

METHOD AND THEORY IN NORTHWEST COAST ARCHAEOLOGY

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We are still searching for the laws that govern the growth of human culture, of human thought; but we recognize the fact that before we seek for what is common to all culture, we must analyze each culture by careful and exact methods ... before we can build up the theory of the growth of all human culture, we must know the growth of cultures that we find here and there ... and the progress of the civilizations of antiquity and of our own times. We must, so far as we can, reconstruct the actual history of mankind, before we can hope to discover the laws underlying that history.

Franz Boas
Introduction to the
Memoirs of the Jesup
North Pacific Expedition
Vol. 1, part 1. 1898

Since its inception Northwest Coast archaeology has been characterized by both an interest in the data of prehistory, and in their meaning. Research goals have been relatively constant, although methods and models have ridden the winds of change and followed the fads of scientific inquiry as with other anthropological disciplines. Boas' thoughts quoted above underlay the conception of the Jesup North Pacific Expedition in which the

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first major archaeological undertaking on the Northwest Coast took place. Such thoughts have continued to be basic to most Northwest Coast archaeological research up to the present day. Prehistory is the paradigm in which Northwest Coast archaeology has been undertaken; it is the checkerboard on which the movements of peoples, the diffusion of ideas, and the interplay of culture and environment have been plotted and replotted as new data have been unearthed, new methods and techniques employed, and new theoretical principles expounded. Although Boas wrote of discovery of "laws that govern the growth of human culture," it is clear that he viewed these laws as fundamentally psychological in nature, and that archaeology contributed to their eventual discovery indirectly through reconstruction of the past. In recent years another paradigm called cultural resource management or conservation archaeology has come into its own. The primary goal of this field is *management* of past cultural remains (e.g., Lipe 1974, Clark 1980). It is not unrelated to prehistory since without proper management there would be nothing left, no unexcavated data base for prehistory.

The basic *modus operandi* of Northwest Coast archaeology has been the comparative method which is based on the determination and assessment of similarities and differences in the archaeological record and leads to explanation of these same phenomena. Theoretical principles are employed in reaching this explanatory level. Ethnographic analogy has been and continues to be an important part of the comparative method in which comparisons are made between ethnographic facts and archaeological ones. The inferential process works the way Thompson (1958:1-8) says it does in proceeding from the indicative quality of the data through analogy to a concluding inference. The comparative method also involves continuous reassessment of conclusions as new information is brought to light.

Northwest Coast archaeology has been remarkably free of the recent trend frequently called "new archaeology" in which the search for general laws, "nomological generalizations" of cultural behavior is purported to be the major goal. Johnson (1972) has provided a succinct and devastating critique of this "avant garde" archaeology. Northwest Coast archaeologists seem to be content to let other disciplines such as psychology serve as the guide to behavioral laws on the assumption that actual observation of human behavior is a much more reliable base for such generalizations than are the data of archaeology, the distributions and spatial inter-relationships of artifacts and non-artifacts in the ground, which result from many factors. In most Northwest Coast archaeology undertaken to date the unstated goal has been the accumulation of

sufficient archaeological data to provide a substantive base for cultural-historical and cultural-environmental hypotheses. This quest has sought data relevant to the following questions: 1) When was the coast first occupied? 2) Where did these initial inhabitants come from? 3) What type of culture did they bring with them? 4) Has the coast ever served as a migration route? 5) What are the origins of the important Northwest Coast culture patterns, i.e., fishing, whaling, and the arts? 6) What changes in culture have taken place in Northwest culture through time? 7) What are the cultural and ecological relationships throughout prehistory? Guiding the archaeological investigations seeking answers to these questions have been three bodies of theory: cultural theory; associational theory; and sampling theory. Archaeology has not been conceived of as a generator of theory, but as a user of theory aimed at reconstruction and explanation of the past (Carlson 1970).

