MARPOLE

Anthropological Reconstructions of a Prehistoric Northwest Coast Culture Type

by

David V. Burley

Department of Archaeology
Simon Fraser University
Publication Number 8

Burnaby, British Columbia 1980

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PREFACE

The following work formed the main text for my Doctoral dissertation in Archaeology at Simon Fraser University. Although several modifications have been made for publication, the context remains basically the same. Descriptive reports for the Marpole and False Narrows sites which have been appended to the original dissertation are not reproduced. They will, however, eventually be published as separate studies and hopefully add to the growing body of archaeological data within the Gulf of Georgia region.

This work has been enhanced through the aid and support of many individuals and institutions. I wish to gratefully acknowledge Simon Fraser University and the British Columbia Provincial Museum for various forms of research assistance. Simon Fraser University provided financial aid throughout my tenure as a graduate student and without this support such a study could not have been initiated. I am also grateful to Vancouver City College at Langara, the Vancouver Centennial Museum, the Anthropology Museum at the University of British Columbia, the Archaeology Division of the British Columbia Provincial Museum, and the Museum of Archaeology and Anthropology at Simon Fraser University for allowing me to either borrow or study Marpole collections in their trust.

Roy Carlson originally guided me to the topic of my dissertation and proved a stimulating mentor throughout the time it took to complete the research. Other faculty members in the Department of Archaeology at Simon Fraser University as well as fellow graduate students have in numerous ways affected my perception of method and theory in archaeology and to each I am intellectually indebted. They, of course, are not responsible for any shortcomings of the subsequent manuscript.

I wish to acknowledge the able penmanship of Kathryn Walton for the maps and figures found throughout. Linda Sears and Brenda Baker typed the original draft copy and are gratefully thanked. Linda also served as a production editor, eliminating the many inconsistencies of grammar and spelling.

To each of the above and the many unnamed others, I offer my gratitude. I hope only that my efforts have measured up to their expectations.

MARPOLE

Anthropological Reconstructions of a Prehistoric Northwest Coast Culture Type

INTRODUCTION

Over the past quarter of a century, archaeological research within the Gulf of Georgia region of southern British Columbia and northern Washington has expanded at an incredible rate. Intensified in the Canadian portion by the establishment of a cultural resource management program, large scale site surveys have been carried out through most of this area. In conjunction, a number of sites have been tested and, where immediate destruction imminent, excavated. The end result has been the collection of a mass of data from which one might expect a clear and concise picture of regional prehistory. This is not entirely the case. In fact, beyond the gross establishment of a culture historical sequence of some 9,000 years, we know little of the prehistoric inhabitants or their lifeways.

Even in the area of culture history, the presumed strength of coastal archaeology, most researchers point out major inadequacies. Lacking full published accounts for many of the type sites, rigorous definitions of individual taxonomic units are absent. This situation has been further compounded by several competing chronological schemes for varying intraregional locales, not to mention an unending debate over the most appropriate conceptual framework for chronology building. However, despite such problems, most would agree that the bare essentials of a culture historical sequence are presently laid out. Moreover, at least one prehistorian has argued that "for general classificatory purposes, it would be hard to see what modifications the present scheme would need" (Matson 1974: 113).

To undertake an intensive examination of all aspects of Gulf of Georgia prehistory in light of the current data base would be a gigantic task. Rather, here the attempt is made to examine but one segment, that termed the Marpole culture type. The major objective is to acquire an understanding of this unit in the context of Northwest Coast prehistory as thoroughly as the data allow.

The format of this investigation has what might best be described as three major themes. The first sets the stage, so to speak, for the second and third. Following a brief synthesis of paleo- and recent geography, an introductory summary is given of the prehistory of the Gulf of Georgia and adjacent regions. This summary finally leads me to address questions of theory and method bearing directly on subsequent conclusions. Specifically, these questions concern sampling and the concept of phase.

The second theme is oriented towards culture history. Initially, there is an extensive review of the basis for a Marpole taxonomic unit. This includes a historical overview and evaluation of currently defined diagnostics. Subsequently, Marpole articulation with earlier and later units is examined as also are the spatial boundaries for this culture type. Finally, a quantitative analysis of interassemblage variability among 18 putative Marpole sites is undertaken.

The final theme attempts a lifeway reconstruction for Marpole peoples. Models of socio-political organization, economic pattern, intergroup relations and ritualistic behaviour are proposed by interweaving the little relevant archaeological data with ethnographic analogy. As a second aspect, a theoretical discourse on the evolution of both the Marpole culture type and the local variant of Northwest Coast culture is provided.

THE REGION: A GEOGRAPHICAL SKETCH

In a relatively recent synthesis of the archaeology of the Gulf of Georgia region, Mitchell (1971) goes to great effort to establish three major tenets. These are:

1) The Gulf of Georgia area constitutes a distinct natural region different from areas on its borders.
2) The Gulf of Georgia region is a distinct ethnographic area within North America.
3) The Gulf of Georgia region has a unique prehistoric past.

For each, Mitchell puts forth well stated arguments based on existent data. With the exception of the third, there is little new information to question his assumptions. Further, with some spatial qualification, most recent archaeological work would tend to confirm his hypotheses regarding the uniqueness of this region prehistorically, at least for the past 3,000 years. As a geographical backdrop for the present study, a brief review of each of these topics is in order. A more detailed analysis of much of this data will be taken up in later discussions.

The Physiographic Perspective

Physiographically, the Gulf of Georgia region consists of the northern half of the Georgia depression within the Coastal Trench. Its boundaries include: the mountain ranges of Vancouver Island and the Olympic peninsula on the west; the Coast-Cascade range on the east; the constriction of mainland and island mountains to form Seymour Passage on the north, and to the south, a line drawn across the northern part of the islands at the entrance to Puget Sound (Mitchell 1971: 3–4) (Figure 1).

Having considerable variation in land form, this region incorporates areas with mountains rising abruptly from the sea, low rolling coastal plains, an abundance of islands and reefs, and the lowland river valley of the Fraser. Sectioned by the Straits of Georgia and Juan de Fuca, variation may also be noted in hydrographic patterns. Tide range is increased in the northern Gulf where a diurnal tide is predominant while, in the south, a single daily tide is present for one third to one half of the lunar cycle (Mitchell 1971: 5). In addition, currents flowing through the island passages in the north are markedly stronger than those to the south.

To aboriginal occupants, probably the single most important hydrographic feature and concomitant landform is the Fraser River. Flowing out of the Fraser Canyon, this river makes its way through a low lying valley for approximately one hundred miles. At its mouth, the yearly accumulations of silts have created an immense delta. Within the historic era, delta growth rate has been set at roughly 28 feet per year (Holland 1964: 37).

As a natural region, the Gulf of Georgia is most restrictive in its climate. It is characterized by a ". . . narrow seasonal range of temperature and marked seasonal variation in precipitation" (Putnam *et al.* 1952: 464). Fall and winter are predominantly overcast with high precipitation but little snow while spring and summer are generally dry. Again, regional differentiation is such that Kerr (1951) has postulated three climatic types based primarily on summer precipitation figures. These include a cool Mediterranean (less than 3 cm), a transitional (3 to 7 cm), and a Maritime (greater than 7 cm). Whereas the first is confined solely to the southern Gulf, the transitional is situated throughout central and northern sectors. The high summer rainfall Maritime is found primarily along the east, west and north perimeters (see Figure 2).

Partially correspondent with these climatic zones are slightly varied organic environments. Munro and Cowan (1947) define three distinct biotic areas – the Gulf Islands, Puget Sound Lowlands and Coast Forests regimes.

The Gulf Islands Biotic area correlates with most low lying coastal plains including the Gulf and San Juan Islands (cf. Mitchell 1971: 12). Primarily characterized by an oak-parkland environment, Garry oak *(Quercus garryana* Douglas) and arbutus *(Arbutus menziessi* Pursh) are the most predominant floral species. Though lacking a unique faunal assemblage, Munro and Cowan (1947: 35) do note the absence of timber wolf *(Canis lupus sp.)*, wolverine *(Gulo luscus)*, weasel *(Mustela ermine sp.)*, marten *(Martes americana sp.)*, black bear *(Ursus americanus)*, beaver *(Castor canadensis)* and wapiti *(Cervus canadensis roosevelti)*. Whether such a case existed prehistorically is open for question. Mitchell (1971: 219) lists wapiti, beaver and black bear as constituents of the Montague Harbor (DfRu 13) faunal remains while marten were recovered at the Helen Point (DfRu 8) site on Mayne Island (Boucher 1976: 86; McMurdo 1974: 135).

The Coast Forest biome is most notable for its rainforest seral-floral communities and a low potential for animal life. Predominantly located along the perimeters of the Gulf of Georgia region, climax forests are dominated by Sitka spruce *(Picea sitchensis)*, Douglas fir *(Pseudo-*

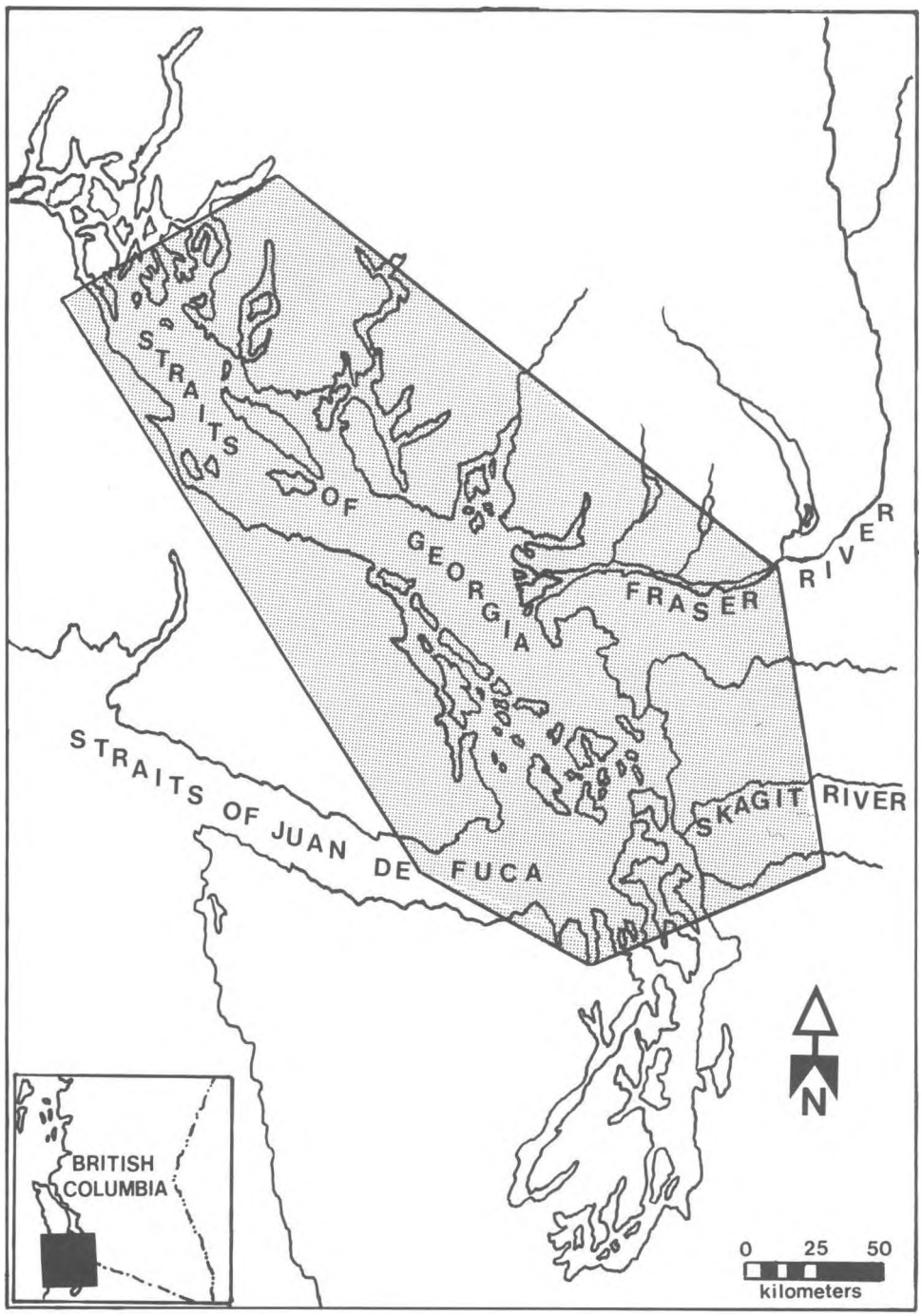


Fig. 1. The Spatial Extent of the Gulf of Georgia Region.

tsuga menziessi), hemlock *(Tsuga heterophylla* and *T. mertensiana)*, western red cedar *(Thuja plicata)*, white pine *(Pinus monticola)*, yellow cedar *(Chamaecyparis nootkatensis)*, and grand fir *(Abies grandis)*. Density of undergrowth is varied dependent upon shade conditions. Of the larger mammalian fauna, Coast deer *(Odocoileus hemionus columbianus)* and wapiti are found within the confines of this zone (Cowan and Guiguet 1956: 26). Mitchell (1971: 14) has suggested that, during earlier stages of forest development, larger deer populations may have been present.

