ARCHAEOLOGICAL SYSTEMATICS AND THE STUDY OF CULTURE PROCESS[1]

LEWIS R. BINFORD

ABSTRACT

It is argued that the normative theory of culture, widely held among archaeologists, is inadequate for the generation of fruitful explanatory hypotheses of cultural process. One obvious shortcoming of this theoretical position has been the development of archaeological systematics that have obviated any possibility of measuring multivariate phenomena and permit only the measurement of unspecified "cultural differences and similarities," as if these were univariate phenomena. As an alternative to this approach, it is proposed that culture be viewed as a system composed of subsystems, and it is suggested that differences and similarities between different classes of archaeological remains reflect different subsystems and hence may be expected to vary independently of each other in the normal operation of the system or during change in the system. A general discussion of ceramic classification and the classification of differences and similarities between assemblages is presented as an example of the multivariate approach to the study of cultural variability. It is suggested that a multivariate approach in systematics will encourage the study of cultural variability and its causes and thereby enhance the study of culture process.

WILLEY and Phillips (1958: 50) have expressed doubts that current archaeological concepts such as "phase" have consistent meaning in terms of human social units. It is the purpose of this paper to explore some of the reasons for this lack of congruence and to offer a theoretical framework more consistent with social reality.

In any general theoretical framework there are at least two major components: (1) one that deals with criteria for isolating the phenomenon under study and with the underlying assumptions about the nature of the units or partitive occurrences within the recognized generic class of phenomenon, and (2) assumptions concerning the way in which these partitive units are articulated in the operation of a system or during change.

Most of the analytical means and conceptual tools of archaeological systematics have arisen in the context of a body of culture theory which is referred to here as the "normative school." Under this normative view the phenomenon being studied is variously defined, but there is general agreement that culture with a capital C is the subject. In this the normative theorists are in agreement with others. It is in the definition of partitive concepts and the assumptions concerning the processes of between-unit dynamics that normative theorists differ markedly from the position taken here. A typical normative statement is given by Taylor (1948: 110):

> By culture as a partitive concept, I mean a historically derived system of culture traits which is a more or less separable and cohesive segment of the whole-that-is-culture and whose separate traits tend to be shared by all or by specially designated individuals of a group or society.

A similar view is expressed by Willey and Phillips (1958: 18) when speaking of spatial divisions of cultural phenomena:

> In strictly archaeological terms, the locality is a geographical space small enough to permit the working assumption of complete cultural homogeneity at any given time.

The emphasis in these two quotations and in the writings of other archaeologists (Ford 1954: 47; Rouse 1939: 15–18; Gifford 1960: 346) is on the shared characteristics of human behavior. Within this frame of thought, culture is defined as an abstraction from human behavior.

> According to the concept of culture being developed here, culture is a mental construct consisting of ideas (Taylor 1948: 101).

Or as Ford (1954: 47) has argued:

> First, it must be recalled that these buildings are cultural products — not the culture. These arrangements of wood, bamboo, and grass are of interest to the ethnologists solely because they illustrate the aborigine's ideas as to the proper ways to construct dwellings.

In summary, a normative theorist is one who sees as his field of study the ideational basis for varying ways of human life — culture. Information is obtained by studying cultural products or the objectifications of normative ideas about the proper ways of life executed by now extinct peoples. The archaeologist's task then lies in abstracting from cultural products the normative concepts extant in the minds of men now dead. (For criticism of this general view see White 1954: 461–8.)