Theory refers to a coherent group of general propositions used as principles of explanation for classes of general phenomena, whereas methodology refers to how problems are solved. Archaeological data which consist of artifacts, non-artifacts (i.e. faunal or carbon samples, depositional strata, etc.), and their frequencies and observed spatial interrelationships, are general phenomena which when explained in terms of these bodies of theory permit the archaeologist to actually predict the past. The general propositions about the theory of culture are that culture is learned, shared, patterned, cumulative, integrated, and manifested in artifact styles, types and distributions. Cultural theory is to archaeology as evolutionary theory is to the biological sciences. The theory of spatial associations involves all those propositions concerning the principles of superposition, intrusion, burial associations, and all those statements about the meaning of spatial distance between artifact and artifact, artifact and non-artifact, site and site, or other observed phenomena. (The purpose of most archaeological field techniques is actually to permit observation and recording of such spatial distances.) Associational theory is also basic to paleontology and historical geology. Sampling theory consists of a third group of propositions, and is based on the assumption that certain populations of objects are randomly distributed within certain universes. Sampling theory is the youngest of these three bodies of theory to receive much attention in archaeology. With an emphasis on sampling, the question changes from simply what has been unearthed archaeologically, to how many have been found, and what is their frequency relative to the entire population from which they came. The use of specific sampling procedures permits somewhat greater significance to be attached to both negative evidence and frequency data, although data on presence are still by far the most important in archaeological inference.

Principles drawn from all three bodies of theory are related to techniques employed in excavation and data analysis.

If precedence is given to associational theory, excavation techniques aimed at gathering stratigraphically associated samples will be given the highest priority. The deposits at the surface of many Northwest Coast sites are of different ages, and deeper deposits from different excavation units are not necessarily of the same age even though they occupy the same position relative to surface strata. Strata of different ages are frequently not directly superimposed. For this reason a series of connected trenches will be employed in order to observe the continuity of strata from pit to pit, if the goal is to obtain samples of associated material. Much of the skepticism in regard to the proposed sequence at the Cattle Point Site (King 1950) was engendered by the many disconnected excavation units. Recent C-14 dates have corroborated this viewpoint, that the intrasite correlations of strata from non-contiguous excavation units is in error, and consequently so are the cultural phases based on these correlations.

If an archaeologist in interpreting his finds gives precedence to the theory of culture then one occurrence of a specific artifact type in context is sufficient to warrant positive placement of the customs indicated by this one artifact within the inventory of customs of the culture under investigation. Such an archaeologist would probably conclude with a simple trait list of artifacts or customs following the model of the ethnological culture element distributions. Site reports by C.E. Borden (1950a, 1951a, 1968a) tended to follow this method.

Sampling theory enters into many facets of archaeology. It may be used to select sites to excavate as Mitchell (1974) has done in the eastern Queen Charlotte Strait region, or it may be employed to determine where to dig at a single site, and in comparison of assemblages and components from the same or different sites after excavation has taken place. The problems lie both in defining the appropriate universe to sample, and in obtaining samples of associated materials of sufficient size to validate statistical results. Spurling (1976) has looked at results of judgmental and random sampling of the same site and found little difference. Matson (1974) introduced advanced statistical techniques in his *Clustering and Scaling of Gulf of Georgia Sites* to the problem of definition and comparison of coastal archaeological assemblages. He obtained a high degree of correspondence between the established chronology and the patterns obtained by clustering and scaling. Burley (1980b) has since employed similar techniques in elucidating

the Marpole phase, and many students are employing them in thesis research. Cultural resource management is fostering further development of sampling strategies for survey work aimed at predicting numbers and kinds of sites in given areas. A statistical revolution has actually taken place, and quantitative techniques based on sampling theory are now widely employed in surveys and excavations, and in making comparisons among assemblages.