Finally, the Puget Sound lowlands biotic area is similar in many respects to the Gulf Islands biotic province. How-

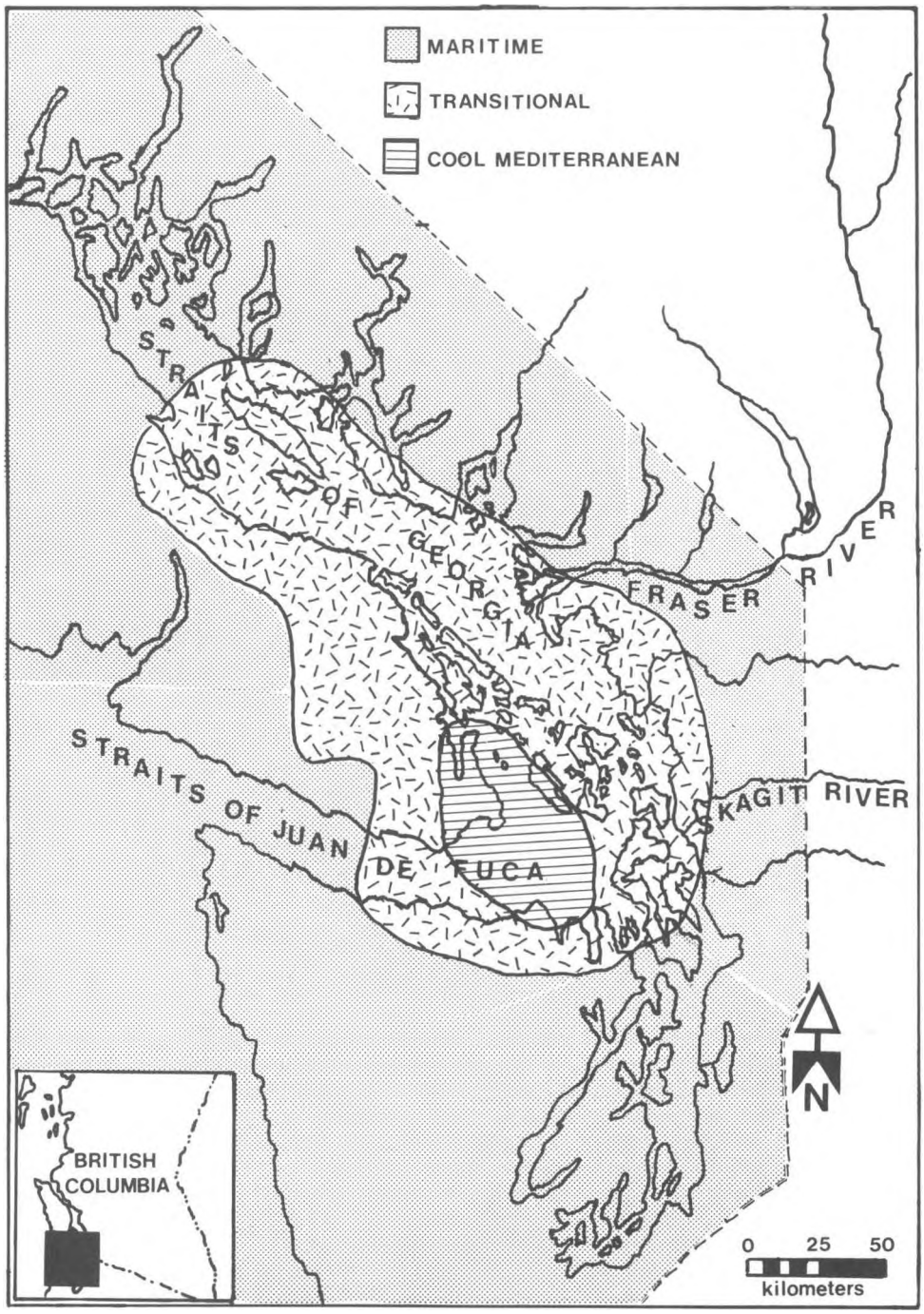


Fig. 2. Climatic Zones Within the Gulf of Georgia Region (after Kerr 1951; Mitchell 1971).

ever, there is a notable absence of Garry Oak and arbutus while ". . . shrubbery of hazel, *Corylus californica*, mock orange, *Philadelphus gordonianus*, Nootka rose, *Rosa nutkana* and western dogwood, *Cornus pubescens*, are formed here . . ." (Munro and Cowan 1947: 35). In addition, several small mammal species are restricted to its boundaries.

Extending from the mouth of the Fraser River southward into Puget Sound, Mitchell (1971: 12) borders the majority of this biotic area with the Gulf Islands zone on the west.

Supplementing the resource potential of these zones is the rich and abundant marine life of the Gulf. Numerous beaches and tidewater flats support a wide range of mollusca

and intertidal vertebrates (Mitchell 1971: 14–5; Quayle 1960; Griffeth 1967). As well, offshore resources are of equal abundance. Several species of sea mammal (Cowan and Guiget 1956) and a plentiful variety of fishes can be found throughout (Carl 1963: 87–9; Mitchell 1971: 16–7).

Mitchell (1971: 16), among others, has singled out the anadromous fish species as those most important to aboriginal inhabitants of the region. Of these, the five species of salmon *(Oncorhynchus nerka* Walbaum, *O. ksiutch* Walbaum, *O. gorbuscha* Walbaum, *O. tshawytscha* Walbaum, and *O. keta Walbaum)* are the most significant. Predictably following set migratory routes, they could be caught both in the waters of the Gulf and its freshwater tributaries (Mitchell 1971: 16–7; Suttles 1951: 154). Individual species vary drastically in abundance at any given locale and return at divergent periods. Salmon abundance is used by Mitchell (1971: 18) as the key division between the Gulf of Georgia region and its southern neighbour, Puget Sound.

Studies of post glacial environments in the Gulf of Georgia, both in terms of climatic conditions and land-sea level relationships, indicate that present conditions cannot be assumed stable for the entire length of man's occupation. The effects of such shifts would have direct impact on localized resources available for exploitation and, in turn, cultural adaptive strategies.

Although specific knowledge of post glacial climatic patterns and concomitant plant communities is still in an infancy stage for southern coast areas, a number of studies do illustrate changing conditions since the last glacial. For instance, Huesser (1965) postulates four phases – a late glacial, an early post glacial, a hypsithermal, and a late post glacial. He suggests that, following the retreat of ice from the region up to 6,500 B.C. (the end of the early post glacial), a lodge pole pine parkland environ was spread throughout. Climatic conditions were cooler and moister than those of today. Succeeded by the hypsithermal, the climate first shifted to a warm moist period becoming drier in a later interval and closing out with strongly humid conditions and a cooling trend (Huesser 1960: 185). Correlated with the hypsithermal is a series of three successional stages of forest development including an initial Sitka spruce, western hemlock, Douglas fir, white pine and alder dominance followed by a peak of Douglas fir and alder. This eventually shifted to mixed floral communities of western hemlock, Douglas fir and alder. In coastal lowland areas of Washington, and quite probably, the Gulf of Georgia, oak becomes important. In fact, the Garry oak/arbutus dominated Gulf Islands biome has been suggested as a vestige of hypsithermal vegetation (Fladmark 1975: 181). The final stage, the late post glacial, comes into effect at approximately 1,000 B.C. Beginning with weather more cool and humid than present conditions, there is a gradual shift to a western hemlock/Sitka spruce dominated climax forest.

Mathewes (1973: 2101), in a palynological study of the Fraser Valley, finds no hard core evidence for a "classic hypsithermal" in the region. His data suggest a *gradual* change from a lodge pole pine dominated early post glacial to current vegetational communities. On inspection of his pollen graphs, it is apparent that climatic and vegetational stability can be extended back for at least the last 3,000 years. However, it is also probable that at least minor perturbances due to neoglacial advance did occur (Fladmark 1975: 186).

As well as a shifting environment, land-sea relationships in the post glacial period have been somewhat dynamic. Southern coastal data have been extensively reviewed by Fladmark (1975: 145–9). Following Mathews, Fyles and Nasmith (1970), he concludes:

> Between 13,000 and 8 or 9,000 B.P. sea levels were high with an overall trend of rapid emergence. Between 8,000 and ca. 5,000 B.P. the sea was between 10 and 40 m lower than present, with a trend of gradual land submergence. By about 5,000 B.P. sea levels were more or less stabilized at their present position (1975: 149).

Applying Fairbridge's (1960) scheme of worldwide Holocene sea level fluctuations, Mitchell (1971: 65–7) has argued for oscillations of up to 3 metres on the southern coast between 500 and 1,500 B.C. As support, he notes that several midden sites dated to this period are either "drowned" or on elevations removed from the present shoreline. Rather than widespread eustatic fluctuation, it is probable that emergence and submergence are due to localized geotectonic factors (Fladmark 1975: 149).

The prehistory of marine and terrestrial fauna for the southern Northwest Coast is little known. Faunal remains from archaeological sites suggest that present day species' compositions have a relatively long antiquity of at least 8,500 years (cf. Matson 1976e). It is also important to note that salmon are recovered in a number of early contexts (Casteel 1976; Cressman 1960) and are suggested to have reached climax productivity by 3,000 B.C. (Fladmark 1975: 207).

In summary, the Gulf of Georgia area is viewed as a natural region distinct from those adjacent to it. Internal variation is present in hydrographic patterns, climate and organic environments. As a whole, however, it incorporates a rich and varied resource base which could be exploited by man. It also is argued that, between 1,500 and 500 B.C., climatic patterns, vegetational communities, and land-sea level relationships had roughly attained their present form.

The Ethnographic Perspective

Mitchell's (1971) characterization of the Gulf of Georgia region as possessing an ethnographically unique culture is, self admittedly, weaker than his identification of a natural region. Nevertheless, as he notes, it is a recurrent theme found in several earlier ethnographies. Basically a Coast Salish linguistic province, the boundaries and distributions of individual groups are as follows:

> Within the area are eight Salish languages and only one of these (Puget Sound) seems to extend any great distance outside of the natural area. . . .In the north is Comox, bounded to the north and west by Wakashan and to the east by Athapaskan. South on the mainland are two languages, Sechelt and Squamish, bounded to the east by the Interior Salish language, Lillooet. On Vancouver Island is Pentlatch, to the west of which is Nootka. South of these languages is Halkomelem, spoken by the Nanaimo and Cowichan groups on the Island and along the Fraser River from the Musqueam and Tswassan to the Tait of the Lower Fraser Canyon. To the west are Nootka and Nitinat, and bordering on the eastern arm are the Lillooet and Thompson languages. At the southern end of the area are Nooksack, Straits and Puget Sound, the latter, as already noted, being outside of the area as well. East and south of these are the Puget Sound Twana, Quinnalt Salish languages and to the west, Quileute (a Chemakuan language), Nitinat and Makah. Chemakum was a distinct Chemakuan language spoken by a small group at the entrance to Puget Sound to the south of most Straits speakers (Mitchell 1971: 24).

Several descriptive ethnographies exist for the majority of these groups (Barnett 1938, 1955; Boas 1890, 1894; Duff 1952; Hill-Tout 1907; Smith 1941; Suttles 1951). While a thorough review for each is unnecessary, a brief synthesis is in order. Many points surficially sketched, particularly those related to subsistence strategies, social organization and ritualistic behaviour, will be taken up in later, more detailed analyses.

As a whole the Gulf of Georgia Coast Salish are characterized by patrilineal descent groups, virilocal residence, extended families and a system of ranking. Nevertheless, although these may be the prescribed norm or general mode, they are less rigid than many other areas of the Coast. For instance, Barnett (1938: 130) reports that descent and inheritance were reckoned bilaterally with only a decided preference for the patrilineal. The value of bilateral kinship recognition served to both enhance an individual's or family's sphere of influence as well as providing safeguards against lean times due to fluctuation of resources (Suttles 1960: 300). In effect, as Duff (1964: 16) has argued, the area was bound together by a "diffuse web of bilateral kinship ties".

The ranking structure, as well, was less strict than areas to the north and west (Drucker 1955: 126). Though a wide gap may have existed between the highest and lowest, individual achievement was acknowledged publicly allowing for achieved mobility. Similarly, nobles without ambition or generosity quickly lost their traditional followers.

The potlatch, as elsewhere on the Coast, was an integral part of the regional culture. It served as a mechanism for redistribution (Suttles 1960), legitimized status and names, eradicated shame, celebrated the completion of a house or erection of a totem pole and, in general, extended one's social sphere. As wealth through the fur trade increased, so did the number and size of potlatches. This snowballing effect has led Barnett (1955: 256) to comment that ". . .the concern for the gifts themselves became so hypertrophied that the real reason for the existence of the institution was obscured".