In examining the problem of how we may observe and study cultural phenomena, a crucial

[1] This paper was presented at the 29th Annual Meeting of the Society for American Archaeology, Chapel Hill, North Carolina, 1964.

question arises: What types of units can be isolated for the meaningful study of culture? For adherents of the normative school, the assumptions about units or the natural "packages" in which culture occurs are dependent upon assumptions about the dynamics of ideational transmission. Learning is the recognized basis of cultural transmission between generations and diffusion the basis of transmission between social units not linked by regular breeding behavior. The corollary of this proposition is that culture is transmitted between generations and across breeding populations in inverse proportion to the degree of social distance maintained between the groups in question. Since culture is viewed as a great "whole" transmitted through time and across space, any attempt to break up this cultural "whole" is considered arbitrary and thought of as a methodological expedient (Ford 1954: 51; Brew 1946: 49). The partitioning of culture is often termed a heuristic device for measuring the degree of social distance between the groups whose cultural products are being observed. (An excellent criticism of this view is found in Spaulding 1957: 85–7). Spatial discontinuities in the distribution of similar formal characteristics are perceived as either the result of (1) natural barriers to social intercourse, or (2) the presence of a value system which provides a conservative psychological matrix that inhibits the acceptance of foreign traits, or (3) the migration or intrusion into the area of new peoples who disrupt the previous pattern of social intercourse. Formal changes in the temporal distribution of items are viewed as the result of innovations or the operation of a built-in dynamics sometimes designated as "drift" (Ford 1954: 51; Herskovits 1948: 581–2). (For criticism of this concept, see Binford 1963: 89–93.) Both innovation and drift are considered natural to culture and, as Caldwell (1958: 1) has said: "other things being equal, changes in material culture through time and space will tend to be regular." Discontinuities in rates of change or in formal continuity through time are viewed as the result of historical events which tend to change the configuration of social units through such mechanisms as extensions of trade, migration, and the diffusions of "core" ideas such as religious cults (Ritchie 1955).

Cultural differences and similarities are expressed by the normative school in terms of "cultural relationships" which, if treated rigorously, resolve into one general interpretative model. This model is based on the assumption of a "culture center" where, for unspecified reasons, rates of innovation exceed those in surrounding areas. The new culture spreads out from the center and blends with surrounding cultures until it is dissipated at the fringes, leaving marginal cultures. Cultural relationships are viewed as the degree of mutual or unilateral "influence" exerted between culture centers or subcenters.

This interpretative framework implies what I choose to call the aquatic view of culture. Interpretative literature abounds in phrases such as "cultural stream" and in references to the "flowing" of new cultural elements into a region. Culture is viewed as a vast flowing stream with minor variations in ideational norms concerning appropriate ways of making pots, getting married, treating one's mother-in-law, building houses, temples (or not building them, as the case may be), and even dying. These ideational variations are periodically "crystallized" at different points in time and space, resulting in distinctive and sometimes striking cultural climaxes which allow us to break up the continuum of culture into cultural phases.

One of the most elegant and complete criticisms of the normative theorists to appear in recent years is that of David Aberle (1960). He has pointed out that adherents of the normative position are forced to explain cultural differences and similarities in terms of two factors, historical and psychic. He summarizes the normative position as follows:

> No culture can be understood solely by reference to its current situation. As a result of the accidents of history, it has had contacts with a variety of other cultures. These other cultures provide the pool of potential cultural material on which cultures can draw. Since there is no general basis for predicting what cultures will have contact with what others, the historical factor has an accidental and fortuitous character. With respect to the psychic factor, there are qualities of men's minds — whether general tendencies to imitate or specific attitudes held by a particular group — which determine whether or not any available cultural item will be borrowed. Although the contacts are unpredictable, the laws of psychology may account for acceptance and rejection. Hence the laws of culture are psychological laws (Aberle 1960: 3).

The normative view leaves the archaeologist in the position of considering himself a culture historian and/or a paleo-psychologist (for which most archaeologists are poorly trained). This leaves him competent to pursue the investigation of culture history, a situation which may partially account for failure to develop the explana-

tory level of archaeological theory noted by Willey and Phillips (1958: 5).

It is argued here that a new systematics, one based on a different concept of culture, is needed to deal adequately with the explanation of cultural process. If we define culture as man's extrasomatic means of adaptation (White 1959: 8), in the partitive sense culture is an extrasomatic adaptive system that is employed in the integration of a society with its environment and with other sociocultural systems. Culture in this sense is not necessarily shared; it is participated in by men. In cultural systems, people, things, and places are components in a field that consists of environmental and sociocultural subsystems, and the locus of cultural process is in the dynamic articulations of these subsystems. This complex set of interrelationships is not explicable by reduction to a single component — ideas — any more than the functioning of a motor is explainable in terms of a single component, such as gasoline, a battery, or lubricating oil.

