

## METHODOLOGICAL PROBLEMS OF ARCHAEOLOGICAL RESEARCH ON THE NORTHWEST COAST

Within the past decade, there has become a growing awareness among regional prehistorians of the interpretive restrictions imposed on data collected and analyzed under a traditional approach. By traditional, I am referring to a research design totally oriented towards the delineation of a culture historical sequence based on supposed "time sensitive" artifact types. In addition, among those who still claim the study of culture change (in the limited sense of changing artifact forms) to be their primary objective, there is recognition of the value of more exact data retrieval techniques and subsidiary data analyses (i.e. faunal remains, soils, palynological remains, etc.). Even so, among published reports only one (Matson 1976a) can be characterized as multifaceted, although it is supplemented by a few unpublished theses. Given this fact, one must ask the question, how reliable and representative are samples collected under such conditions?

In part related to this methodological issue is a re-evaluation of past culture historical units. Since a major portion of the existent data remains unanalyzed, there is a general feeling of skepticism for the delimitation of a sequence based on "table top" observations or a single component. Moreover, this debate has further centred on the concept of phase as a viable taxonomic unit for describing regional assemblages and cultural variation.

As should be evident, both of these problems have direct bearing on the present study. If we cannot assume the data to be representative, then the validity of any interpretation must remain questionable. Similarly, should the problem of culture historical unit formulation be skirted, the basis for further analysis becomes suspect.

### Sampling and the Question of Representativeness

A typical Northwest Coast midden is a complex mass of refuse (food debris), cultural features and vestiges of material culture. Though our understanding of midden accumulation dynamics is still inadequate, Hester and Conover (1969: 138) outline the most traditionally accepted model:

The typical site possessed a single row of houses strung out along the beach with the development of the midden resulting from the disposal of debris on the front side of the house toward the water. This

pattern results in a seaward building of the midden deposits with strata dipping toward the waterline and the oldest layers occurring to the rear or uphill portions of the site.

In addition to seaward buildup, midden sites are expected to have had lateral movement along the shoreline. House abandonment, for a variety of reasons, is assumed to have occurred periodically with residence units resituated further along the beach. It may also be suggested that an abandoned house site could remain abandoned for a considerable period of time dependent upon population size and the availability of suitable areas for house construction.

To a limited extent, this hypothetical model of midden development has been borne out by archaeological excavation. The seaward sloping effect is often notable on profiles running perpendicular to the beach while the earliest deposits almost always occur to the rear of the site. Of course the latter situation must also be viewed with respect to sea level changes. As support for a lengthy abandonment of site areas, we may note slightly different culture historical sequences at varied horizontal positions in several sites. Examples of this are seen in excavations at Helen Point (Carlson 1970; Hall 1968; McMurdo 1974), Marpole (Borden 1950; Burley 1979b) and Whalen Farm (Borden 1968a; Seymour 1976).

Northwest Coast middens are known to vary extensively in size and depth. While some may be less than half a metre deep and have a limited spatial extent, others are over five metres deep and run several hundred metres along the shoreline. Because the largest and deepest sites invariably have the longest sequence of occupation, they have been almost exclusively the ones singled out for excavation. In fact, with few exceptions, components dealt with in subsequent analyses come from such sites.

With sufficient time and labor, the most common sampling procedure on large sites has been the excavation of a series of trenches. Frequently, trenches will intersect and, often, segments will be expanded to fully expose cultural features or burials. As well, the excavation of a few dispersed test pits normally supplements the excavated record. It is implicit that this procedure ensures maximal stratigraphic control.

The rationale for placement of major excavation units

may be considered in light of three factors. In what I interpret as a descending order of importance, these are:

1. Time/depth considerations – areas which have a potential for producing the longest cultural sequence and earliest deposits are selected for.
2. Opportunistic considerations – such aspects as site vegetation, disturbance levels, relationship of the archaeologist to proprietors, etc. heavily influence excavation design.
3. Salvage considerations – areas in threat of imminent destruction may be given initial or total priority.

With a few notable exceptions, it is possible to characterize the bulk of midden excavation within the region as following a judgmental sampling design. Although extensive spatial coverage may be intended by the placement of widely separated test pits, at least one area is singled out for more extensive investigation in conjunction with the above considerations. Since the majority of data is collected from a limited area, the representativeness of the sample, when used to make inferences about the site, culture historical or otherwise, becomes suspect. Abbott (1972: 274) has noted this problem and pointed out the possibilities of misinterpretation if, for instance, excavation units fell entirely within the segment of a village occupied by “lower class” or, alternatively, “highly ranked” families.