Several explications of method and theory have served as guides in Northwest Coast archaeological research. Before the statistical revolution the most important were the following:

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| 1916 | Sapir | <i>Time Perspective in Aboriginal American Culture: A Study in Method.</i> |
| 1948 | Kroeber | <i>Anthropology.</i> |
| 1948 | Taylor | <i>A Study of Archaeology.</i> |
| 1958 | Willey and Phillips | <i>Method and Theory in American Archaeology.</i> |

Edward Sapir's contribution, written while he was at the National Museum of Man in Ottawa, was the only codification of method and theory relating specifically to New World prehistory until Taylor's work in 1948. Sapir's monograph was used by an entire generation of culture historians as a body of theoretical principles related to the reconstruction of past cultures; there was no other. The past was reconstructed by distributional analyses of culture traits and complexes, typological comparisons and assessment of similarities and differences, isolation of discrete parts of cultural complexes and consideration of their distribution in time and space; these methods were applied to ethnographic, archaeological, and linguistic data. They survive today in archaeology because of the nature of archaeological data. Kroeber's *Anthropology* was a far more general work, but the principles of culture (chapters 7, 8, 9, 14 particularly, and 19) expressed there and in his other publications provided the theoretical guide necessary to archaeology.

Taylor's (1948) "conjunctive approach" was a guide to data collection, and Willey and Phillips (1958) volume was in turn an important guide to the classification of time, space, and culture. Both were more methodological than theoretical, and broached issues of typology and cultural taxonomy which are essential to the comparative method. Archaeology like other sciences requires the reduction of masses of data to meaningful units of manageable size, and this is accomplished through classification. Various

classificatory systems have been employed at different times on the Northwest Coast, and the more common ones are reviewed below.

Drucker (1943) introduced the first specifically archaeological classifications to the Northwest Coast. His chief archaeological predecessor, H.I. Smith, operated in a taxonomic vacuum and barely got beyond grouping all hunting and fishing implements into one taxon, and root digging tools into another. Culture areas, complexes, traits, and strata which were in widespread use in studies of coastal prehistory (cf. Birket-Smith and DeLaguna 1938; Kroeber 1939), were classificatory units derived for the most part from ethnology rather than archaeology. In 1943 Drucker introduced both artifact typology and the McKern taxonomic system to the Northwest Coast. Those ethnological units mentioned above came to be partly complemented and partly paralleled by artifact types, and by defined cultural "aspects" within the Northwest Coast culture "pattern." The aspects corresponded closely to the known ethnographic divisions: A) Northern Aspect, comprising Tlingit, Haida, Tsimshian territories; B) Central or Milbanke-Queen Charlotte Sound Aspect, coextensive with Kwakiutl territory; and C) a Strait of Georgia/Puget Sound Aspect, the territory of the present Coast Salish (Drucker:1943, 123-127). Drucker's artifact types were never widely adopted, although the names he employed for some of the artifact classes have seen considerable use. There is still no standardized typology used by all Northwest Coast archaeologists. The most significant innovation since the statistical revolution is Flenniken's (1981) replicative systems analysis. This method looks at artifactual data from start to finish, from raw material through fabrication and its byproducts, to the finished tool and its use. Each artifact and piece of debitage can be plugged back into the system. This type of analysis has rendered most stone tool classifications used on the coast obsolete.

No system of cultural taxonomy has yet been universally accepted and employed. King (1950) used "phase" to designate the divisions of the sequence at Cattle Point, and at Five Mile Rapids Cressman (1960) used "stage" in much the same way. Borden (1950a, 1951a) began by using both "period" and "horizon" for units of time and culture. Cultural taxonomy remained at a standstill until Willey and Phillips' publication on method and theory in 1958. The classification system offered by Willey and Phillips divided time, space, and culture into manageable units, and provided specific definitions of various concepts such as "tradition" and "horizon" for integrating these dimensions. "Component," also used in the McKern system, has been the most widely adopted concept, and "phase" has enjoyed considerable although not universal usage. While I was revising *Chronology and Culture Change in the San Juan Islands* in

1959 for publication, Borden and I reached mutual agreement that we would use "phase" in the Willey and Phillips sense rather than "focus" for Marpole and similarly constituted units of culture content. We never accepted the social realities, tribe etc., suggested for these taxons which are largely the basis for Abbott's (1972) criticism of the concept of phase. Even on the ethnographic time level, tribes are abstractions based on proximity, language affiliation, and culture content and not on socio-political unity. The use of phase does not imply that any such unity existed in the past.

