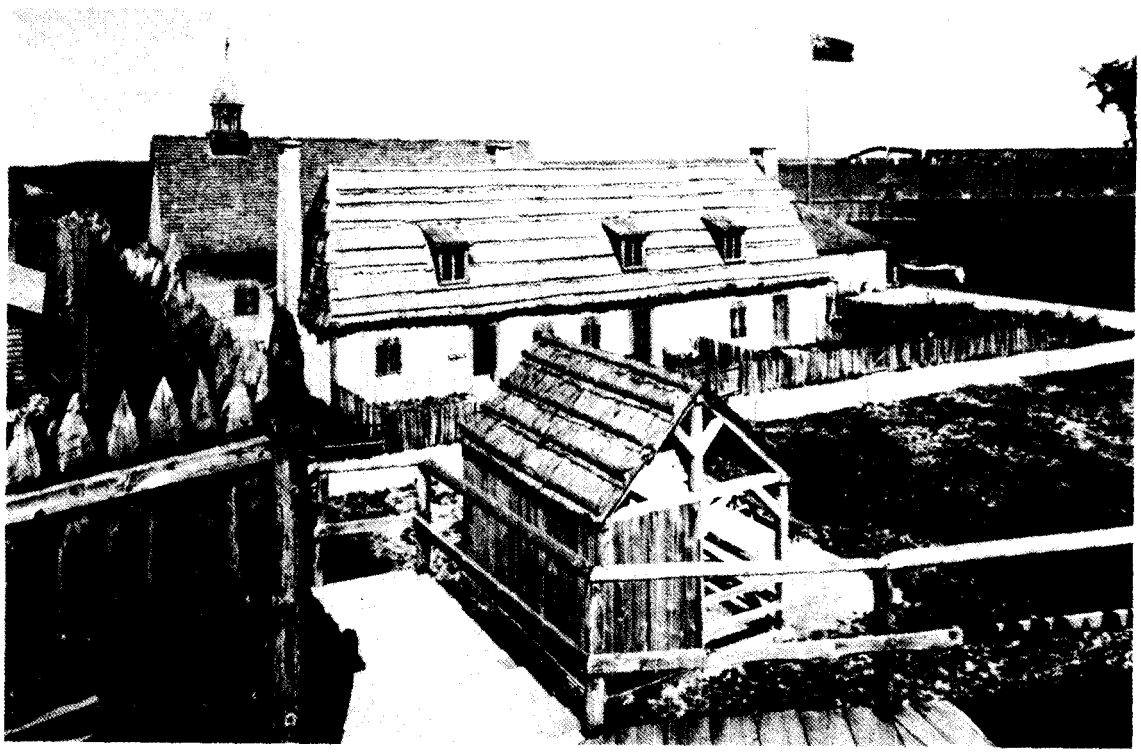


FIGURE 3. *Fort Michilimackinac, looking Northeast from the Southeast Bastion.*

A highly contrasting distribution is noted between Series B, Types 1 and 2. Each type is found in one major area exclusive of the other. Approximately 43 percent of Series B, Type 1 specimens are found concentrated in a circular area within the center of the Southwest rowhouse unit and between this unit and the South/Southwest rowhouse unit. The Southwest rowhouse unit (Feature 220) has been interpreted as a series of joined rowhouse units which were probably constructed by the French between 1755 and 1760 and which were in use until 1781. The majority of artifact associations are French (dating between 1730 and 1760) and secondarily, British, reflecting the feature's initial French construction and occupation as well as the re-occupation of this area and certain house units by British soldiers after 1761. The South Southwest rowhouse unit (Feature 266) represents a rowhouse series which was constructed by the French between 1755 and 1760. The majority of artifact associations are British; specifically British military, indicating that a major part of this unit, although constructed and owned by the French, was occupied by British military personnel from the time of their arrival in 1761. Only one specimen of Series B, Type 2 is found within this entire area.