Sampling fraction is also of extreme importance when considering the relationship of retrieved data to that still in the ground. As I have stated, those sites consistently chosen for excavation are large and deep. In many cases the spatial extent of the site can never be determined due to erosional problems or historic development. Although tentative, I would estimate the majority of excavations to have covered less than two percent of the total site volume. In the only case where actual sampling fraction has been computed on the basis of a full season's work (Spurling 1976), it is reported to be less than one percent. If such a ratio holds true on more intensive inspection, it also must be viewed as a limiting factor for an extension of inference from the sample to the site as a whole.

In two instances of which I am aware, the stated research design has incorporated a simple random sample as an alternative to judgmental selection of pits. In one, however (Carl and Haggarty 1973), the strategy was defeated by the priority given selected units under immediate threat. The second project, a simple random element sample of a site (DcRu 2) on Esquimalt Lagoon, was specifically contrived to compare assemblage content of randomly chosen pits to those of a judgmental nature excavated the previous summer (Spurling 1976). Subsequent quantitative analyses failed to show significant content differences between the “probabilistic” derived sample and that obtained from the more traditional research design. Of this situation, Spurling (1976: 65) notes that, although the random sample is the

only one to be representative in a statistical sense, there is a “trade off” of information. Specifically, there is a loss of stratigraphic control which may be a considerable drawback when excavating sites with internal complexity.

Because Spurling's excavations were undertaken at a predominantly single component site (Blacklaws 1978), his random sample may be considered probabilistic. However, the nature of a multicomponent stratified site immediately contradicts sampling principles (Brown 1975; Flannery 1976b). That is, as Brown (1975: 158) points out, probability sampling “. . . assumes that all locations within a sampling universe be truly accessible and that the limits of the occupations composing the site are known.” Unless we know beforehand the spatial boundaries of underlying components, we can never hope to obtain a probability sample for those components.

Nonprobabilistic sampling strategies for deep site excavation are only now being developed. While some are highly complex and emphasize maximal spatial coverage (for example, see Brown 1975), Flannery (1976b: 68) argues for a transect (trench) sampling scheme “ideally connecting 2 points at random”. Whether or not either design could be applied to Northwest Coast midden archaeology remains to be seen.

A final problem of intrasite sampling of middens is the recognition of spatial relationships between artifacts, features and other cultural debris. Whereas the typical trench rarely exceeds 2 metres across, it becomes exceedingly difficult to correctly interpret feature patterns broader than this transect (see Gose 1976). It becomes even more difficult using the standard 2 x 2 metre excavation unit which Flannery (1976a: 3), in Mesoamerican archaeology, has appropriately likened to a “telephone booth”. While an expansion of individual pits or trench segments may accommodate this problem, it often becomes impractical if the feature or burial lies at the bottom of 3 to 4 metres of deposit.

As should be apparent, the excavation of a typical Northwest Coast midden is not a simple task. There are no standardized sampling procedures which guarantee statistical representativeness of the recovered collection nor is there an acceptable nonprobabilistic strategy. In light of such a situation, the traditional approach of trenching may be appropriate given a defined research design. While sacrificing pertinent data with regards to artifact and feature spatial associations, it gains in stratigraphic documentation. However, we must also take into consideration the lack of areal coverage this form of sampling scheme produces when making inferences about the site as a whole.

Whereas I have suggested that the sampling design for many of the assemblages included in later analyses may be acceptable within limits, other drawbacks do exist. These include problems of data retrieval and analysis.

It may not be an understatement to suggest that most researchers within the region have treated middens as if they were giant layer cakes. The standard excavation technique has little regard for natural stratigraphy with 10 to 20 cm arbitrary levels removed by shovel. As a justification, one is presented either with the rationale of expediency (i.e. to gain a larger collection of materials in the time allotted) or what I have cynically labelled the Theory of Garbage Obfuscation. The latter would suggest that, since middens are refuse heaps, no one really knows what constitutes a natural (component bearing) strata. Further, the infield recognition of such strata is considered to be exceptionally difficult and time consuming.

Expediency might be considered a major problem faced by all coastal archaeologists. Not only are midden sites often deep and large, they are generally poor in those items needed by the culture historian to develop a meaningful sequence. Thus, to gain quantity, there has been a tendency to ignore exact vertical control. The expediency situation becomes even more acute should the site be in a salvage context with impending destruction around the corner.