It is still not widely understood that a phase is a working tool and that it is defined on the basis of culture content, not on time and space. The fact that such a unit of culture content has a limited distribution in time and space is simply a function of its validity as a useful tool in reconstructing the past. Mitchell (1971) has employed the term "culture type" in a manner identical to that of phase, and has thus rendered its more usual usage as a generalizing term for types of cultures not limited by time or space considerations somewhat ambiguous. (See discussion in Willey and Phillips 1958:12-13.) Burley (1980) has further complicated the picture by using phase in local sequences, and culture type for the regional equivalent. Anyone attempting to disentangle the taxonomic picture might well conclude that above the level of component Northwest Coast archaeologists don't know what they're talking about. The taxonomic system that best helps to both explain and understand the past is the one that is obviously the most useful, and I am sure that new systems will continue to be developed. Higher level integrative concepts such as horizons, traditions, co-traditions, such as MacDonald (1969) has profitably used on the Northern Coast to show the interaction of Tlingit, Haida, and Tsimshian cultures through time, and just plain archaeological cultures are actually one step removed from pure taxonomy and approach the realm of explanatory models.

Cultural-historical models are composed of sets of hypotheses which simplify complex observations and eliminate unnecessary information. Simple analogue models have been the rule. All such models have emphasized one or more of the trilogy of diffusion, migration, or adaptation as the mechanisms responsible for growth and change of prehistoric Northwest Coast cultures. Kroeber (1923:7-8) presented a methodological approach to the problem of formulating cultural historical models which has not been superseded. He separated aboriginal American culture into four groups: 1) original common traits brought by the first immigrants, simple and widely distributed; 2) cultural elements developed on American soil which spread widely; 3) elements locally developed

which remained local; and 4) elements later introduced from the Old World. He concluded:

... Northwest Coast culture shares with American culture only basic universal elements presumably derived from Asia; that it lacks regularly the generic American elements that were developed on American soil and became diffused; and that what is specific in it is either a direct outgrowth on the spot from the relatively undifferentiated primitive American culture or the result of later Old World influences.

(Kroeber 1923:7-8)

Archaeology has modified this model only slightly by demonstrating that some generic American elements such as pipe smoking did indeed diffuse to parts of the Northwest Coast.

Kroeber later (1939:28) suggested a developmental model for Northwest coast cultures based on change from an interior riverine subsistence to a fully maritime one:

... the Northwest Coast culture was originally a river or rivermouth culture, later a beach culture, and only finally and in part a sea going one.

Archaeological research has recently reversed this model (Carlson 1981) so that it now reads that Northwest Coast culture

... likely originated as coastal, later became river mouth, and even later, but only in part, riverine, as it accompanied the spread of lake spawning species of salmon further and further up the rivers into the interior as part of the postglacial environmental adjustment.

Whereas Kroeber's model stressed adaptation, all the other early models emphasized migration and diffusion with either an initial southward or westward movement of people or culture, followed by a similar movement from the direction other than that from which the first inhabitants came. Some of these models preceded Kroeber; others followed. All were based largely on ethnology, although the specifically archaeological data of the Jesup Expedition were recognized. Boas (1905) looked to an Asiatic-Northwest Coast cultural continuum broken by the migration of the Eskimo. Hill-Tout (1932) also used a displacement model, but in this case Eskimo culture as far south as the mouth of the Fraser was displaced by peoples from interior British Columbia. Birket-Smith and de Laguna

(1938) and de Laguna (1947) employed a diffusion model involving a sequence of cultural strata marked by elements of an "ice hunting stage," followed by those of a "snowshoe stage" and then by "circum-Pacific drift." H.I. Smith had difficulty finding any model to which to relate his finds, although he eventually did subscribe to population movements from the Interior. Drucker (1943:117) likens Smith to an Archaeological Ancient Mariner:

culture stratigraphy all about, but not a sequence could he find.