The Coast Salish yearly cycle followed a pattern of sedentary winter villages, dispersed spring hunting, gathering and fishing camps and larger summer/fall gatherings for the procurement of salmon. Seasonal mobility was great with a number of groups travelling distances in excess of 320 km (Duff 1952: 26; Mitchell 1971: 27; Barnett 1955: 22).

Barnett (1938: 122) notes an intra-areal distinction of Gulf of Georgia Salish on the basis of available resources. Peoples along the Fraser and Squamish rivers had little opportunity to take cod, halibut or sea mammals while the scarce sockeye were plentiful on the Fraser and, likewise, eulachon on the Squamish. Such a separation was not unfounded considering ". . .the peoples living on these rivers drew a distinction between themselves and the 'salt water people', by which they meant mainly those on Vancouver Island" (Barnett 1938: 122).

Mitchell (1971: 29) has further refined internal variability on the basis of access to the Fraser River salmon runs and, to a lesser extent, procurement strategies. Proposing four area subtypes, he defines: 1) a Northern Gulf diversified fishing strategy (Pentlatch, Comox, Sechelt); 2) a central and southern Gulf river fishery (Squamish, Halkomelem); 3) Straits reef-net fishermen (Straits); and 4) a Puget Sound diversified fishing group (Puget Sound, Chemakum). Although both northern Gulf and Puget Sound diversified fishermen had to rely on lesser salmon runs in local rivers and streams, the central and southern Gulf river based fishery and that of the Straits reef-net group had direct access to the major runs. The latter, however, took their catch by a special form of net while the fish were still in salt water. Additional division can be drawn between mainland and island groups in the northern Gulf as well as a distinction in the central and southern zones between those peoples permanently inhabiting the Fraser sites and those who occupied stations at its mouth on a seasonal basis.

Aside from fishing, a large variety of other resources were exploited both seasonally and year round. Mitchell (1971: 25) argues that ". . .conditions in the Gulf of Georgia

habitat fostered optimum density of deer, and this must have allowed a much greater use of this animal than was possible in the neighbouring regions". As well, goats, wapiti, bear, seal and a number of smaller fur bearers supplemented Salish diet and provided valuable raw materials. A large variety of mollusca and intertidal vertebrates were collected and weirs. Cedar bark was used in clothing, basketry and rope making. The list is virtually endless. It was the wood- several avian species, were taken seasonally.

The technological aspects of subsistence and material culture have been extensively outlined by Barnett (1938, 1955). While a variety of raw materials was utilized, cedar would have to be considered that most important to Salishan technology. Cedar beams and planks were used in the construction of winter long houses. Cedar logs were adzed out for watercraft. Cedar laths were built into fish dams and wiers. Cedar bark was used in clothing, basketry and rope making. The list is virtually endless. It was the wood-working industry and wood related products which gave the ethnographic populace the major portion of their distinctive Northwest Coast material culture.

To exploit the wide range of resources available and secure adequate surpluses for winter consumption, Mitchell (1971: 26–7) has suggested three requisites. First and foremost, the culture must have developed a sufficient range of technological devices for the taking of such resources. While I have already noted nets and traps for fishing, we might add a large selection of hooks and lures for fishing; several harpoon forms for both fishing and hunting; the bow and arrow as well as nets, deadfalls and traps for taking terrestrial fauna; multiple pronged spears for hunting ducks, and a long paddle-like rake for collecting herring. In addition, this inventory was supplemented by a variety of tools for processing the catch.

The second and third requirements are those of seasonal movements to exploit available resources and the possession of a preservation technique for storing abundance. For the former, seasonal movements have been briefly touched upon as has the mobility of certain Salish groups. It is of note that water travel across the Straits was frequent and done with apparent ease. Preserving surpluses for winter consumption was primarily carried out through drying by sun, wind or fire. Eulachon, porpoise, seal and dogfish oil were also rendered down and stored for future use (Barnett 1955: 61).

The picture that emerges is one of a culture seemingly well ordered to a complex but abundant environment. The availability of seasonal resources required people to be in a specific place at a specific time and settlement pattern strategies were so adjusted. Mobility was high and adequate preservation techniques for storage of surpluses were present. In addition, the wide range of kinship ties, both of the husband and wife, apparently served as a safeguard against resource fluctuation.

The Archaeological Perspective

Mitchell's 1971 review of prehistoric variability within the Gulf of Georgia region provides both a historical account of archaeological work and an integrative synthesis. Recognizing the problems of divergent competing sequences (Figure 3), some of which were derived in the same area, he sets out to cross correlate the various phases, cultures and periods into larger units designated culture types. To this end, he was successful. Despite Mitchell's efforts, however, the state of culture history has been little altered. Several schemes remain in vogue and this has been compounded by the addition of a number of new phases derived from recent analyses and syntheses. Though a replication of Mitchell's archaeological documentation is not intended, an outline of the major chronology helps set a framework for later discussions. Moreover, the incorporation of recent data updates the synthesis.

Over the past decade, our knowledge of man in the Gulf of Georgia prior to 4,000 B.C. has drastically expanded. Several sites have now been excavated and corresponding cultural units delimited. The earliest, and probably most disputed, is the cobble/pebble tool complex of the Fraser Canyon known as the Pasika phase. On the basis of terrace sequencing and geological context, Borden (1968b, 1975) dates this occupation to a period between 10,500 and 9,000 B.C. In that Pasika seems to lack a bifacial flaking technology, its ultimate origins have been tied to eastern Asia.

While the status of Pasika awaits further documentation, there is firm evidence for widespread occupation throughout the region by 7,000 B.C. In the Fraser Canyon at Esilao, Borden (1968a, 1975) has defined two sequent phases for this period, Milliken (7,500 to 6,000 B.C.) and Mazama (6,000 to 4,500 B.C.). In that both are characterized by laurel leaf points, large foliate bifaces, pebble tools and a variety of flake implements, there can be little doubt that one evolved from the other. Interestingly, Borden (1975: 63) has argued for a fall occupation due to the presence of wild cherry pits in both components. By seasonal association, he suggests the primary site function to have been the interception of an annual salmon run.

Similar in most respects to Milliken and Mazama, and quite possibly part of the same tradition, is the earliest occupation of the Glenrose Cannery site. Situated at the mouth of the Fraser River, it has bracketting dates of 6,200 ± 250 B.C. (Gak 4866) and 3,780 ± 125 B.C. (Gak 4650) (Matson 1976b: 18). Unlike the Canyon phases, however, Glenrose Cannery I incorporates a large faunal assemblage illustrating a diversified economy of fishing and hunting as well as the beginnings of shell fish exploitation. Because of this, Matson (1976d: 283) has argued that it

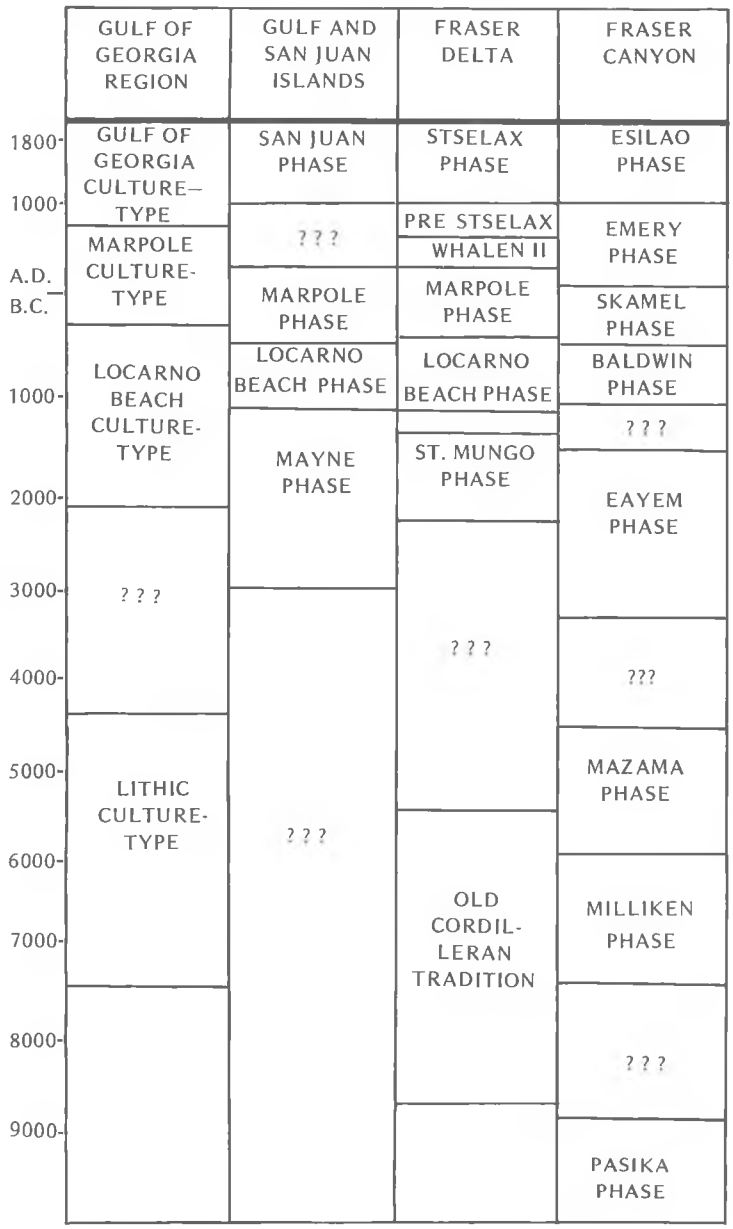


Fig. 3. Culture Historical Sequences for subareas Within the Gulf of Georgia Region (after Borden 1968, 1975; Carlson 1960, 1970; Mitchell 1971; Matson 1976a). Borden (1975) now includes Mayne, St. Mungo and Eayem phases in a single Charles phase.

may be a coastal variant of Butler's (1961) Old Cordilleran. Consequently, he feels its closest ties are in Oregon with the early component on the Dalles (Cressman 1960, 1977).

To the south, in coastal Washington, several seemingly early components have been excavated. In common, all have a preponderance of cobble tools in association with leaf shaped projectile points. Gaston and Grabert (1975) list five such components in the Birch Bay locality of the Washington mainland while R. Kidd's (1964) excavations at the Olcott site on the Stillaguamish River have led to the formulation of an Olcott complex. In northern Puget Sound, Bryan (1957) has defined an early coastal land hunting culture, the Deception Pass phase, from similar materials.

Since Capes' (1977) rejection of the early date for Millard Creek, the only other putative protowestern tradition sites within the Gulf of Georgia are at Deep Bay and Dionesio Point. For the present, the status of Deep Bay must be questioned on the basis of a pair of dates more recent than one would expect and the disturbed nature of the site (see Monks 1977). Although the Dionisio Point assemblage is somewhat small, Mitchell (1971) suggests it has widespread relations with a majority of the components already mentioned. In fact, by combining all materials prior to 4,000 B.C., he defines a "Lithic" culture type.

While the bulk of these assemblages are generally assumed to be residues of an early diversified economy with strong emphasis on hunting, the first positive recognition of a primary coastal adaptation can be seen in components occurring after 3,000 B.C. At the St. Mungo Cannery site on the Fraser River, a component with associated dates of 2,290 ± 105 B.C. (I 4688) and 2,360 ± 110 B.C. (I 4053) has been excavated by Calvert (1970: 57). Here, she reports "...the basic economic reliance on fish, mollusca, and wood which is so characteristic of later Northwest Coast cultures is well-defined in the earliest levels" (Calvert 1970: 74). Diagnostic of her St. Mungo I assemblage are stemmed or single shouldered points, a bilaterally barbed harpoon, boulder spall tools, bone rings, brow bands, various tooth and bone pendants, bone "charms" and large cores.

A similar assemblage with a coeval age is described by Matson (1976d) as overlying the Old Cordilleran component from Glenrose. In fact, the materials have such a striking correspondence that he proposes a St. Mungo phase (2,300 to 1,000 B.C.). In addition to St. Mungo affiliations, Matson (1976d: 286) sees broad similarities with two other phases of this time period, the Mayne phase of the Gulf Islands and the Eayem phase of the Fraser Canyon. Further, in that many artifact types persist from the Old Cordilleran complex of Glenrose I, he hypothesizes a direct continuum.

Using the earliest component at Helen Point on Mayne Island as the type site, Carlson (1970, 1975) has defined the Mayne phase. Including bilaterally barbed harpoons, a variety of stemmed, leaf and diamond shaped basalt points, pebble choppers, microblades, labrets and several other traits, he postulates a temporal span of 3,000 to 1,000 B.C. (Carlson 1970: 115). Although originally a guess estimate, this chronological placement was later supported by a number of C_{14} assays (Carlson 1975: 2). Other possible Mayne phase components are Marpole I (Burley 1979b) and the early assemblage from the Crescent

Beach site (Percy 1975).