Despite the Theory of Garbage Obfuscation, most analysts attempt to place the "significant" artifacts back into their original strata by plotting them against a profile. Resultant stratigraphic assemblages are then reviewed for consistency and a decision is made as to which strata should be combined as representative of a component. Inherent within this approach is the fallacious assumption that strata drawn on one profile are found in the exact same position on the opposite face. Nevertheless, the end result is a table providing a component-by-component breakdown of artifact types.

The fact that some mixing occurs in the course of analysis can be little disputed. While it may be minimal, it does introduce additional sources of error when there is an attempt to compare intrasite components or individual components to those of other sites. This error could be consequential if, for instance, single traits are to be employed in the delineation of culture historical units.

Returning to the original question of sample representativeness, it is suggested that any subsample (assemblage) reflects the characteristics of its parent population (total of cultural materials from a site) at least to some degree, regardless of the sampling scheme employed (see Thomas 1976: 35). In later quantitative analyses of interassemblage variability, such a situation may be illustrated. Specifically, in three sites (Helen Point, False Narrows, Musqueam) where more than a single Marpole culture type component has been defined, there is a strong tendency for each assemblage to be more like its intrasite counterpart than other external components.

Sampling techniques vary in efficiency dependent upon the problems being researched. As I have pointed out, the

standard use of trenches provides optimal data control toward some aspects of midden archaeology while trading off in others. The latter can be taken into account, however, when drawing inferences from the sample. The problems of excavation and analysis are not as easily overcome. For reported components, it is impossible to determine if, or how much, mixing has occurred due to analytic techniques. This factor could prove to be of major import in the eventual acceptance or rejection of subsequent analysis and interpretation.

#### The Concept of Phase – Northwest Coast Applications

While several culture historical units have been employed within the Gulf of Georgia region over the past quarter of a century (see Mitchell 1971; Abbott 1972), that which has had the most frequent and longest standing usage is the term phase. As defined by Willey and Phillips (1958: 22), it is:

...an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived whether of the same or other cultures or civilizations spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief time span.

Phase criteria of space and time, however rigid they might seem in the above citation, were to remain flexible. Indeed, almost within the same breath, it is stated that a phase might be composed of "...anything from a thin level in a site reflecting no more than a brief encampment to a prolonged occupation of a large number of sites distributed over a region of elastic proportions" (1958: 22). Still further, it was to have no scale independent of the situation to which it was being applied. It is this degree of flexibility which has made it viable for a large number of culture areas within North America.

To extract from this definition, I would suggest that phase, as a conceptual unit, is marked by specific characteristics of material culture, distinct from other assemblages in space and through time. It is composed of a series of components or, possibly in its formulation stage, a single component (Willey and Phillips 1958: 22).

Since phase membership is dependent upon recurrent traits, one may see within its application two distinct forms – a monothetic variety and a polythetic variety (see Clarke 1968: 37–8). A monothetic phase is one which requires of its constituent members the possession of a *unique* set of attributes or, quite possibly, a single attribute. On the other hand, a polythetic phase dictates only that a percentage (with no set limitations of such traits) be present. No single characteristic is both sufficient and necessary for aggregate membership. Monothetic phases are most prevalent in regions where single "type" artifacts can be shown to have discrete spatial and temporal bound-

aries. For instance, Southwestern prehistorians, using ceramics, have employed this usage with relative success. Polythetic phases, by their definition, are able to incorporate a variety of components of a diverse functional nature. Differences in component assemblages related to functional variability in settlement pattern are not segregated so long as one or several traits, not necessarily the same within each assemblage, can be recognized. Thus, they are well suited to hunter/gatherer archaeology where specialized seasonal exploits predominate.

Although slightly pessimistic that the archaeological abstract of phase correlates with a social reality, Willey and Phillips (1958: 49–50) propose that, at least in some instances, it may be the equivalent of society (as defined by Smith 1955: 4). However, this analogy is drawn with severe qualification. They state:

We do not maintain that every, or even any, specific phase is the archaeological expression of an extinct society. We simply call attention to the fact that there is a certain conceptual agreement between phase and society. Both are intelligible units of their respective fields of study. They have similar roles and similar scales and in this crucial matter of scale both exhibit the same relativism with respect to the level of cultural development. This congruence, we contend, qualifies the phase as the intelligible unit of comparative study and, thus, offers the best hope of incorporating archaeology into general anthropological science (1958: 51).