It was stated above that in our definition culture is not necessarily shared; it is participated in. And it is participated in differentially. A basic characteristic of cultural systems is the integration of individuals and social units performing different tasks, frequently at different locations; these individuals and social units are articulated by means of various institutions into broader units that have different levels of corporate inclusiveness. Within any one cultural system, the degree to which the participants share the same ideational basis should vary with the degree of cultural complexity of the system as a whole. In fact, a measure of cultural complexity is generally considered to be the degree of internal structural differentiation and functional specificity of the participating subsystems (White 1959: 144–5). Within any given cultural system, the degree to which all the participants share common ideational preferences should vary inversely with the complexity of the system as a whole. The sharing of cultural elements by distinct systems will be a function of the nature of the cultural means of articulating distinct groups with each other.

At present our explicitly stated systematics is based on the degree to which cultural traits are shared. The Midwestern taxonomic system (McKern 1935: 70–82; and 1939: 301–13) is a hierarchical arrangement of archaeologically defined culture traits as they appear in spatially or temporally discrete manifestations. Similarly, such units as the phase (Willey and Phillips 1958: 50; Rouse 1955: 713–14) are groupings of archaeological complexes on the basis of shared traits.

This emphasis on shared traits in our system of classification results in masking differences and in lumping together phenomena which would be discrete under another taxonomic method. Culture is not a univariate phenomenon, nor is its functioning to be understood or measured in terms of a single variable — the spatial-temporal transmission of ideas. On the contrary, culture is multivariate, and its operation is to be understood in terms of many causally relevant variables which may function independently or in varying combinations. It is our task to isolate these causative factors and to seek regular, statable, and predictable relationships between them.

Our taxonomies should be framed with this end in mind. We should partition our observational fields so that we may emphasize the nature of variability in artifact populations and facilitate the isolation of causally relevant factors. Our categories should be justifiable in terms of possessing common structural or functional properties in the normal operation of cultural systems. These categories should then be analyzed in terms of their behavior in various systems and in situations of systematic change.

By such a method we may achieve our aim of expressing the laws of cultural process. Archaeological systematics should be an aid in accomplishing analytical tasks. As an example of the suggested method of partitioning our observational framework, two general problems will be discussed: ceramic classification and the classification of archaeological assemblages.

Formal variation in ceramics occurs because of differences in either the techniques of manufacture or in the general design of the finished product; both kinds of variation may occur independently of each other. (This distinction is analogous to Rouse's [1960: 314] distinction between procedural and conceptual modes). One example is the production of an abrupt shoulder as opposed to a gently sloping shoulder while continuing to execute the same basic set of manufacturing techniques. Such variation is termed *morphological variation*. In addition to morphological variation, there is *decorative variation* or modifications that are made as discrete steps in the terminal phases of the manufactur-

ing process. Painted and incised designs are examples of decorative variation. We can therefore speak of two major classes of variation or analytic dimensions, in terms of which ceramic forms can be studied — *technical* and *design dimensions*. Morphological and decorative variation may be observed along either dimension.

With regard to the sociocultural context of formal variability, two broad classes of variation can be recognized which crosscut the categories mentioned above. *Primary functional variation* is that which is directly related to the specific use made of the vessel in question; for example, the difference between a plate and a storage jar. *Secondary functional variation* is a by-product of the social context of the manufacturers of the vessel or of the social context of the intended use of the item, or both. This variation may arise from a traditional way of doing things within a family or a larger social unit, or it may serve as a conscious expression of between-group solidarity. Certain design characteristics may become standardized as symbols appropriate to vessels used in specific social contexts. At this level of analysis we may recall Linton's (1936: 403–21) statement that any given cultural item may vary with regard to form, meaning, use, and function in variable cultural contexts. Such distinctions are particularly important if the social context of manufacture and use are not isomorphic, as in the case of items circulated widely through exchange systems, or are used primarily in the context of institutions functioning for intersocietal articulation.