The Eayem phase of the Fraser Canyon is now known from two sites, Esilao and Mauer (Borden 1975; LeClair 1976). On the basis of eight radiocarbon dates, it spans the period between 3,500 and 1,500 B.C. In that several artifact types persist from earlier Canyon phases, it is assumed to also be an *in situ* evolutionary development.

The exact relationships of the Eayem, Mayne and St. Mungo phases must await a full detailed analysis of assemblages belonging to the former pair. Nevertheless, Borden (1975) suggests they are similar enough to combine into a single culture historical unit. He states:

> In the preceding discussion of cultural manifestations in the lower Fraser-Strait of Georgia region dating between 5,500 and 3,000 B.P., it has become evident that a series of components, some of them initially defined as local "phases", e.g. Eayem, St. Mungo and Mayne, share a significant number of positive and negative traits which distinguish them from earlier and later cultural manifestations in this region. It seems desirable, therefore, to group these local components and "phases" together into one regional phase and to replace the local "phase" terms by the single designation "Charles phase" which would henceforth apply to all presently known components as well as to other comparable components yet to be discovered in this region and falling within the indicated temporal interval (1975: 96).

Subsequent phases or culture types of the Gulf of Georgia region have, for the most part, a longer standing in prehistoric research and are historically documented by Mitchell (1971). The Locarno Beach phase/culture type is known from several components (Mitchell 1971; Percy 1975; McMurdo 1974; Haggarty and Sendey 1976; Borden 1950, 1951, 1970; Charlton 1977) and is assumed to have been in existence between *circa* 1,000 and 400 B.C. Distinctive traits of this unit include one-piece toggle harpoon heads, two-piece composite toggle harpoon heads, medium sized chipped basalt points, microblades and cores, large facetted ground slate points, thick ground slate knives, labrets, earspools, grooved or notched sinkers and cobble and spall implements. Also characteristic are a series of well made bone or soapstone artifacts with an unidentifiable function. These are broadly categorized as Gulf Islands Complex artifacts (Duff 1956).

Few researchers would presently question the continuum of Charles phase peoples into Locarno Beach times. For instance, Mitchell (1971: 57) goes so far as to incorporate the Mayne phase within his Locarno Beach culture type. Carlson (1975) also notes major similarities of Locarno Beach, Mayne and other early Delta and Canyon phases and views these in the broader perspective of a tradition. Whatever the case, there is little doubt that a full maritime adapted settlement subsistence pattern was in effect during the Locarno Beach time period. In fact, it may well have been oriented more towards maritime resources than later culture types (see, for instance, Mitchell 1971: 57–9).

The Marpole phase/culture type, the major focus of later analyses, has a temporal overlap with Locarno Beach (Borden 1970: 101). Assigned to a 400 B.C. to A.D. 400 period, its origins seem unclear. Borden (1951: 48) had originally described it as an "interior culture in a state of transition". Mitchell (1971: 68–71), on the other hand, argues that it could have developed out of the Locarno Beach culture type. Marpole components have a spatial configuration spread throughout most of the southern Gulf of Georgia. In addition, Borden (1968a: 20) reports close similarities between Marpole and the earlier Baldwin phase of the Fraser Canyon.

The Baldwin phase first appears by 1,000 B.C. and lasts up to 300 B.C. Despite a slight gap in the archaeological record between Baldwin and the earlier Eayem culture, on the basis of several persisting artifact types it would appear to represent another stage of continuous development in the Canyon. Even so, as Borden (1968a) points out, there are a number of introductions in Baldwin which set it apart. One of the more important is the development of an artistic tradition in stone.

The ensuing Skamel phase (300 B.C. to A.D. 200), a unit which is in part contemporaneous with Marpole, is interpreted by Borden (1968a: 16) as an alien intrusion into the locality. As he reports, ". . .virtually everything that was characteristic of the Baldwin phase vanishes" (1968a: 16). With Skamel came intensive utilization of fine grained cryptocrystalline lithics, diagonally corner-notched triangular projectile points, a number of small specialized tools and the "pit house". Furthermore, Borden (1968a: 20) finds it intriguing that with the appearance of Skamel or, more properly put, the disappearance of Baldwin, Marpole comes into being further down the river.

With the demise of the Marpole Phase on the Fraser Delta, Borden (1968a: 20) once again has assumed a population replacement. This immigrant culture is identified as the Whalen II phase (A.D. 400 to 800). Delimiting it from Marpole are new forms of chipped projectile points, a shift to a composite form of harpoon, olivella beads and the lack of a ground slate industry. As evidence of upriver interior relationships, projectile point styles of Whalen II are likened to those of the Skamel phase (Borden 1970: 107–9). Despite such claims, this phase remains suspect. Its derivation was based on a sample of less than 200 specimens (Mitchell 1971: 56) and subsequent research has failed to uncover additional related components.

Following Whalen II, a hypothetical pre-Stselax phase has been proposed on the Fraser delta (Borden 1970: 110). An amalgamation of old and new elements takes place which eventually forms the cultural assemblage of the late prehistoric Coast Salish. While, admittedly, even today few

components can be definitely tied into the pre-Stselax period, evidence from a number of sites suggests slightly different assemblages for people occupying the Gulf Islands and those near the mouth of the Fraser. Whereas the Fraser River components seem to have been strongly influenced by interior patterns, particularly in chipped and ground point styles (see Charlton 1977), those on the islands appear more affected by adjacent coastal peoples.

The developed Coast Salish horizon, acknowledged by two distinct phases, spans the period A.D. 1200 until the time of contact. Borden (1968a, 1970), relying on material collected from Stselax Village near the mouth of the north arm of the Fraser, has defined the Stselax phase. Reporting a considerable number of redundant traits between Stselax, Whalen II and Marpole, he lists the major differences as a paucity of personal ornamentation, a new form of composite harpoon, a decline in the frequency of chipped stone, the lack of a microblade industry and a marked shift in burial practices. Further, the Stselax phase appears to have been "remarkably stable" through time ending with the full historic period (Borden 1970: 112).

Originally defined in the San Juan Islands and later extended into the Gulf Islands, Carlson (1954, 1960, 1970) argues for a late period San Juan phase. Though contemporaneous with Stselax and sharing many characteristics, it can be segregated on the basis of a greater frequency of herring rake barbs and small bone points (Carlson 1976: personal comm.). For the origins of San Juan, Carlson (1970: 122) presents three possibilities – population replacement, internal cultural change or diffusion of traits. It is implied that the resolution of this problem must await a greater documentation for the period intervening between Marpole and San Juan.

The final two cultural complexes of the Fraser Canyon, the Emery and Esilao phases, respectively date A.D. 200 to 1200 and A.D. 1200 to 1808. During the Emery phase there appears to be a reintroduction of the artistic traditions previously dominant in Baldwin and Marpole but absent in Skamel (Borden 1968a: 22). Aside from a continuum of many artifact types from Skamel, Borden also reports strong outside influences, particularly in the form of pipe smoking. Esilao, the culmination of the Fraser Canyon sequence, in many respects has an assemblage similar to its delta counterpart, Stselax. Projectile points, including side-notched and barbed forms, are smaller and lighter than earlier types. Further, there is an increased frequency of ground slate items and a continuation of tobacco use. However, the large scale woodworking technology found in most contemporaneous coastal sites appears to be lacking (Borden 1968a: 22).

The Gulf of Georgia culture type, as defined by Mitchell (1971: 47), incorporates the three latest phases of the region – Esilao, San Juan and Stselax. From this amalgamation, he has derived 15 distinctive archaeological features (1971: 48). On the origins of the Gulf of Georgia culture type, there are no pretenses as to anything other than a direct ontogenous development out of the preceding Marpole period. Towards such an end, Mitchell concludes "there are many continuities indicating perpetuation of a well established regional tradition and the discontinuities . . .seem slight by contrast" (1971: 72).

From the preceding synthesis, several observations may be drawn. First, coterminous cultural complexes within the Gulf of Georgia physiographic region share many similarities throughout the prehistoric period. Thus, one might infer that the ethnographically recorded interaction between the Fraser Canyon, Fraser Delta and Islands peoples has considerable antiquity.

Secondly, we may note that considerable disagreement exists in the explanation of phase/culture type origins ultimately leading up to the development of the Gulf of Georgia variant of the Northwest Coast culture. Both continuity and discontinuity models have been employed to interpret the same phenomena. Mitchell (1971) suggests that, at least from early Locarno Beach times, there is little evidence to support alternative explanations aside from internal continuous evolution. Moreover, Matson (1976d) would extend this period back to an Old Cordilleran base. Borden (1968a, 1970) however, has suggested a number of incidences of migration and full scale population replacement. Most notable is the Skamel phase displacement of Baldwin in the Fraser Canyon and a movement of upriver peoples to the coast during the Whalen II period.

Finally, and most important to this study, is the seeming acceptance of the Marpole phase/culture type by all regional prehistorians. It has been given a discrete temporal designation with spatial boundaries encompassing almost the whole of the Gulf of Georgia. The major exception to this point is the Fraser Canyon although, even here, strong affinities have been drawn to the earlier Baldwin phase while the Emery phase is suggested as an amalgamation of Skamel and Marpole.

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 than 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 defineable 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 "subarea" (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 subphase 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.

HISTORICAL DEVELOPMENT OF THE MARPOLE PHASE

Although much has been made of the early research of Hill-Tout (1895, 1948) and H.I. Smith (1903, 1907) towards the development of a culture history in the Gulf of Georgia (see Mitchell 1971: 29–33; Robinson 1976), it was not until the 1950s that a temporal sequence, based upon assemblage content and stratigraphic position, was delimited. On the Fraser Delta and Point Roberts peninsula, Borden (1950, 1951) excavated a number of sites in the late 1940s including Locarno Beach (DhRt 6), Marpole (DhRs 1), Whalen Farm (DfRs 3), Point Grey (DhRt 5) and Musqueam (DhRt 2). Estimating a minimal age of the surface layers for each, he was able to place them into a gross chronological ordering of 500+ years (Marpole, Point Grey, Locarno Beach), 200+ years (Whalen Farm) and historic (Musqueam) (Borden 1950: 21). In no way was this meant to reflect succint correlations of assemblage content. To the contrary, he found major similarities between Point Grey and Marpole as well as Locarno Beach II and Whalen I. Initial impressions pointed towards the interior for the cultures represented at the former sites while the latter components were seen as having far northern ties. As well, the Whalen II assemblage, while similar to Marpole and Point Grey by virtue of interior origins, remained distinctive.

On the heels of his initial report came a more explicit sequence (Borden 1951). Here, Borden outlined a three period breakdown for prehistoric inhabitants of the Fraser Delta. These were:

1) EARLY PERIOD – Eskimoid cultures
   a) Locarno Beach I and II
   b) Whalen I
2) INTERMEDIATE PERIOD –
   Interior Cultures in a State of Transition
   a) Marpole – Point Grey – Locarno Beach III
   b) Whalen II
3) LATE PERIOD –
   Developed Southern Aspect of Northwest Coast culture
   a) Stselax Village at Musqueam

His intermediate period, the so-called "interior cultures in a state of transition", is the precursor of the Marpole phase. Characteristic of this complex were the presence of numerous heavy duty woodworking tools, barbed projectile points of antler, barbed harpoons with tangs, massive stone carving and an emphasis on chipped stone. Although the above listed traits were considered to be highly indicative of an interior origin, the presence of thin ground slate knives and projectile points suggested to Borden that the bearers of these assemblages were undergoing modification through adaptation to a Maritime environment. Thus, it was concluded that "the culture of these peoples may indeed be viewed as a modified aspect of a Plateau or Fraser River–Columbia River phase" (Borden 1951: 46).

Borden's interpretations regarding what aspects of his materials were interior derived came under heavy criticism by Caldwell (1954). Specifically, having completed a survey of the Similkameen and Okanagan Valleys, Caldwell notes a paucity of evidence in support of the postulated associations. What parallels that existed were felt to have little archaeological depth and could be attributed to late importations. Caldwell, it would appear, favored independent development for both coastal and interior patterns while not ruling out the possibilities of trait specific diffusion.

In defense of the interior/coast migration hypothesis, Borden (1954) attacked Caldwell's position by questioning the reliability of his survey data and its usefulness in making a contribution to "current theory". Although Borden would seem to have modified his approach, especially with regard to the origins of a heavy duty woodworking industry, he continued to maintain his interior roots for intermediate components. As such, he again came under criticism by plateau archaeologists.

In a well-stated argument, Osborne, Caldwell and Crabtree (1956) provided a trait by trait refutation of interior characteristics found in the intermediate period on the Fraser Delta. Further, they took issue with Borden's extension of the Fraser River hypothesis to all of the Northwest Coast. It was argued that historical reconstructions of this nature should be limited to the Fraser drainage (Osborne *et al.* 1956: 117). Finally, of the shift from early to intermediate cultures, they state:

> If we must have migrations, this episode seems to us much more like one of coastal migration. It could as well represent diffusion and local population shifts as Borden suggests. . . (1956: 125).