As outlined in a preceding discussion, a plethora of phases have been defined to characterize space/time trends in the prehistory of the southern Northwest Coast. Often, these seem to have been hastily constructed without the presence of full analyses on the assemblages they are meant to describe. Moreover, at least originally, they were delimited in a monothetic sense where the presence or absence of specific type artifacts have been employed as *fossil directeur*. While the situation has changed somewhat within the recent period, most phases lack true quantitative definition.

The concept of phase and its applicability to regional prehistory has been seriously questioned by Abbott (1972). His skepticism, though not as explicitly stated, may be found in the work of several other researchers (Mitchell 1971; Monks 1977; Simonsen 1973; Kenney 1974). Basically, Abbott's arguments revolve around two major themes, the restrictiveness of the concept in terms of spatial and temporal boundaries, and its social equivalent, society. However, it is the latter which bears the major brunt of his arguments.

Recognizing that Willey and Phillips (1958) acknowledge the problems of finding a social equivalent of phase, Abbott states:

Despite Willey and Phillips caution quoted above,

there is no doubt that most archaeologists would consider that their culture historical unit "phase" does in fact equate with some potentially definable and therefore distinct, social entity which existed in the past (1972: 267).

Following an exposé on the use of a direct historical approach to Salish prehistory, Abbott (1972: 268–273) thoroughly reviews Salish ethnographic data concluding that such terms as community and society have no clear cut distinctions within the region. If we are unable to define them within the historic period, he suggests ". . .it would also be impossible to distinguish them archaeologically" (1972: 274). By extension, since social networks were spread throughout the entire Gulf of Georgia "sub-area" (in the sense of Willey and Phillips 1958: 30), the concept is too limited spatially.

Abbott's original criticisms may well be acceptable. Indeed, we are unable to correlate phase with society on the southern Northwest Coast. Nevertheless, it is not a problem of the concept *per se* but, rather, its application to regional data and how individual prehistorians view and treat their assemblages. There can be little doubt that, as they were originally conceived, phases were the analogues of distinct cultures with individual histories (Borden 1950; 1951). The description of intermediate period assemblages (Whalen II—Marpole—Point Grey—Locarno Beach III) as "interior cultures in a state of transition" is one of the most oft cited examples. However, with a few exceptions, I find scant evidence within the recent literature to suggest that this is a continued practice. Phases appear to be employed as archaeological abstractions of surviving material culture. As such, they provide both a spatial and temporal reference system.

The argument that, as a concept, phase has spatial boundaries too restricted for employment on the southern Northwest Coast is confusing. The Willey and Phillips (1958: 19–20) definition of a region, as I interpret it, would include the natural area defined as the Gulf of Georgia. This, nevertheless, is an interpretation since the concept of region has no observational definition. A region is delineated as:

. . .a considerably larger unit of geographical space usually determined by the vagaries of archaeological history. . .such a region comes to be thought of as having problems of its own that set it apart from other regions. . .Regions are not altogether without reference to the facts of geography, however. In stressing the accidental factor in their formation, we must not overlook the tendency for environmental considerations to assert themselves. In portions of the New World where physical conditions of sharp diversity prevail, archaeological regions are likely to coincide with minor physiographic subdivisions (Willey and Phillips 1958: 19).

If the Gulf of Georgia is to be accepted as a distinct region and the entire Northwest Coast as a culture area, then it may not be possible to delineate a geographical subarea with marked cultural affinities. One possibility might consist of a majority of the southern Northwest Coast from Puget Sound up to and including Johnson Straits on the central coast. However, for what reason one would want to have a unit of this size or nature is unclear.

Thus far I have defended the concept of phase as an archaeological abstraction on the basis of its inherent flexibility and ambiguity. This ambiguity, nevertheless, has led to a number of problems with regard to application within the Gulf of Georgia region. That is, on a theoretical level, we are able to define a phase on both a regional and local scope. This situation most explicitly manifests itself in the early period where there exists a series of local phases, Mayne, St. Mungo and Eayem, combined into a regional unit, the Charles phase. It has also led to confusion in late period assemblages where, again, there are a number of local phases, Stselax, Esilao and San Juan, yet lack an integrative phase on a regional scope. Since the concept of phase is rarely, if ever, outlined in archaeological reports beyond the standard Willey and Phillips (1958: 22) definition, one must interpret on which level of abstraction a particular phase is meant to apply. In addition, the situation becomes more complex when there is the distinct possibility of having a phase (local) of a phase (regional).