Drucker however fared no better; he found no sequence either and had to rely on a seriation of Smith's and Hill-Tout's collection of skulls in order to arrive at a migration model of a broad-headed population replacing a longheaded one, at least in the Coast Salish region. This seriation plus both the absence of stratigraphy in the middens of the Central Coast where he had excavated, and the presence of numerous traits in the Puget Sound/Gulf of Georgia aspect which had interior distributions, led him to consider the latter to be a modified aspect of Plateau culture overlying an older coastal component (Drucker 1943:126-127). He later (1955) identified the latter with the Ice Hunting stratum. Beattie (1980:10-18) has now reviewed all data relating to this seriation of skulls, and has shown that these two types do not exist. He concludes,

an overconfidence in Hill-Tout's hypothesis, combined with a misreading of the work of Kidd, has fostered the durable concepts of two prehistoric physical types and a related population migration focused at the mouth of the Fraser River.

Arden King (1950) excavated and fully published the first stratified site on the Northwest Coast, and Borden (1950a, 1951a) developed the first chronological sequence based on excavated materials which has withstood the test of time. King's model of cultural development based on the Cattle Point material did not follow that of those researchers who saw the earliest cultures immigrating from the north, but instead tended to follow Kroeber's line of thought. King (1950) related the earliest phase at Cattle Point to life on land, and compared it to the inland Archaic cultures of North America, although recognizing the later diffusion of ice hunting traits, and circum-Pacific drift. Borden working at the same time as King developed the opposing model: his earliest horizon, the Early Maritime, was specifically Eskimoid in type even to the point of speculation about skin boats in use along the Strait of Georgia; this culture was later replaced by cultures from the

Interior. What is interesting is that both King's and Borden's earliest phases are very similar in culture content, and we know today that both date to much the same period! We also know now that these components do not represent the earliest cultures of the Strait of Georgia.

In the late fifties the models of migration and diffusion from the north and east began to take on a new direction and this direction was migration and diffusion from the south:

Small groups wandering gradually northward as the areas became free of ice, as the forests grew and as the salmon began their annual migrations up the rivers probably moved out into the (San Juan) islands.

Carlson 1960:583

This shift in emphasis was the direct result of new archaeological knowledge concerning the antiquity of man in the New World. Evidence of periglacial occupations to the south had been presented by Daugherty (1956) and Cressman (1960). The culmination of this direction of thought was Borden's (1962) article which postulated the northward diffusion of ground slate, an industry traditionally associated with Arctic and Eskimo cultures. Today, the Arctic holds but a slight edge in regard to the antiquity of this industry.

Butler (1961:70) offered a genuinely constructive model of Pacific Northwest prehistory with his publication of the Old Cordilleran Culture, an early cultural tradition defined as:

... a tradition characterized by a leaf-shaped point and blade complex, along with a generalized assortment of cutting, chopping, and scraping implements. That its carriers pursued a generalized hunting-fishing-gathering economy. That ... the tradition developed along independent lines becoming a maritime tradition in the Northwest Coast area.

While this concept was not initially greeted with unmitigated acclaim (Carlson 1962), it was soon modified (Butler 1965) and became widely known. The concept involved both a way of life, and a particular artifact assemblage. It survives today in both these forms: as the earliest unit of culture content in the Glenrose site on the lower Fraser (Matson 1976) typified by an assemblage very much like that originally ascribed to the culture, and in the second sense as a way of life exemplified by a barely prehistoric component from southern Puget Sound with quite a different artifactual content (Hedlund 1973). The Protowestern (Borden 1975) was a similar

construct, but like the Old Cordilleran tends to obscure the differences between the earliest coastal and interior plateau cultures.