Formal variation in artifacts need not and, in most cases, probably does not have a single meaning in the context of the functioning cultural system. The study of primary functional variation is essential to the understanding of the sociocultural systems represented by the artifacts, in this case ceramics. The nature and number of occurrences of functionally differentiated container types can yield valuable information about the size of social segments performing different tasks. Even in cases where specific functions cannot be determined for the recognized types, the spatial configuration of their occurrence tells something about the spatial structure of differentiated activities within or between sites.

Variables of primary function may remain stable, change abruptly, or change at rates different from variables of secondary function. The relative rates of change in these two classes of variables can tell us much about the nature of the changes within the systems in question. An example of this can be seen by comparing the Havana tradition of Illinois with the Scioto tradition of Ohio.

Containers of the Havana tradition are predominantly large, open-mouthed cauldrons, but there are occasional flat-bottomed "flowerpot" forms. This suggests that food was prepared in these societies for relatively large groups of people — larger than nuclear families — and that food was stored corporately. This pattern of cooking and storing was common to essentially all the societies participating in the Havana tradition. Secondary functional variation, on the other hand, with respect to both decoration and design exhibits differences through space and time, suggesting that among the participants in the Havana tradition social contacts and generational continuity were changing.

Container forms of the Scioto tradition in Ohio, which is believed to be contemporaneous with the Havana tradition, were smaller vessels with rounded bottoms; the large cauldron is an infrequent form. Nevertheless, there are common design and technical attributes in the ceramics of both traditions. This suggests that, in the Ohio groups, the social units for which food was prepared were smaller and that modes of food storage were correspondingly different.

In the traditional view, the elements in common between the Havana and Scioto traditions would be interpreted as indicating "cultural relationships," and at present the two are grouped into the "Hopewell phase," with each group sharing different traits of the "Hopewell culture." It is suggested here that the sociocultural systems represented in the two traditions may be and probably are totally different, and that the common ceramic elements reflect patterns of common regional interaction facilitated through different institutions. This view differs markedly from one which pictures the flowing of "Hopewell culture" out of a "culture center."

The comparative study of secondary functional variation within one class of containers makes it possible to determine the degree of work specialization in discrete social segments as well as the degree of craft specialization in the manufacture of specific container classes. Empirical demonstration of the validity of the assumptions underlying sociological interpretation of variability in craft products is accumulating, and a number of recent studies show that

TABLE 1. CONTINGENCY OF FORMAL VARIATION

	Morphological variation	*Decorative variation*
Technical dimension		
Design dimension		

this kind of "meaning" is recoverable from ceramic data. For example, Cronin (1962: 109) has demonstrated greater similarity in the conventional use of decorative design elements between pottery types at a single site than between types of the same pottery from different sites. Comparable results are suggested by recent discussions of taxonomic problems encountered by others (Sears 1960: 327–8; Smith 1962). I have recently proposed a processual model for this type of phenomenon (Binford 1963). Several recent studies have utilized the measurement and spatial distributions of stylistic minutiae in the construction of sociological models for prehistoric communities (Deetz 1960; Longacre 1963; Freeman and Brown 1964).

If we expand our analytical perspective to include the problem of formal variability in contemporaneous sociocultural systems and sociocultural systems through time, then our analysis must be even more critical. What is ideosyncratic secondary functional variation in one group may symbolize political ties in another. Primary functional variation in one social system may be partially incorporated as secondary functional variation in another.

The complexities facing the archaeologist who attempts this kind of analysis necessitate the use of multiple taxonomies framed to express multivariate attributes. Such taxonomies should replace the conventional ones, which are either classes based on unspecified kinds of likeness or difference, or are hierarchically arranged traits presumed to reflect generic relationships (Willey and Phillips 1958: 31; Rouse 1960). We suggest that classification should proceed independently with regard to technical and design attributes and that crosscutting categories should be used to express morphological and decorative variation (Table 1).