A number of Series B, Type 2 specimens are found concentrated in the area of the North Northwest rowhouse unit, whereas only one specimen of Series B, Type 1 has been found in this area. The North/Northwest rowhouse unit (Feature 90) represents three houses in a rowhouse unit which was constructed in approximately 1751. This unit was probably in existence until 1780-1781. The majority of artifacts associated with this feature are British in origin, whereas the trash or garden areas north and south of these units contained both late French and British assemblages. These units were presumably originally occupied by French inhabitants and were later used by British inhabitants (traders) and military officers. Also, an area within the northwest corner of Feature 5 (the earliest French stockade dating between ca. 1715-1725 (1735)), contains four Series B, Type 2 specimens and no Series B, Type 1 specimens.

Other areas of presence and absence are approximately the same between the two types, although both appear to be randomly distributed in areas other than those noted above. The notation of specific structural features within which these different types were found adds little to their interpretation.

Series B, Type 1, Variety a specimens were found in four different features: Feature 296 (1 specimen), British Zone (a refuse deposit dating between 1775 and 1781); Feature 297 (1 specimen), basement in the South/Southwest rowhouse; Feature 248 (1 specimen), pit in the Southwest rowhouse; and Feature 215 (2 specimens), basement in the Southwest rowhouse unit.

One each of Series B, Type 2, Variety a specimens were found in three individual features: Feature 296, British Zone; Feature 124, clay apron around the Commanding Officer's house; and Feature 83, basement in the Northwest rowhouse unit. The Northwest rowhouse unit (Feature 25) represents an early French period rowhouse, probably constructed between 1715 and 1720 and abandoned between 1730 and 1740.

Comparative Evidence

Jew's-harps have been found in small quantities at a number of historic sites (Table 3). Several of the sites listed contribute little to an understanding of differences in Jew's-harps types through time, either because the specimens cannot be adequately dated, or they cannot be identified as to specific type. The single brass specimen from Pemaquid, Maine, could apparently date between 1625 and 1775; the one brass specimen from Corchaug, New York, appears to represent a different style (that is, similar to Series A, Type 2) due to the *R* mark; and the six brass specimens from the Strickler Site, Pennsylvania, cannot be identified for comparative purposes. The remaining sites which have produced iron specimens range in date from 1640 to 1830. Brass specimens other than those problematical examples already noted appear to date after 1740. This comparative table gives little evidence for suggesting a time difference between iron and brass specimens; both types occur during the seventeenth, eighteenth, and early nineteenth centuries.

Historical Evidence

In the hopes of supplementing the archaeological record, a sampling was made of several eighteenth century trade good and personal property lists. Five typical references to Jew's-harps are noted below:

1. "Jews Harps 6 for a large Racoon"—dated 1765, British (Flick 1925: V. 4, 895).

2. "Jews Harps small and large"—dated 1761, British (Flick 1921: V. 3, 334).

TABLE 3. *Jew's-Harps Comparative Evidence*

TABLE 3 Jew's-Harps Comparative Evidence

Site	Approximate Site Dates	Frequency	Length*	Width*	Michilimackinac Typology	Source
Pemaquid, Me.	1625-1775	1B 1I	50E 50E	21.2E 28.6E	SB, T1, Va SB, T2, Va	Camp 1967: 6
Corchaug, N.Y.	1640-1660	1B 1I	48E 39E	31E 24E	SA, T2 SB, T2, Va	Solecki 1950: 30
Strickler, Penn.	1650-1675	6B				Futer 1959: 140
Shantok, Conn.	1620-1750	1I	66.5E	31.5E	SB, T2, Va	Salwen 1966: 10
Bell, Wis.	1680-1730	1I	60E	39E	SB, T2, Va	Wittry 1963: 35
Pensacola, Fla.	1722-1752	2I 1I	50.5E 69.8		(1) SB, T2, Vb SB, T2, Va	Smith 1965: 63
Ahumada, Tex.	1756-1771	1I	67	38	SB, T2, Va	Tunnell and Ambler 1967: 71-72
Alamo, Tex.	1740----	1B	63	28	SB, T1, Va	Greer 1967: 83
Longlac, Ont.	1740-1921	1I 1B	48E 48E		SA, T1, (?) SB, T1, Va	Dawson 1969: 49
Big Tree, N.Y.	ca, 1770	2B 1I			SB, T1, Va	Hayes 1965: 37-38, 55
Orringh Tavern, N.Y.	1790-1830	1I			SB, T2, Va	Hayes 1965: 37-38, 55
Canawaugus, N.Y.	ca. 1800	1B			SB, T2, Va	Hayes 1965: 37-38, 55
Spokane, Wash.	1800-1826	3B	57x26, 51x22, 48x26		SB, T1, Va	Combes 1964: 19, 43
Posey, Okla.	1830-1840	2B	46-48	21.E	SB, T1, Va	Wyckoff and Barr 1968: 42-43