In the last ten years the emphasis has shifted to those models in which adaptation plays the key role, although diffusion is by no means dead and even migration is mentioned occasionally. The prehistory of the Northwest Coast is after all both a history of new techniques and tool kits used to exploit the same ecological niches, and a history of known tools and techniques extended to different niches. Adaptation to resources was never denied by early researchers, but the gathering and interpretation of substantive data was slow to come about. By the early forties during the attempt to identify the faunal remains from Drucker's survey, it was discovered (Fisher 1943) that there were no comparative fish bone collections, an obvious need for any empirical archaeological investigation of the aboriginal "salmon area." Many archaeologists worked on identifying bones but it was Cressman (1960) who made the first major contribution in this area. Today we have not only comparative collections, but specialists in this study (Huelsbeck 1981, Boucher 1976, Boehm 1973, Stewart 1975) and the emphasis has gone beyond simple identification to problems of terminology and sampling. Mitchell's (1971) sub-areas of the Strait of Georgia are fundamentally adaptive zones. Fladmark (1975:292) looks at the entire development of the Northwest Coast village pattern in terms of the late stabilization of the post-glacial environment. Donald and Mitchell (1975) have demonstrated a positive correlation between salmon abundance and local group rank, and Pomeroy (1980:222-223) has postulated a relationship between salmon abundance and local group stability. The ultimate in environmental mindedness has been Hester's (Hester and Nelson 1978) research design at the Namu site predicated on the reconstruction of prehistory on faunal evidence alone!

The current emphasis on adaptation is fully evident in the papers in this symposium. None of the authors attempt to trace historical threads through the multiple adaptations necessary for survival and the development of cultural complexity during the post-glacial. Instead, their focus is on the adaptations themselves. Such an emphasis seems justified if not inevitable in attempting to explain any culture area which retained a food gathering subsistence base long after cultures of other areas achieved food production, and for which there is archaeological evidence of long standing cultural continuity and abundant middens containing remains of food gathering enterprises. It has long been realized that the artifact complex of a given site should express to some degree the peculiar ecological manifestation of the particular

site which should not be construed as a total cultural complex, and that the latter would probably be expressed only at a winter village site, if there (Carlson 1954:10). In this respect Northwest Coast archaeology is only now in full flower with attempts to actually identify seasonal sites and tool kits and correlate them with ecological niches. The papers in this symposium contribute to this end, although some are more replete with data and ideas economically expressed than are others lost in the jargon jungle of the peers and mentors of their authors. Once the above goals are achieved, however, there still remains the problem of integrating the historical with the ecological as neither provide adequate explanatory models by themselves. The emergence of cultural complexity on the Northwest Coast must be conceived of as a result of both progressive adaptation to the environment and the diffusion of techniques and artifacts (Carlson 1960:584).

The best models are those which provide the most information in the most economical manner. The one I prefer for the early period is an acculturation model (Carlson 1979, 1981) involving the mutual influencing of three early basal cultural traditions: the Pebble Tool Tradition, the Lind Coulee or northern variant of the Stemmed Point Tradition, and the Microblade Tradition. Different primary subsistence strategies -- fishing for the first, land hunting for the second, and fishing and marine hunting for the last are assumed and partially documented for these early cultural traditions. Borden (1968a, 1969), Ackerman (1968, 1974), Dumond (1973) and Hester (1978) present some of the hypotheses necessary to this model, which also predicts that these basal cultural traditions are ancestral to the historic Indian peoples still present on the Northwest Coast. Burley's (1980:72) systemic model of processes involved in the development of the Marpole phase provides a framework for explaining archaeological data of later periods.

Several trends are apparent in current research that in all probability will be of continued concern. The "research projects" of the sixties which gave way to the "salvage archaeology" of the seventies have now given birth to archaeological "resource management," a conception of archaeological sites as non-renewable resources which must be conserved and protected for the future. Regional inventories and impact assessment have replaced archaeological surveys in contemporary jargon. The accumulation of field data will continue, and some of this data gathering will still be basic research into the unknown just to see what is there, but more will likely be involved with surveys and excavations undertaken as part of systematic inventories and problem oriented conservation archaeology. Archaeology will likely become more esoteric on the one hand as statistical fine tuning and computer simulation are

employed more and more, and more general on the other as it presents its conclusions to a public ever fascinated by the past. The continued development of method and the application of various bodies of theory are a necessary part of the future of archaeology.