The result of such an analysis would be the recognition of numbers of classes of variables, referable to one or more of the column-and-row contingency boxes in Table 1. Analysis would then proceed to the question of the cultural context of the observed classes or variables distinguished in the four categories above. This step is schematically diagrammed in Table 2. Each column and row contingency box would contain the formal classes of demonstrable variables derived from the initial classification.

The next step would be the definition of populations of artifacts in terms of recognizable and demonstrably different cultural factors. Discussions of differences and similarities would be based on independent and dependent variables and not on an undifferentiated conglomeration of multivariate phenomena.

The current systematics of archaeological assemblages also stresses the quantity of shared traits. Assemblages are referred to a phase or a focus without due allowances for either seasonal or functional variability. Although it is premature to attempt a final presentation of assemblage systematics since such a presentation should be based on more complete knowledge of the range of classes of variability, we feel that at least three major types of broad cultural alignments can be distinguished which may vary independently of one another.

TABLE 2. CONTINGENCY OF CULTURAL VARIATION

	Primary functional variation	*Secondary functional variation*	
		Context of use	*Context of Production*
Techno-morphological			
Morphological design			
Decorative techniques			
Decorative designs			

The first such category is the *tradition*, whose meaning we choose to make somewhat narrower than is conventional in archaeological literature. (For a discussion of the concept as generally used, see Willey and Phillips 1958: 34–40.) We define tradition as a demonstrable continuity through time in the formal properties of locally manufactured craft items, this continuity being seen in secondary functional variability only. There may or may not be such continuity with respect to primary functional variability. To put it another way, the tradition is seen in continuity in those formal attributes which vary with the social context of manufacture exclusive of the variability related to the use of the item. This is termed stylistic variability (Binford 1962: 220), and on a single time horizon such a tradition would be spatially defined as a style zone. Through time we may study the areal extent and stability of style zones and the comparative history of local traditions within the framework of the macrotradition. Historical continuity and social phylogeny are particularly amenable to analysis through the study of stylistic attributes. It should be noted that the concept of tradition as it is used here may refer to either a single class of artifactual materials, such as ceramics, or to several classes of artifacts of a single sociocultural system which exhibit continuity through time. It is assumed that formal variability in secondary function is directly related to the social matrix of production and use. In the case of stability through time in the social matrix of production, we would expect to observe temporal continuity and a regular rate of change. In the case of a changing social matrix of production, we would expect to find discontinuities in rates of change and in the spatial and temporal distribution of formal properties.

A second broad class of sociocultural relationships is reflected in items that are widely exchanged and which occur in a context of social distinctiveness, that is, sociotechnic items (Binford 1962). Such items would be analyzed in terms of their primary functional variability as inferred through correlation with other archaeological remains which define the context of social relations. Through the study of the spatial distributions of such items on a single time horizon we may define *interaction spheres* — the areal matrices of regular and institutionally maintained intersocietal articulation. This term is adopted from Caldwell (1962). It is my impression that I have seen the term used by other archaeologists, but I have not been able to find it in the literature. Caldwell (1962) has pointed to the essential characteristics of the interaction sphere:

> An interaction sphere is a kind of phenomenon which can be regarded as having properties different from a culture . . . the various regional traditions were present before there was a Hopewellian situation. The term culture would be better applied to each of these separately than to the overall situation with which they are interacting.

What is essential to the concept of an interaction sphere is that it denotes a situation in which there is a regular cultural means of institutionalizing and maintaining intersocietal interaction. The particular forms of the institutions and the secondary functions which may accrue to them will be found to vary widely in the spectrum of history. Interaction spheres may crosscut both traditions and culture areas. The sharing of symbols and the appearance of similar institutions are less a function of the traditional enculturative milieu of individual societies than of complex articulation of societies of different ethnic backgrounds, levels of cultural complexity, and social types.

The comparative structural and functional analysis of interaction spheres is suggested as an approach which allows us to define, quantify, and explain the observation of Redfield (1941: 344) that rates of cultural change may be directly related to rates of social interaction. The distinction between the "shared" culture of a stylistic nature and the "shared" culture of a sociopolitical nature is the basis for distinguishing the tradition from the interaction sphere.