Undoubtedly influenced by this critique, as well as the acquisition of a larger data base including several radiocarbon assays, Borden reformulated the Fraser Delta sequence into that which is currently in vogue. The early period became the Locarno Beach phase, the intermediate period was split into the Marpole and Whalen II phases and the late period was termed the Stselax phase (Borden 1968a). Eskimo origins for Locarno Beach were dropped (1962) and no further mention is made of interior traits for Marpole.

At approximately the same time that Borden was beginning his research on the Fraser Delta, archaeological work was being undertaken in the San Juan Islands of northwestern coastal Washington. King's (1950) excavations at the Cattle Point site provided a developmental sequence from an early land based hunting and gathering culture through to the developed aspect of the southern Northwest Coast pattern. The phase names of Island, Developmental, Maritime and Late were proposed.

Carlson (1954), analyzing subsequent material from Cattle Point, in addition to assemblages from several other sites in the San Juans, had misgivings with King's framework. Such a developmental sequence, he suggested, was somewhat controversial. Bringing the San Juan materials into line with those of the Fraser, his sequence included an "Early Maritime Culture", an "Archaic Culture" and a "Recent Culture". The term Archaic reflected the then proposed interior origins for Borden's intermediate period. Carlson's unpublished chronology was not to have a long life, however. Bryan (1955), conducting research in northern Puget Sound, disagreed with the use of Archaic in describing cultures with a Maritime orientation (Marpole). Consequently, he proposed that it be reserved for the early pre-Maritime components turning up at a number of Washington sites. By extension, Borden's concept of "intermediate" was to be substituted.

Following the publication of Willey and Phillips (1958), the San Juan classification was again modified by Carlson (1960). Few differences between his intermediate or Archaic components and those excavated by Borden were seen and they were grouped as the Marpole phase. Such a case could not be made for the more recent materials resulting in the emergence of a San Juan phase. Carlson (1970) has continued with this scheme.

Since the mid 1960s, major alterations to the basic framework have been lacking. An attempt by Kidd (1964) to have regional prehistorians describe their materials in reference to a strict chronological series met with little success. In his framework, both Marpole and Locarno Beach phases were grouped together into a "Middle Period". Finally, as I have earlier reported, Mitchell (1971) has substituted the term culture type for phase. In addition, the Whalen II phase was incorporated with Marpole.

THE MARPOLE CULTURE TYPE –

CURRENT KNOWLEDGE

A major implicit criticism of the culture historical sequence, as established within the Gulf of Georgia region, has been the strict definition of individual units on the basis of trait presence/absence. While such a scheme might be justifiable given the full analysis of several collections from controlled excavations, in addition to absolute dates, this has not been the case. In fact, the original concept of a Marpole culture type (the Intermediate Period) was based on broad comparisons from "table top" inspection of a few component assemblages. Specific characteristics were singled out and emphasized as all important diagnostics (cf. Borden 1951).

Since the original characterization, there have been a number of modifications stemming from recent analyses and a plethora of radiocarbon assays. The tendency has been to de-emphasize gross differences between Marpole and articulating culture types as well as extending the terminal date. Still, the unit has remained a viable culture historical concept. Moreover, at least a partial measure of statistical distinctiveness has been illustrated in recent analyses by Matson (1974). Matson's study employed a polythetic set with both presence/absence and frequency data.

Mitchell's (1971: 52) synthesis of diagnostic archaeological features within the Marpole culture type lists 20 defining criteria. Based upon the works of Borden (1950, 1954, 1960, 1962, 1968a, 1970), Carlson (1960, 1970), Hill-Tout (1895, 1948) and H.I. Smith (1903, 1907), these include: a variety of chipped stone point forms; microblades; large ground slate points; thin ground slate fish knives; celts of various sizes; disc beads of shell or shale; labrets and possibly earspools; stone hand mauls; perforated stones; stone sculpture; large needles; sectioned or split bone awls; barbed antler points; antler wedges; antler sculpture; relatively frequent use of native copper for ornaments; midden burials, some with plentiful grave goods; skull deformation and occasional trepanation; and, finally, large post moulds and house outlines. Subsequent sections provide an evaluation for each of these diagnostics.

Projectile Point Forms

Within the Marpole culture type, a large variety of chipped stone projectile point forms are notable. As well, at a number of sites this category of implement is surprisingly abundant in relation to the total assemblage (see Burley 1979a, 1979b). While the possibility of site specific factors cannot be ruled out, as a general characteristic, variety and abundance of chipped points appear more diagnostic of Marpole than culture types preceding and succeeding it. Forms most frequently found include:

1) large well made thin lanceolate bifaces both with and without stems. A number have serrated blade edges and are manufactured of exotic raw materials including silicified wood, chert, chalcedony and quartz. In that many of this form have been associated with burials, a ceremonial or ritual function is suspected (Figure 4, a, b);
2) a medium to large sized contracting stem form with straight to convex blades, squared to rounded shoulders and pointed convex to straight bases (Figure 4, c);
3) a small to medium sized expanding stem type having straight to convex blades and a convex base (Figure 4, d);
4) a medium sized corner-notched form intergrading with the preceding type. Basal margins vary from straight to convex as do blade edges (Figure 4, e).
5) a basal-notched barbed form often with an ill-defined or truncated stem. Bases tend to be either pointed convex or convex, blade edges vary between slightly incurvate and slightly convex while barbs are well defined and have a tendency to project below the basal edge (Figure 4, f);
6) a wide variety of unstemmed triangular types of a small to medium size. Blade edges range from incurvate through to slightly convex as do the basal margins. One specific type with an asymmetric slanted base has been suggested as particularly diagnostic (Mitchell 1971: 52) Figure 4, g–j);
7) small to medium sized leaf shaped points with varying types of basal margins. Leaf forms, on the whole, tend to be rare (Figure 4, k);

The lanceolate type aside, for almost all chipped point styles, the basic raw material is basalt/andesite. Typically, it varies in consistency from vitreous to highly granular. Concomitant with the flaking propensities of this material is what might be considered a poor or "crude" workmanship on many specimens. Non basaltic materials do occur but these tend to be extremely rare. With the exception noted above, no typological preference for the use of such

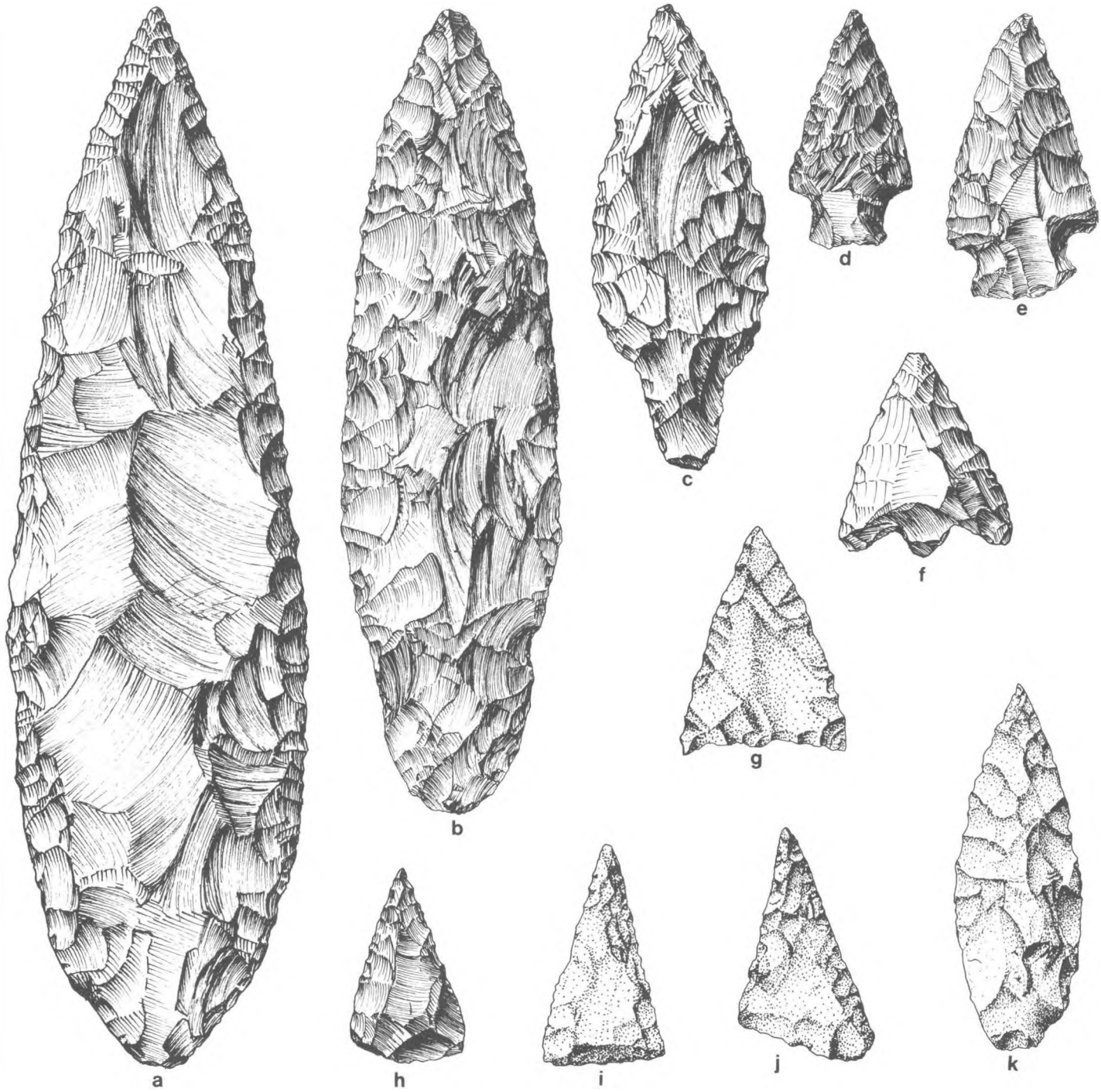


Fig. 4. Chipped Stone Projectile Point Styles Characteristic of the Marpole Culture Type. (a,b) Large Lanceolate Bifaces. (c) Contracting Stem Point; (d) Expanding Stem Point ; (e) Corner-notch Point; (f) Basally-notched Barbed Point ; (g-j) Triangular Points; (k) Small Leaf Shaped Points

materials can be illustrated.

At this point it is difficult to ascertain and quantify intraculture type chronological distributions for specific styles. On a general level, a few trends may be delineated. First, I would suggest that the smaller unstemmed triangular point forms occur toward the latter end of the Marpole period. Many types are virtually indistinguishable from those of late period assemblages attributed to the Gulf of

Georgia culture type (Mitchell 1971: 52, Burley 1979a) and rarely occur in an early Marpole context (for instance see Matson 1976d). Similarly, notched and barbed forms seem to have a late distribution. Borden's (1970: 106) illustration of Whalen II phase points show much overlap with these styles. Finally, both contracting and expanding stem types appear to be equally distributed through time with a possible tendency to drop in frequency and size in later assemblages.

This tendency for reduced size and increasing variability through time may be indicative of something more than stylistic change. Specifically, we may note that at roughly the same time elsewhere in the Pacific Northwest, there is a major shift in hunting technology from the atlatl and dart to the bow and arrow. Cressman (1977: 106) suggests a transitional date of 300 B.C. for the Columbia Dalles region while Borden (1968a: 15) marks its appearance into the Fraser Canyon during the Baldwin phase (1,000–300 B.C.). On the other hand, Stryd (1973: 50) argues for a more recent introduction in the interior plateau during the Lillooet phase (A.D. 200–800).

Whatever the case may be, there can be little doubt that the notched point styles are reflective of a major cultural flow out of the interior to the coast. Such an inference is predicated upon the close similarities of these forms with those of Sanger's (1970: 56) Upper Middle Period, Wilson's (1976: 17–18) Thompson phase or Turnbull's (1977: 107–108) Deer Park phase. However, this diffusion stream may not have spread throughout the entire Gulf region. As reported in a later discussion, notched points tend to be most abundant and associated with mainland (including the Point Roberts Uplands) sites.

Microblades

Microblades and prepared cores have been recovered from a large number of Marpole culture type sites. However, their distribution is not solely limited to this period, occurring in earlier Locarno Beach assemblages and possibly persisting into later components as exhibited in the Whalen II phase (Borden 1970). Of course the latter might be considered the terminal aspect of Marpole.

As a technological tradition, microblade production is found throughout much of the Pacific Northwest (Borden 1962; Mitchell 1968a; Sanger 1968; MacNeish 1964; Ackerman 1968; and Fladmark 1975). Their presence has been used to propose a variety of migration and diffusion streams in a host of directions. For the Gulf of Georgia, Borden (1962: 16–17) first suggested them to be the end product of a north to south temporal gradient running through the interior plateau and hence to the coast. Shortly thereafter, Mitchell (1968a) illustrated a much earlier distribution than previously considered for the region. Subsequently, he argued that it was indicative of a continuity in regional culture growth (1968a: 14). Sanger (1968) has also taken issue with Borden's model, again illustrating a long time depth (*circa* 5,000 B.C. to A.D. 1) in the interior plateau. Notably, he reports marked differences in plateau/coastal microblade technologies. Summarizing, Sanger has stated:

> The coastal microblades represent a different technology. From the evidence drawn from both microblade and core examination, many of the coastal microblade cores are typified by: extensively modified striking platforms; lesser emphasis on core edge preparation compared with the Plateau specimens; unmodified to little modified lateral surfaces; and fluted surfaces which are parallel or tend to expand, rather than to contract, towards the keel (1968:111).