* Converted from inches to mm where necessary
B Brass
I Iron

3. "20 Groce of Small Jews Harps ---42/---42"—dated 1770, British (Flick 1931: V. 7, 782).
4. "20 Groce of the smallest brass Jews Harps"—dated 1769, British (Flick 1931: V. 7, 780).
5. "brass jews'-harps"—dated 1749, British (Jacobs 1966: 100).

The first four references are taken from the letters and documents of Sir William Johnson. These citations give us information of the relative value, size, and material of manufacture of Jew's-harps.

Interpretations

Several problems have been defined with respect to understanding differences in the frequency and types of Jew's-harps found on North American historic sites. First, nearly 4½ times as many specimens were recovered from Fort Michilimackinac as from the combined total of specimens taken from 14 other sites which have been reported. Although Jew's-harps are very common at Fort Michilimackinac, it is clear that they are uncommon artifacts at the majority of archaeological sites and in the historical literature. Second, the distributional evidence from Fort Michili-

mackinac indicates that there are important temporal and/or social differences between brass and iron Jew's-harps. Temporal differences between brass and iron Jew's-harps are very tentatively suggested as follows: both brass and iron specimens were in use during the last 20 years of site occupation. Brass specimens, however, occur earlier at the site than do iron specimens; they are found at least by 1730-1735. This conclusion is the most acceptable at present and is based on the inconclusive comparative and distributional evidence available. Social factors which may have affected the noted distributional differences cannot be defined on the basis of the present analysis. Additional research at Fort Michilimackinac and elsewhere will hopefully permit the dating of different Jew's-harps types on a more objective basis.

Step 8.

A final step, that of description, serves a comparative purpose. The formal description of Jew's-harps follows.

Jew's-harps

Series A Flattened Frame Head, Parallel Shanks

Type 1 Iron

Figure 3 A
4 specimens
Dimensions (4 specimens): length, 43.3[2], 35.3, greater than 28.6, 39.1; width, 33.3, 25.1, 33.2, 33.2.

Iron specimens exhibit flattening across the frame head and down both sides to the point of shank-head juncture. Shanks retain the square shape of the preformed iron stock. Type 1 specimens exhibit a triangular head shape with rounded corners.

Type 2 Brass

Figure 3 B-E
8 specimens
Dimensions (7 specimens): length 36.3-39.4, average, 37.6; width, 22.8-29.2, average, 25.0.

Brass specimens are flattened across the frame head and down both sides to the point of shank juncture. Frame shanks are square in cross section. The frame head is triangular in shape. Seven specimens show a stamped mark at the center of the flattened frame head. Three different marks are represented: a *B* (2 specimens), an *R* (3 specimens), and a symbol composed of two elements, each similar to an *H* with concave sides (2 specimens). Except for one specimen, this sample of seven exhibits a great uniformity in both width and length dimensions. An additional specimen represents a second size category with a width of 14.3 mm. and a length of 26.2 mm.

Series B Square- to Diamond-Shaped Cross Section Throughout, Tapered Shanks

Type 1 Brass, file marks on all surfaces

Variety a Round-shaped frame head.