Examples of the interaction sphere come readily to mind. The presence of Mississippian "traits" in local traditions on the Piedmont of the southeastern United States is one. Another is the common "Hopewellian" items in tombs of Illinois (the Havana tradition) and in the charnel houses of Ohio (the Scioto tradition). The nature of the cultural processes responsible for the widespread occurrences of similar cultural items in these two cases cannot be explained by the simplistic reference to sharing of similar ideas concerning the proper ways to manufacture items.

The third category we wish to discuss is that of the adaptive area. An adaptive area is one which exhibits the common occurrence of artifacts used primarily in coping directly with the

physical environment. Such spatial distributions would be expected to coincide broadly with culture areas as they are conventionally defined; however, this concept differs from the culture-area concept in that stylistic attributes are excluded from the definition. The adaptive means of coping with changes in physical environment need not coincide with those which are designed to cope with changes in the social environment. Therefore, we need to study traditions (based on styles), interaction spheres (based on intersocietal relations), and adaptive spheres (based on common means of coping with the physical environment), and treat these three isolates as independent variables.

Summary. It has been argued that the normative theory of culture is inadequate for the generation of fruitful explanatory hypotheses of cultural process. An approach is offered in which culture is not reduced to normative ideas about the proper ways of doing things but is viewed as the system of the total extrasomatic means of adaptation. Such a system involves a complex sets of relationships among people, places, and things whose matrix may be understood in multivariate terms.

The steps in such an analysis proceed by means of the partitioning of demonstrable variability into a multidimensional framework. Use of such a framework will facilitate isolation of the causes of various kinds of changes and differences and provide the basis for studying comparatively the rates and patterns of change in different classes of cultural phenomena. Such an approach would, it is argued, facilitate and increase our understanding of cultural processes.

Acknowledgments. I would like to acknowledge the intellectual stimulation of many of my colleagues in the formulation of the ideas presented in this paper. Stuart Struever, Joseph Caldwell, Howard Winters, James Brown, Melvin Fowler, and the author have had frequent discussions over the past three years in an attempt to increase our understanding of the prehistory of the Midwest. Although individually all of the participants in our own "interaction sphere" have contributed to the formulation of the arguments presented here, I accept full responsibility for the particular form in which the ideas are presented. In addition, I would like to express my gratitude to Carl-Axel Moberg of the Göteburg Museum, Sweden, who participated in the joint teaching of a class along with Robert J. Braidwood and me. Moberg's arguments and rebuttals have aided appreciably in definition of the ideas presented. My students over the past three years — particularly William Longacre, James Hill, Leslie Freeman, and Robert Whallon — have been a constant source of stimulation and have initiated agonizing reappraisals of my own thinking. Of particular importance is the role played by my wife, Sally Binford. She has been a severe critic of my logic as well as of my syntax, and I gratefully acknowledge her editorship of this manuscript.

ABERLE, DAVID R.
1960 The Influence of Linguistics on Early Culture and Personality Theory. In *Essays in the Science of Culture: In Honor of Leslie A. White*, edited by Gertrude Dole and Robert Carneiro, pp. 1–49. Thomas Y. Crowell, New York.

BINFORD, LEWIS R.
1962 Archaeology as Anthropology. *American Antiquity*, Vol. 28, No. 2, pp. 217–25. Salt Lake City.
1963 Red Ocher Caches from the Michigan Area: A Possible Case of Cultural Drift. *Southwestern Journal of Anthropology*, Vol. 19, No. 1, pp. 89–108. Albuquerque.

BREW, JOHN OTIS
1946 Archaeology of Alkali Ridge: Southeastern Utah. *Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University*, Vol. 21. Cambridge.

CALDWELL, JOSEPH R.
1958 Trend and Tradition in the Prehistory of the Eastern United States. *Memoirs of the American Anthropological Association*, No. 88. Menasha.
1962 Interaction Spheres in Prehistory. Unpublished paper presented at the Annual Meeting of the American Association for the Advancement of Science, Philadelphia 1962.