Sanger attributes many of these variations to differences in raw materials. Whereas the interior complex is almost solely based on basalt, coastal specimens tend to be of quartz crystal or obsidian. As a result, the coastal technique is posited as a development on quartz crystal applied to obsidian (Sanger 1968: 111). The few basalt specimens which have been recovered in the Gulf of Georgia are found to exhibit characteristics of the cryptocrystalline industry.

Disregarding technological and material differences, Sanger notes that microblades and cores represent a relatively small percentage of coastal assemblages as opposed to the interior. For the Marpole culture type, this may be in part an artifact of recovery technique and the temporal context of these assemblages. Of the latter, it is important to note that Marpole's chronological placement is at a period where, in the remainder of the Northwest, microblade technology is at a decline. In this light, 33 quartz crystal microblades and four cores were excavated from the Locarno Beach culture type component at Georgeson's Bay (DfRu 24) (Haggarty and Sendey 1976: 23–26). Since the total assemblage amounted to only 263 specimens and the excavation was limited to a pair of 2 x 2 metre pits, this artifact type could hardly be considered a rarity. A similar situation is found in at least two other components of a coeval age (Kenney 1974, MacMillan and St. Claire 1975).

Nonetheless, speaking strictly of Marpole, few assemblages have an abundance of microblades. Further, no spatial trends appear to be present with a wide distribution throughout the Gulf of Georgia. Given microblade profusion in the Locarno Beach culture type, one would expect the earlier Marpole assemblages to have a more abundant collection with fewer specimens from sites with less time depth. Such a situation has yet to be illustrated and comparable microblade samples are found among even the latest of Marpole components.

Ground Slate Points

On a general level, ground slate points are less numerous than their chipped stone counterparts. While the most

typical form appears to be a medium sized excurvate to leaf shaped variety with lenticular cross section, a number of other styles are present. These include: small to medium sized triangular and eared points with faceted edges and flat surfaces; the occasional medium sized stemmed or notched point; and a series of large faceted types of which a few have stems.

The relative lack of ground points in the Marpole culture type contrasts with both earlier and later units. Despite this factor, existent styles do overlap. Several large faceted points are comparable to types present in Locarno Beach while the triangular points are analogous to Gulf of Georgia culture type forms. It is interesting to note that, at False Narrows (DgRw 4), a number of the bayonet type points were recovered in a burial context suggestive of a ceremonial function (Burley 1979a). In this regard, they may be analogous to the earlier described large lanceolate chipped stone bifaces.

Since types with a lenticular cross section tend to be thicker than those having faceted blade edges and flattened surfaces, they may be representative of varied functions. That is, the latter appear more suited for insertion as cutting blades in composite harpoons while the former may be tips for arrows or atlatl darts. Late Marpole assemblages at False Narrows (Burley 1979a) and Deep Bay (Monks 1977) include thin point types in association with composite harpoon valves.

Thin Ground Slate Knives

In his original excavations at the Marpole site, Borden (1950) encountered numerous complete and fragmentary ground slate knife specimens. Ranging in shape from rectangular to semilunar, he described them as being "...thin, 2 mm, rarely more than 3 mm thick, of even thickness throughout and with the entire surfaces ground smooth" (1950: 18). Although present in later assemblages, this category of implement was felt to discriminate between the Marpole and Locarno Beach phases, the latter having a thicker and heavier type (Borden 1970: 103).

With the exception of other Fraser River sites, large numbers of ground slate knives are rare. Moreover, though infrequent, thin knives are possibly recognized in earlier coastal contexts (Calvert 1970; Carlson 1970; Haggarty and Sendey 1976, Burley 1979b). Borden (1970: 103) also notes that knives of this form are present by 3,000 B.C. in the Eayem phase of the Fraser Canyon.

While sample skewness may be used to explain discrepancies in quantities between the Fraser River and other locales, alternative interpretations are proffered. Should these implements be assumed as integral to the mass processing of fish, then one would expect them to be an important aspect of a tool kit at sites optimally situated to exploit such a resource. The Fraser River salmon runs are by far the most prolific fish population within the Gulf of Georgia region and it is notable that set migratory approaches to the river are followed (Suttles 1951).

Crowe-Swords (1974: 98–105), reporting an excessively large collection of knives from the Carruthers site (DhRp 11), suggests an alternative function. Specifically, he proposes that, at least at Carruthers, they may have been used in the preparation of wild potato. The possibilities of a multi-purpose employment, therefore, cannot be ruled out.

Whatever the case may be, on the basis of present data, thin ground knives appear to segregate Marpole from earlier assemblages. Such a recognition has formed the basis for isolating Marpole from an earlier component at the Marpole site itself (Burley 1979b). However, it must also be emphasized that identical specimens are abundant in later collections (Borden 1970; Carlson 1970; Mitchell 1971).

Celts/Adze Blades

The sudden occurrence of large celts within the Marpole phase, in addition to other aspects of a heavy duty woodworking tool kit, suggested to Borden (1954, 1970) an introduction of the large scale woodworking industry of ethnographic times. Celts or adze blades found in earlier contexts are characteristically small and, it is implied, unsuited to such a technology (Borden 1970: 99). Although Mitchell (1971: 59) has questioned the postulate that large scale woodworking was absent in the Locarno Beach culture type, he also points out that larger celt forms are absent prior to Marpole.

Mitchell (1971: 52) characterizes Marpole celts as being "...of various sizes, generally large, made with little care, of flattened oval cross section and with a rough rounded poll; the sides often taper towards the poll." That various sizes are represented are now fully documented (Matson 1976c: 152; Borden 1950: 19; Burley 1979a, 1979b). However, with the remainder of the above description, some issue may be taken. In analyzed collections of the False Narrows and Marpole sites (Burley 1979a, 1979b), many specimens have completely finished polls, faceted or flattened lateral margins and extreme care taken in their manufacture. At Marpole, small to medium sized celts are most abundant, as was the case in the Marpole component at Glenrose Cannery (Matson 1976d). Thus, while it is admitted that sample sizes at individual sites are inadequate to establish a comprehensive typology, it is felt that when such a study has been completed, considerable overlap of smaller forms will be found with Locarno Beach. To date, larger adzes or celts have not been recovered in a Locarno Beach context and may prove to be a reliable temporal delimitor. Marpole and Gulf of Georgia culture type celt assemblages are virtually indistin-

guishable.

For most celts of all periods, the predominant raw material intergrades between jadeite, nephrite and serpentine (Loy 1977, personal communication). Since the origins of this material are extralocal, extensive trade or migratory pursuits must be inferred. The closest source is the Fraser River Canyon (Mitchell 1971: 152). Basalt adze blades are also present though much less frequent.

Disc Beads of Shell or Shale

Involving considerable energy expenditure, the manufacture of both shell and slate disc beads has been interpreted as signalling a great emphasis on personal wealth and ornamentation within the Marpole culture type (see Stewart 1973: 90–91). Such a hypothesis is reinforced by their ubiquitous occurrence in burial contexts and often association with a second assumed wealth item, dentalia.

As a chronological diagnostic, shale or shell disc beads appear to be relatively isolated to the Marpole culture type although a few occurrences are noted in earlier and later associations. Of the latter, they are either insignificant in numbers or have a questionable placement. For example, Percy (1975: 143) suggests that five examples of disc beads in the early component at Crescent Beach ". . .were chance discoveries of items intrusive from stratigraphically superior components". Similarly, the single occurrence of a ground stone disc bead in the Lithic and Gulf of Georgia culture type components at Deep Bay (Monks 1977: 223) might be considered anomalous. Five steatite disc beads are reported as being present in the Georgeson's Bay I component (Haggarty and Sendey 1976: 35).

Without qualification, the arguments for disc beads as prime *fossil directeur* might be misleading. Specifically, the size of individual items makes them all but impossible to recover using standardized excavation procedures unless concentrated and/or recognized *in situ*. In Marpole, as has been reported, such a situation frequently occurs in burial contexts. Since mortuary patterns of previous and later culture types do not include extensive grave furniture, it could be proposed that differential variation is not found in the actual artifact form, but in burial practices and recovery rates. In fact, I believe this may well prove to be the case for the Gulf of Georgia culture type.

Labrets and Earspools

Although infrequent, both labrets and earspools have positive associations with the Marpole culture type. Also, both are found within the material culture of Locarno Beach. Ethnographically, neither labrets nor earspools are reported within the region and they are absent for the Gulf of Georgia culture type. However, pierced ears were common and ornaments of haliotis shell were frequently worn (Suttles 1951: 268; Barnett 1955: 76).

Almost all known forms of labrets found on the Northwest Coast are present during Marpole. These include T-shaped, button, pendulant and, tentatively, composite and novice types (Matson 1976c: 157; Percy 1975: 140; Kidd 1969: 55; Haggarty and Hall 1976). Moreover, they are manufactured of both stone and shell.

Although there appears to be no distributional pattern, on a regional level it is interesting to note that, where they do occur, they tend to be found in clusters. At Glenrose Cannery there are four (Matson 1976c), at Crescent Beach, six (Percy 1975), at the Hill site, five (Haggarty and Hall 1976), and at Musqueam Northeast, three (Matson 1974). In a minimum of 12 other Marpole components, they are not identified.

Mitchell (1971: 52) has attributed earspools to the Marpole culture type by inference from sculpture. Two are now reported for the Component II assemblage at the Marpole site (Burley 1979b). As well, a possible bone specimen was excavated within late Marpole deposits at Crescent Beach (Ham 1977, personal communication).

Stone Hand Mauls

Prior to the Marpole culture type, large well made spooled hand mauls are absent. Once introduced, they persist up to the historic era. Although a complete specimen, in a fully diagnostic sense, is a rare find in controlled excavation, the style most typical of Marpole has a conical projection (nipple top) on its proximal flange. Plain and grooved conical top mauls also occur but are infrequent (Smith 1903: 156, Fig. 23, d and e). While all three forms may be associated with later assemblages, the flat topped variety of the Gulf of Georgia culture type has yet to be recovered from earlier deposits.

Being pecked and polished out of a tough fine grained material (characteristically diorite), individual mauls represent a considerable investment of labor. However, once finished it is suspected that the attrition rate due to breakage or loss would be low. Should it be assumed that mauls primarily served in a plank splitting capacity along with antler wedges, we might predict that their greatest frequency would occur at sites with large scale architecture such as the winter village. Too few excavated specimens have been recovered *in situ* to verify this postulate.

Perforated Stones

Commonly interpreted as sinkers and possibly associated with a number of fishing techniques (Stewart 1973, 1977), perforated stones are found in a variety of weight classes and materials. Of the two basic types, centre and end perforated (King 1950), neither can be attributed with chronological patterning during the Marpole culture type. However, as will be noted in later analyses of interassemblage variability, there is a tendency for artifacts of this class to be

found in sites away from the Fraser River and delta. This association may be suggestive of varied fishing technologies for river mouth and coastal locales.

Again, although both Borden (1970) and Mitchell (1971) list perforated stones as a diagnostic of Marpole, they can be found in more recent contexts. King (1950: 40) attributes six specimens to his late phase, albeit five are incomplete, while at False Narrows, three are definitely associated with component III (San Juan phase or Gulf of Georgia culture type) (Burley 1979a). Similarly, a single specimen is reported in a late component at Coronet Bay on Whidbey Island (Bryan 1963).

As yet, perforated stones are unreported for pre-Marpole horizons. Since notched and girdled specimens are present in a number of Locarno Beach deposits (see Mitchell 1971; Haggarty and Sendey 1976), major differences in fish procurement strategies may not be inferred.

Stone Sculpture

Possibly one of the most distinctive of Marpole industries is that of stone sculpture. For the most part, it is a representational art form of both an anthropomorphic and zoomorphic nature. Included in this complex are a wide range of both functional and ritualistic items (see later discussions and Figure 6). Most notable are the seated human figurine bowls; sculptured heads; fish, seal, turtle, and other faunal effigies; as well as an assortment of decorated bowls.

Several base lithics are employed in the sculpture industry although most fine detailed work is done in soft stones such as steatite or lignite. Again these materials imply an intense trading pattern. In fact, Duff (1956: 99) has proposed that soapstone figurine bowls may well have been imported in a finished form from the midFraser. Specimens of less exotic materials he suggested to be copies by local artists.

Although the ultimate origins of this complex are unclear (see Duff 1956: 104–109 for a detailed review), it does not seem to be a logical development out of the earlier Locarno Beach culture type. Since it does not persist with any degree of intensity into the late period, the tradition would seem to have reached a peak in an early to mid-Marpole context.