Figure 3 F-J
70 specimens
Dimensions (57 specimens): length, 38.5-66.0, average 55.0, standard deviation, 6.83; width, 23.0-30.0, average 25.8, standard deviation, 1.87.

Two size categories based on length are tentatively suggested: one narrowly defined between 48.0 mm and 50.0 mm, and one broad category between 54.0 mm and 61.0 mm. No further size distinctions could be made although other dimensions such as width and weight were not tested. A correlation coefficient of .75 reveals that the variables of length and width are fairly closely related.

2. All measurements are given in millimeters.

Variety b Triangular-shaped frame head.

Figure 3 K
1 specimen
Dimensions (1 specimen): length, 51.3E; width, 28.4.

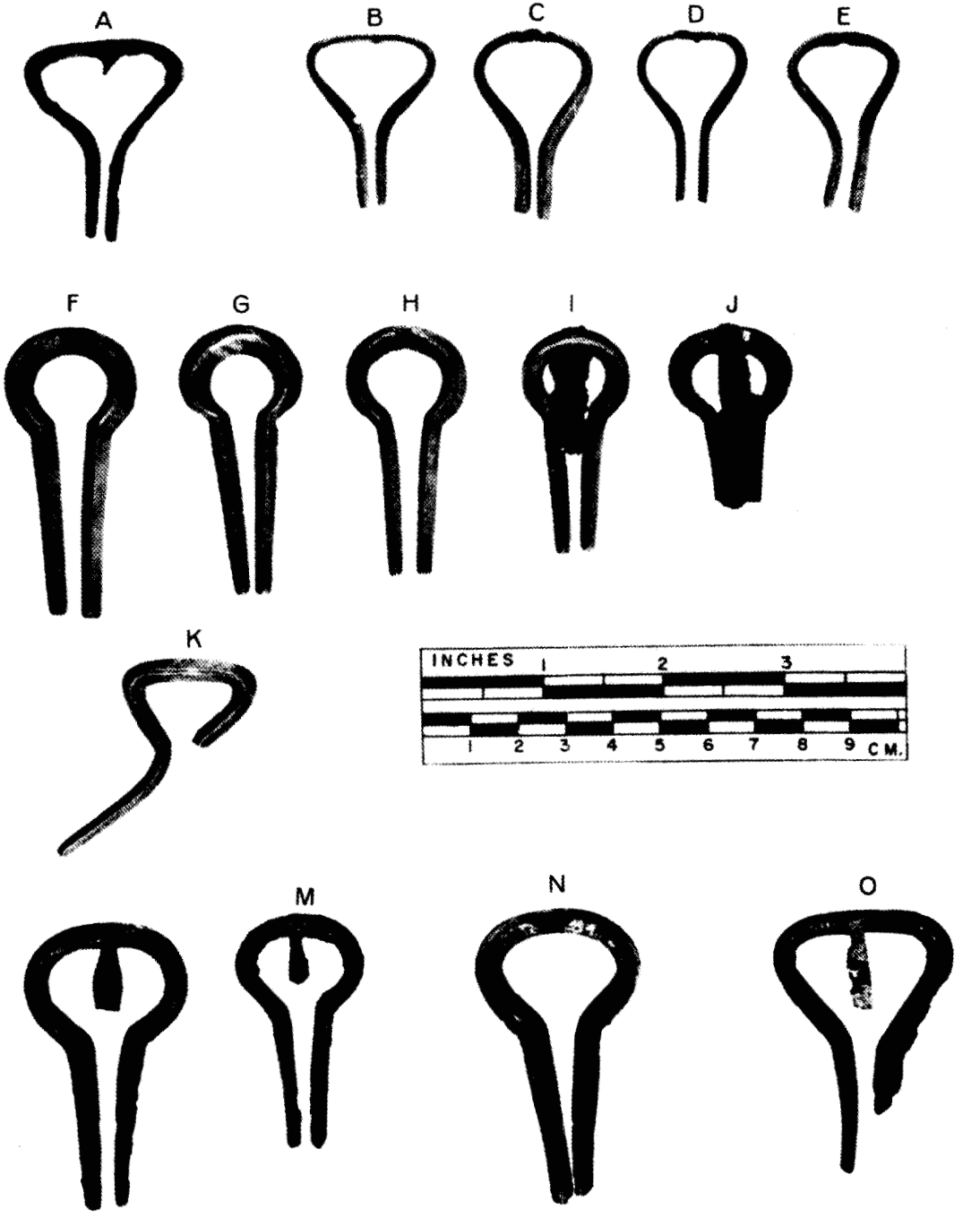
Type 2 Iron

File marks are not present on iron specimens. There are several other attributes which distinguish this type from Series B, Type 1. The center ridge, which forms one corner of the square iron stock, is hammered flat across the entire frame head. This produces a beveled effect on the head surface. There is a great deal of variation between specimens in the extent and degree of this bevel.

Variety a Round- to slightly oval-shaped frame head.

Figure 3 L-N
24 specimens
Dimensions (18 specimens): length, 52.0-66.7, average, 30.3, standard deviation, 4.63; width, 22.5-37.3, average, 30.3, standard deviation, 4.30.

A standard deviation of 4.30 for width indicates that this is a highly variable dimension, although directly related to


A
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variation in length as suggested by a high coefficient of correlation, .85. Two broad length categories were identified: one between 54.0 mm and 58.0 mm, and a second between 61.0 and 65.0 mm.

Variety b Triangular-shaped frame head.

Figure 3 O
15 specimens
Dimensions (15 specimens): Length, 51.7-62.0, average, 56.4; width, 34.0-42.5, average, 38.5.

Width and length measurements deviate moderately from their respective means.

Table 2 summarizes metric attributes for all Jew's-harp types that were described above. One additional between-type comparative measure has been computed.

Analytic Features of Formal Classification

The above steps have resulted in a classification which possesses a number of unique comparative and analytic qualities. Formal classification:

- —is not structured by any specific interpretative problem. Therefore, there are no limitations imposed on the interpretative purposes to which its results may be applied.