CRONIN, CONSTANCE
1962 An Analysis of Pottery Design Elements Indicating Possible Relationships between Three Decorated Types. In "Chapters in the Prehistory of Eastern Arizona I," by Paul S. Martin and others. *Fieldiana: Anthropology*, Vol. 53, pp. 105–41. Chicago Natural History Museum, Chicago.

DEETZ, JAMES D. F.
1960 An Archaeological Approach to Kinship Change in Eighteenth Century Arikara Culture. Unpublished Ph.D. dissertation, Harvard University, Cambridge.

FORD, JAMES A.
1954 The Type Concept Revisited. *American Anthropologist*, Vol. 56, No. 1, pp. 42–57. Menasha.

FREEMAN, L. G., JR. AND JAMES A. BROWN
1964 Statistical Analysis of Carter Ranch Pottery. In "Carter Ranch Site" by Paul S. Martin and others. *Fieldiana: Anthropology* (in press). Natural History Museum, Chicago.

GIFFORD, JAMES C.
1960 The Type-Variety Method of Ceramic Classification as an Indicator of Cultural Phenomena." *American Antiquity*, Vol. 25, No. 3, pp. 341–7. Salt Lake City.

HERSKOVITS, MELVILLE J.
1948 *Man and His Works.* Alfred A. Knopf, New York.

LINTON, RALPH
1936 *The Study of Man.* Appleton-Century-Crofts, New York.

LONGACRE, WILLIAM A.

1963 Archaeology as Anthropology: A Case Study. Unpublished Ph.D. dissertation, University of Chicago, Chicago.

MCKERN, W. C.

1935 Certain Culture Classification Problems in Middle Western Archaeology. In "The Indianapolis Archaeological Conference," pp. 70–82, issued by the Committee on State Archaeological Surveys. *National Research Council, Circular* No. 17. Washington.

1939 The Midwestern Taxonomic Method as an Aid to Archaeological Culture Study. *American Antiquity*, Vol. 4, No. 4, pp. 301–13. Menasha.

REDFIELD, ROBERT

1941 *The Folk Culture of Yucatan*. University of Chicago Press, Chicago.

RITCHIE, WILLIAM A.

1955 Recent Discoveries Suggesting an Early Woodland Burial Cult in the Northeast. *New York State Museum and Science Service, Circular* No. 40. Albany.

ROUSE, IRVING

1939 Prehistory in Haiti: A Study in Method. *Yale University Publications in Anthropology*, No. 21. New Haven.

1955 On the Correlation of Phases of Culture. *American Anthropologist*, Vol. 57, No. 4, pp. 713–22. Menasha.

1960 The Classification of Artifacts in Archaeology. *American Antiquity*, Vol. 25, No. 3, pp. 313–23. Salt Lake City.

SEARS, WILLIAM H.

1960 Ceramic Systems and Eastern Archaeology. *American Antiquity*, Vol. 25, No. 3, pp. 324–9. Salt Lake City.

SMITH, WATSON

1962 Schools, Pots and Pottery. *American Anthropologist*, Vol. 64, No. 6, pp. 1165–78. Menasha.

SPAULDING, ALBERT C.

1957 Review of *Method and Theory in American Archaeology*, by Gordon W. Willey and Philip Phillips. *American Antiquity*, Vol. 23, No. 1, pp. 85–7. Salt Lake City.

TAYLOR, WALTER W.

1948 A Study of Archeology. *Memoirs of the American Anthropological Association*, No. 69. Menasha.

WHITE, LESLIE A.

1954 Review of "Culture: A Critical Review of Concepts and Definition," by A. L. Kroeber and Clyde Kluckhohn. *American Anthropologist*, Vol. 56, No. 3, pp. 461–8. Menasha.

1959 *The Evolution of Culture*. McGraw-Hill, New York.

WILLEY, GORDON R. AND PHILIP PHILLIPS

1958 *Method and Theory in American Archaeology*. University of Chicago Press, Chicago.

UNIVERSITY OF CHICAGO
Chicago, Illinois
October, 1964