On a general level, stylistic elements of the stone sculpture assemblage (and this would apply to carving in other media) have their most comparable analogues further to the north. Duff (1956: 105), while pointing this out, suggests it to be an evolutionary prototype of the northern wood carving tradition – the latter evolving out of the former. In a similar vein, Borden (1976a) has argued that the Marpole artistic complex is a southern climax for the later artistic developments of the north. The Coast Salish, and presumably Gulf of Georgia culture type artistic traditions, are less representational and of a more geometric nature.

Large Needles

Large needles of land mammal bone have a fairly widespread distribution among Marpole culture type sites. At least two distinct forms are present and assumed to have had varying functions. These include specimens with distal eye placements and a wide proximal end as opposed to a longer more slender type with proximal eyes. It is unlikely that the former implement could be pulled through a material and, therefore, would have an analogous function to the present day bodkin. At False Narrows, two such implements are decorated on their proximal ends (Burley 1979a).

Bone needles have a widespread chronological distribution in the Gulf of Georgia and it seems curious that Mitchell (1971: 52) would posit them as a distinctive archaeological feature. Borden (1950: 16) attributes three forms of varying sizes to Locarno Beach II deposits and illustrates specimens for Marpole and Stselax phases which closely correspond (1970: Figure 31 b and c, Figure 33). Although Borden (1950) describes all Locarno Beach II specimens as being distally perforated, his illustration of diagnostic artifacts shows two examples with proximal eyes (1970: Figure 30 i and k). Thus, I suspect a confusion in terminology. Even so, both Hall (1968) and J. McMurdo (1974) record distally perforated examples within Helen Point I, a Locarno Beach culture type component.

As an aside, Borden (1970: 96) lists bird bone needles as occurring solely within a Locarno Beach time period. At Marpole (Burley 1979b) and Montague Harbor (Mitchell 1971), they are found in a Marpole culture type association and in late period deposits at Coronet Bay (Bryan 1963).

Sectioned or Split Bone Awls

As a generalized category, awls of land mammal bone are abundant throughout the entire spectrum of culture types within the Gulf of Georgia (cf. Matson 1976d; Burley 1979a, 1979b; Borden 1950; Percy 1975). Moreover, there does not appear to be a distinctive or more abundant variety associated with Marpole. As a diagnostic criterion, it is somewhat suspect.

Whether the difference between sectioned and split awls are meaningful beyond taxonomic purposes remains to be answered. In analyses of awls from the False Narrows and Marpole sites, aside from types formed on identifiable elements, I have followed Percy (1975) in delimiting two major varieties, splinter and formed split bone (see Burley 1979a, 1979b). It was assumed that the former were immediate use tools and the latter, curated items. Matson (1976c: 159–162) has applied differing criteria for class delineation at Glenrose Cannery, that being morphology of the tip. Such a format applied to large collections from intra-

regional sites may lead to a refined functional typology.

Harpoon Points

Of all categories of artifacts, that considered most diagnostic of the Marpole culture type is the distinctive unilaterally barbed harpoon. Such a priority is not without its justification. The chronological distribution of unilaterally barbed harpoons, with but a few exceptions, is restricted to the Marpole time period. They are preceded in the Locarno Beach culture type by single and two piece composite toggling harpoons and are succeeded during the Gulf of Georgia period by two piece composite varieties.

Although the typical Marpole harpoon is standardized as a unilaterally barbed noncomposite style, there remains considerable variation in the form of line attachment attributes. In a comprehensive analysis of unilaterally barbed harpoons, A. McMurdo (1972) has proposed five major types with a number of subtypes. Her classificatory scheme includes (see Figure 5):

Type 1 unilaterally barbed harpoons with line guards
- a) unilateral line guards
- b) bilateral line guards
- c) line guards with incisions or secondary sawing

Type 2 unilaterally barbed harpoons with a notched form of line attachment
- a) unilateral line attachment by means of notching
- b) bilateral line attachment by means of notching
- c) a neck or spool form of line attachment
- d) light harpoons with constriction on the base

Type 3 unilateral barbed harpoons with shoulders
- a) unilateral shouldering
- b) bilateral shouldering

Type 4 unilateral barbed harpoons with line hole
- a) unilateral line attachment in the form of a round drilled intrusion into the shaft resembling a broken line hole

Type 5 unilateral barbed harpoons with a line hole in combination with another attachment.

After reviewing the distributional data for each type (Table I), I would concur with McMurdo's (1972: 101) proposition that bilateral line guards are the most typical Marpole form and probably represent a "middle time slot". They occur in seven undisputed Marpole components throughout the Gulf of Georgia.

It is interesting to note that, when examples of unilaterally barbed *bone* harpoons have been recovered in Gulf of Georgia sites, they seem to be associated with late components. Bone specimens are reported at Belcarra Park II, a component falling into an A.D. 400 to 800 period (Charlton 1977) and Georgeson Bay II, a Gulf of Georgia culture type component (Haggarty and Sendey 1976). A possible exception are a few examples within Borden's collections from Marpole. Even here, however, a date of A.D. 440 ± 90 (Har 2183) for Marpole II may be supportive of this late association.

Table I Distribution of Unilaterally Barbed Harpoon Forms Within Gulf of Georgia Region Sites

	Harpoon Type											
	Ia	Ib	Ic	IIa	IIb	IIc	IId	IIIa	IIIb	IV	IVa	V
Marpole	x	x	x	x		x	x	x				x
Helen Point	x											x
St. Mungo	x											
Cadboro Bay		x			x						x	
Montague Harbor		x							x			
False Narrows			x					x				
Pedder Bay						x		x				x
Fishtown*								x				
Beach Grove												
Georgeson Bay*									x			
Belcarra Park*							x	x				
Point Grey		x										
Garrison		x										
Richardson		x										
Argyle Lagoon		x										

(adapted from McMurdo 1972: 99–100)

* unsure of the presence of a Marpole component

Although unilaterally barbed harpoons are virtually restricted to the Marpole culture type, there is growing evidence to propose that, in small frequencies, two other forms occur. The first of these is a bilaterally barbed shouldered harpoon of a fairly stout nature. Having some range of variation, at least three specimens may be attributed to Marpole. Borden (see Willey 1966: 390) has recovered one from the Marpole site; Matson (1976d: 182) attributes another to Glenrose Cannery III; and King (1950: 43) ascribes the third to his Maritime phase. All are made of antler. Smith (1903: 152) also illustrates one from Port Hammond although its cultural affiliation is unknown.

In addition to bilaterally barbed harpoons, eight Marpole components are now reported to include toggle valves for composite harpoons. These are False Narrows I and II (Burley 1979a), Beach Grove (D. Smith 1963: 32), Whalen Farm (Seymour 1976: 89), Deep Bay (Monks 1977: 224), the Hill site (McCauley 1976: 69–70), Helen Point II (Carlson 1970: 119) and Cadboro Bay I (Mitchell 1971: 72). Aside from Deep Bay and False Narrows II, only single specimens are represented. Moreover, the date of 900 ± 90 (GaK 6036) (Monks 1977: 61) for Deep Bay is considered to be extremely late for a Marpole component while False Narrows II is hypothesized as a Marpole transitional/Gulf of Georgia culture type component (Burley 1979a). Similarly, it could be proposed that the majority of the above listed collections come from a middle to late Marpole context.

Unilaterally Barbed Antler Points

Fixed unilaterally barbed points of antler, in addition to harpoon styles, are thought to be among the most diagnostic traits of the Marpole culture type. Borden

Fig. 5. Unilaterally Barbed Harpoons and Points Associated with the Marpole Culture Type.

(1970: 96) lists them as abundant in Marpole, rare in Locarno Beach and Whalen II and absent in Stselax. In the Marpole site assemblage that I have analyzed (Burley 1979b), the only material employed in barbed point manufacture was antler. Although based on a brief inspection of other collections from that site, antler is by far the most abundant medium. Such a case exists for several other related assemblages.

Despite antler being the most frequent material employed during Marpole, fixed unilaterally barbed bone points have also been recovered. They are noted at False Narrows I (Burley 1979a), Helen Point II (J. McMurdo 1974, Hall 1968), English Bluffs (Sutherland n.d.), Garrison (Carlson 1960) and Montague Harbor II (Mitchell 1971). Further, in limited numbers, barbed antler points are listed as constituents of a few Gulf of Georgia culture type assemblages.

In conjunction with her study of noncomposite harpoons, A. McMurdo (1972) has intensively analyzed fixed barbed bone and antler points. Restricting her sample to specimens from Gulf of Georgia sites, the typology, primarily, was based upon barb form and application technique. The subsequent classification resulted in 10 types of straight profile points (six bone and four antler), two types having curved profiles and an additional two types of small unibarbs. While a detailed outline of the classification is unwarranted, several of her conclusions on temporal distributions are significant with regard to the Marpole culture type.

Of the straight profile points (Class II), those most consistently associated with Marpole (Figure 5) are antler points having low straight extended barbs (Type VII) and antler points with high extended barbs (Type IX, A. McMurdo 1972: 101–103). The bone counterparts for these two forms (Types VIII and X) are also highly correlated with Marpole. Of the latter, however, both are viewed as late developments and may be considered transitional.

Curved profile points (Class III) of both antler and bone are included within Marpole deposits. In fact, the antler specimens were found to occur only in Marpole (A. McMurdo 1972: 106). Again, curved profile bone points are considered to be an evolutionary or transitional form. Finally, it is noteworthy that bone and antler unibarbs are, without exception, restricted to the Marpole period within the Gulf of Georgia (ibid.).

In a diagnostic sense, it can be concluded that fixed antler points of the types mentioned above are viable chronological indicators. Bone points with barb application similar to the antler forms may also be time sensitive. However, they are found in later contexts and by themselves are unreliable.

Antler Wedges

As previously reported, the occurrence in Marpole of antler wedges, spooled hand mauls, and large celts led Borden (1954, 1968a, 1970) to suggest the beginnings of heavy duty woodworking. This triad of tool types was thought to be absent or extremely rare in the earlier Locarno Beach period (Borden 1970: 96). Recent excavations, to some extent, have supported the reported distribution with large celts and mauls seemingly absent from early components. Nevertheless, both tine and beam antler wedges are now recorded for a large number of pre-Marpole components (Mitchell 1971; Charlton 1977; Matson 1976c; Calvert 1970; Percy 1975) while Carlson (1970: 115) goes so far as to list them as a diagnostic trait of his Mayne phase. Moreover, a full scale woodworking industry has been adequately documented within the waterlogged deposits at Musqueam Northeast, a Locarno Beach culture type component (Borden and Archer 1974).

From the above discussion, it is obvious that antler wedges are not a distinguishing characteristic of Marpole. They are found in abundance in both earlier and later contexts and are widely distributed throughout the Gulf of Georgia.

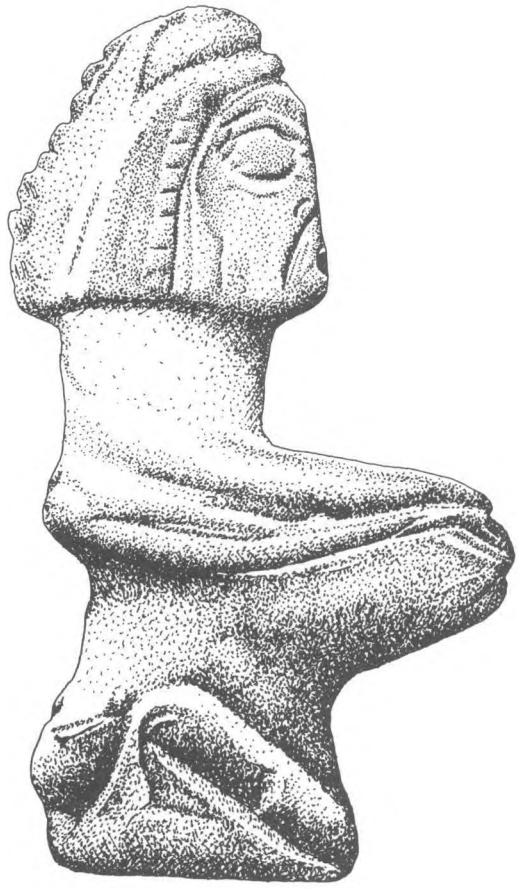
Antler Sculpture

In many stylistic aspects, sculpture in antler is related to that undertaken in stone. It tends to be representational including both anthropomorphic and zoomorphic motifs, although a few geometric forms are also known. In addition to purely artistic specimens, it is found on a number of functional implements including knife hafts, spoons, harpoons and barbed points. Antler pendants, of which there are several varieties, attest to its use in personal ornamentation. One specific form, a small crowned tear drop pendant, is considered to be particularly diagnostic. With limited variation, they have been recovered at Marpole (Borden 1950: 19, Burley 1979b), Point Grey (Borden 1950: 14), False Narrows (Burley 1979a), Helen Point (Hall 1968: 73) and Beach Grove (Smith 1963: 35).