Since the concept of phase has a traditional usage in the region and it is highly unlikely that it will be dropped as an analytic unit by many coastal prehistorians, we are faced with a somewhat perplexing problem. There appear at least two alternatives. We may retain either regional phases and delegate those delimited on a local basis to the sub-phase level or, alternatively, retain local phases and propose a differing unit on a regional scope.

Mitchell (1971), at least implicitly, has come to the same recognition and proposes the term "culture type" as the larger integrative concept. Unfortunately, this term also lacks a clear cut definition within regional prehistory and one wonders whether or not he is referring to an analytic unit in a strict archaeological sense or a type of culture having both archaeological and social implications.

As defined by Spaulding (1955:12), a culture type is a "...conveniently vague term... which means a group of components distinguished by the common possession of a group of traits". Similarity of components is not strictly defined on the presence or absence of specific tool types, utensils, house forms and so on, but should be based on a quantitative correspondence of artifact forms in the components being compared. It should also be noted that, at least within the Gulf of Georgia, it is applied on a regional scope.

As I perceive it, a culture type as an archaeological

abstracted unit is directly analogous to what Clarke (1968: 231) has termed an "archaeological culture" or "cultural assemblage". Being such, a more exacting definition may be provided. Following Clarke, a culture type (archaeological culture) is:

...expressed by a set of specific artefact-types and represented by a group of assemblages containing some of those artefact-types. The special nature of the cultural assemblage or cultural entity is embodied in the precise relationship between the group of assemblages and the comprehensive set of types which they exhibit (1968: 231).

Further, several characteristics are defined for this unit (ibid.). These include:

- 1) The component assemblages must share a large number of specific artefact types with one another, although each assemblage need not contain all the types in the shared set.
- 2) The artefact-types represented in the assemblages must comprise a comprehensive selection of types from most of the material spheres of cultural activity — the exo-skeletons of most of the socio-cultural subsystems.
- 3) The same specific artefact-types must occur together repeatedly in those component assemblages, albeit in varying combinations.
- 4) Finally, the component assemblages must come from a limited, defined and continuous geographical area and a limited, defined and continuous period of time.

As Clarke (1968: 252) argues, a common cultural assemblage would therefore be "...the material manifestation of an area of maximized diffusion — an area crisscrossed by the web and mesh of social relationships maximizing group intercommunication". It is polythetic and, since no component assemblage is expected to contain all diagnostic artifact types, it can be expected to include all aspects of a culture's settlement/subsistence pattern.

If we are to accept this analogy between archaeological culture and culture type, then the relationship of a local phase becomes somewhat problematical. Clarke (1968: 186) views a phase as the smallest taxonomic unit with a "homogeneous set of entity states". It is a "thin time slice" of an archaeological culture's "time trajectory". Such a description, obviously, does not fit the already defined subregional phases. As they have been delimited and perceived, however, phases are the equivalent of Clarke's subcultural units. Thus, they could define ethnic subcultures, regional (local) subcultures, occupational subcultures, social subcultures or sexual subcultures (see Clarke 1968: 235). With the exception of the latter pair, a good case could be made to fit a number of existing phases within this framework. For instance, the San Juan phase might well be considered either an occupational subculture (part of a cultural system's

settlement pattern, Carlson 1976: personal communication) or a regional subculture. Similarly, Esilao and Stselax may be ethnic or regional subcultures. Whatever the case, it is clear that phase application has, in many instances, paralleled this set of concepts.

In support of the usage of culture type on a regional basis and phase on a local subcultural level, a number of advantages over the phase, subphase alternative may be noted. For instance, although many of the local phases are, without a doubt, subphases (see Willey and Phillips 1958: 24), a number are not. Likewise, local phases may be representative of a number of different cultural manifestations including aspects of subsistence, ethnicity, diffusion spheres or localized adaptations. Finally, even if it were possible

to convince phase proponents that their phases were actually subphases, it is unlikely that the traditional terminology would be subsequently altered.

A possible drawback to the use of culture type, in the sense of an archaeological culture, is the lack of data exhibiting the total range of cultural variation for sequent units. Indeed, by definition, we should not be able to define a unit on this level for any period of Gulf of Georgia prehistory. Nevertheless, although prematurely outlined, they do serve at least a culture historical classificatory purpose. It is apparent that when more and better controlled data are collected, analyzed and published, alteration both in form and context will be required.