- —produces a classification free of built-in interpretative error and permits a re-evaluation of existing artifact interpretations on an objective basis, because attribute distinctions and rankings are not based on assumed knowledge of attribute significance but are based on the presence or absence and relative formal importance of empirically defined physical attributes.

  permits a maximum recognition of and discrimination between physical properties representative of an artifact category, so that each variable property can be tested against the many factors potentially responsible for its contextual and formal variation. Any specific attribute or class can thus be isolated and evaluated in terms of its contextual and interpretative significance at the site. Any specific attribute can be compared with other attributes on a similar level of formal differentiation; this yields evidence of co-variation between attributes. In certain cases, it is also possible to compare related but different artifact categories on the same level of discrimination in order to identify functional co-variation between artifact categories.
- —produces an internally consistent arrangement of artifact classes. This permits the description and comparison of any specific artifact within a category in terms of attributes which define any other artifact within the same category.
- —through its descriptive features permits the quantification and statistical evaluation of artifact properties.
- —is both easily modifiable and is flexible enough to include additions of new data.
- —is capable of efficiently accommodating a large and formally complex artifact sample, thereby systematizing the task of description.
- —facilitates the analysis of fragmentary or badly preserved artifacts through the use of *category* designations.
- —produces artifact descriptions of a caliber adequate for comparative research.
- —enables discrimination between behavioral norms of manufacture since the classificatory levels defined in a formal classification of historic artifacts are based essentially on differences which result from differential manufacturing behavior.

CONCLUSION

The rationale for, mechanics, and advantages of a formal approach to artifact classification and analysis have been described and exemplified. Although this approach is based in part on current methods of archaeological taxonomy, it is a new and useful concept in the archaeological study of historic sites. It is hoped that this approach will be evaluated and tested by others in the field who recognize the advantages inherent in artifact classification.

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