Antler sculpture, in addition to that of stone, may be regarded as part of a general artistic emphasis in Marpole. Although it is not totally restricted to this culture type, here it is highly developed and most abundant.

Native Copper Ornaments

Although Mitchell (1971: 52) attributes the Marpole culture type with a "relatively frequent use of native copper for ornaments", and Borden (1970: 96) posits native copper ornaments as a distinctive Marpole trait, I have been able to find only a few recorded cases of copper in any form. These are a nose ring (Smith 1903: 178) and sheet copper (Menzies 1948: 16) from Marpole, a bead fragment from Deep Bay (Monks 1977: 224), a pendant from Cadboro Bay, copper fragments from Beach Grove (Abbott 1961) and a pendant, disc and several fragments from False Narrows (Burley



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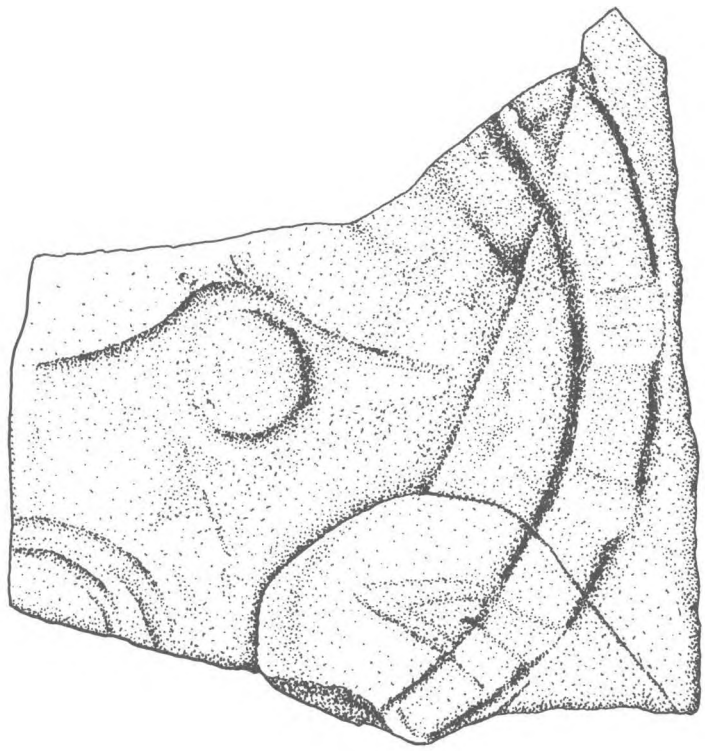

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Fig. 6. Marpole Stone Sculpture.

1979a). None, to my knowledge, have had a source identification. In two of the above cases (Cadboro Bay and False Narrows) there may be an association with a late component while at Penn Cove Park, Bryan (1963) has most definitely recovered a copper triangular pendant from a recent horizon.

Because copper is an extralocal material, we must again surmise widespread trading patterns. In this case, the most logical source would be the Copper River in Alaska.

Flexed Midden Burial

As yet, there has been little research into intraculture type patterning of mortuary practices within the Gulf of Georgia. On a general level, the form considered most typical of the Marpole culture type is a simple subsurface interment with individuals having a loose to tight flexure. Moreover, burials tend to be placed on the inland slope of the village midden (Borden 1970: 105).

Despite the modal type just described, there is a possibility that as many as four other burial forms are present. These include true cairn burials (see Smith and Fowke 1901), burials with associated large rock features, surface inhumation and, quite possibly, reburial. True cairn burials are a rare occurrence in Marpole with the vast majority

related to what I would term rock slab associated interments. However, examples of cairns are reported at Marpole (Menzies 1948) and False Narrows (Burley 1979a). Rock slab associated burials characteristically include one or several large boulders placed over varying parts of the body. They may be interpreted from either of two perspectives or, possibly, both. On the one hand, the rocks may have served to hold down the lid of burial boxes and thus protect the body from scavengers. With the decay of the box, the boulder would eventually come to rest on the interment. On the other, the rocks may be part of a ceremonial feature related to the transference of the soul or spirits from the real world into the afterlife. Above ground inhumation and reburial are suggested by the large number of scattered skeletal elements found in the majority of Marpole components. Both practices are characteristic of the early contact period (Borden 1970: 112; Barnett 1955: 220; Duff 1952: 94–95).

Although we are lacking large burial populations from definite Locarno Beach culture type sites, it would seem that the range of variation found in Marpole may be extended to this period. Flexed interments are reported in Locarno Beach components at Crescent Beach (Percy 1975), Montague Harbor (Mitchell 1971), Helen Point (J. McMurdo 1974) and Whalen Farm (Borden 1950). In addition, probable cairns or rock slab associated features are noted by Mitchell (1971: 147), J. McMurdo (1974: 128–129) and Percy (1975: 35). A cairn-like structure, although for Georgeson Bay I (Haggarty and Sendey 1976: 66). If one interprets disarticulated skeletal elements as evidence one interprets disarticulated skeletal elements as evidence for reburials, they too must be considered part of the Locarno Beach pattern.

Late prehistoric burial practices are somewhat obscured by what may be a European influenced ethnographic pattern. Despite the fact that burial remains, for the most part, were placed in mortuary houses, caves or trees (Borden 1970; Mitchell 1971), flexed midden burials do occur (Burley 1979a; Monks 1977). Monks (1977: 367) also attributes a cairn burial to his Deep Bay III, Gulf of Georgia culture type component.

A major aspect of Marpole burial practices not found to a great extent in earlier or later periods is the interment of plentiful grave goods. These include personal ornamentation (i.e. disc beads, dentalia, pendants, etc.), ceremonial items and functional implements.

Employing richly interred graves as a prime characteristic, Mitchell (1968a: 13) has aligned False Narrows with the "Beach Grove variant of the Marpole culture type". Whether or not such a variant actually exists remains to be determined. As suggested in later sections, False Narrows also shares many similarities with the Marpole site itself and Cadboro Bay I. As at False Narrows and Beach Grove, the Hill site (Haggarty and Hall 1976) includes a complex of richly interred individuals.

Skull Deformation and Occasional Trepanation

Although it is unclear whether artificial cranial deformation can be associated with individuals of a pre-Marpole period, it is a frequent trait within Marpole and persists through time to ethnographic Coast Salish cultures. At least two forms are recognized, each of which may have temporal significance.

Lambdoidal deformation, extending from just above the external occipital protruberance to the parietal foramina creating an angle of 30 to 40 degrees (Gordon 1974: 4), is the type most commonly found with Marpole individuals. Beattie (1977, personal communication) has raised the possibility that this form may not be intentional but related to cradle board binding.

Also associated with Marpole, but more common within the Gulf of Georgia culture type, is occipito-parieto deformation. Characteristic of this deformation form are markedly flattened occipital areas with the frontal area only mildly flattened (Gordon 1974: 7). Unlike lambdoidal deformation, it would appear to be the result of definite head binding (Beattie 1977, personal communication). If a positive association between occipito-parieto and late Marpole/Gulf of Georgia culture type can be drawn, it may be possible to infer a logical developmental sequence. At this time, occipito-parieto deformation has been found in Marpole populations at Deep Bay, Beach Grove and Musqueam Northeast (Beattie 1977, personal communication). At False Narrows (Burley 1979a), it occurs in either a transitional or late component.

While cranial deformation has a distinct occurrence in Marpole, trepanation is on a much less solid footing. The only identified case which has been associated with Marpole comes from the Marpole site (G. Kidd 1930, 1948). In a recent study, Cybulski (1977a) not only has questioned the identification of trepanation on this particular skull, but all seven other reported cases within the province. Offering alternative explanations for each, he concludes that the practice of trepanation has yet to be proven. Cybulski's study aside, one possible example hardly quantifies trepanation as a characteristic of the Marpole culture type.

Large Post Moulds and House Outlines

The presence of large post moulds within a number of Marpole culture type components (Mitchell 1971: 53; Gose 1976: 173) and possible house platforms at Beach Grove (Abbott 1961: 37–38; D. Smith 1963: 2) and False Narrows (Burley 1979a; Mitchell 1966) suggest a type of habitation structure not unlike that of the ethnographic peoples. Such an interpretation is supported by the presence of a wood working tool kit suited to the building

of this house type.

Again, however, large post moulds and house outlines cannot be taken as discriminating traits for the Marpole culture type. They occur, or at least one would expect them to occur, in all post Marpole contexts where permanent habitations were constructed. Prior to Marpole the picture is unclear. Mitchell (1971: 59) argues that "... there is no reason to assume that bearers of the Locarno Beach culture were unable to split planks for use on dwellings." Despite this possibility, recent excavations have failed to record the presence of large habitation structures as inferred from cultural features (see Percy 1975; Gose 1976; McMurdo 1974; Charlton 1977). However, it should also be pointed out that few projects have systematically attempted to excavate a living floor (Gose 1976: 190).

Summary

The preceding review has attempted to evaluate the reliability of diagnostic features attributed to the Marpole culture type. While a limited number are shown to have a somewhat restricted temporal span, others notably overlap with earlier or later components. In several cases, specific traits were found to occur in both later and earlier contexts and their diagnostic value has been questioned.

Although individual artifact types are the material expression needed to discriminate component assemblages, it is obvious that a number of distinctions are manifest on a more general level. For instance, sculpture in antler and stone seem indicative of greater emphasis in certain forms of artistic endeavors. Of course we cannot yet compare Marpole art forms in wood or other organic materials with those of the ethnographic period due to preservational factors. Still, given the richness of the art in other media, it is expected to equal or surpass the ethnographic industry. Similarly, disc beads, various styles of pendants and richly interred burials may also mirror variations in social organization principles (see page 59). Other macro-level differences which might be suggested include a more developed woodworking industry than in the Locarno Beach culture type as possibly exhibited in housing forms and a greater emphasis on chipped stone in relation to cultures immediately preceding and following Marpole. The significance of these traits awaits discussion in succeeding sections.

Of component recognition for the Marpole culture type, it must first be pointed out that I have evaluated only positive traits. As with certain of the characteristics outlined for Marpole, several others are temporally restricted to earlier or later units and thus are absent or rare in Marpole. Specific examples include Gulf Islands complex artifacts and certain forms of ground stone and bone points for Locarno Beach while small composite bone points including arming tips and herring rake barbs are found predominantly among Gulf of Georgia culture type components. The previous review, therefore, has presented a slightly obscured picture deflating at least some of the major differences.

In terms of providing a specific definition or formula for the identification of the Marpole culture type, it should now be apparent that none is forthcoming. While several artifact forms may be restricted to the Marpole interval or have their greatest frequency of occurrence there (i.e. barbed harpoons, laterally perforated pendants, stone sculpture, etc.), they tend to be types which are infrequently recovered. Moreover, as suggested by a later analysis of interassemblage variability, a quantification of the Marpole pattern is no easy task due to vagaries of sample skewness, reportage bias and other noncultural traits. These problems, undoubtedly, are associated with the definition of other culture types within the region (cf. Matson 1974). Such being the case, it must be concluded that, without the possession of a large collection having a wide range of artifact types and/or supplementary aids such as radiocarbon assays, one can have little faith in temporal assignations (see also Boehm 1973: 82–83). This does not mean that a definitional pattern may never be found. Rather, I would only suggest that with the data at hand, this pattern would be extremely difficult to delimit and, most probably, would be misleading.

TEMPORAL ARTICULATION

Mitchell (1969), in a polemic style, has argued that a prehistorian is able to approach the archaeology of a region from either of two perspectives or models. These are dislocation and continuity. Whereas the proponents of a dislocation model explain culture change through population displacement (migration) or diffusion of whole cultural complexes, those stressing continuity see it as a series of adaptations within a local context (Mitchell 1969: 208–211). Although a continuity approach does not totally rule out the possibility of trait diffusion, there must be an explanation as to why diffused traits were accepted by the recipient culture. Within the current archaeological literature, Mitchell (1969: 208) has deduced that continuity models are "in" and dislocation approaches "out". As support, he offers several examples of shifts from explanation by migration to that of *in situ* development.

Bringing his arguments closer to home, Mitchell (1969: 212), with certain qualifications, posits a statement of intent. That is, unless, under "constrained circumstances", migration or cultural complex diffusion can be proven, he will emphasize a continuity model. Although he is speaking only of his future research interests within the Johnson Straits region, there is little doubt that such a perspective was meant to apply to the Gulf of Georgia. Not surprisingly, Borden (1969: 256) likens Mitchell's intentions to a "Midden Manifesto" branding it scientifically unsound.

While the merits and drawbacks associated with Mitchell's position could long be debated, his characterization aptly reflects the historical development of culture history within the Gulf of Georgia. Two schools of thought, those of dislocation and continuity, have developed and strenuously argued their case. The Marpole culture type, positioned in a central time range, has figured heavily within the ensuing debate. It is to the origins and demise of this unit which I now turn.

The Question of Marpole Origins

At one time Abbott (1961: 108) suggested that Marpole and Locarno Beach phase assemblages were simply different settlement pattern aspects of one cultural system. This was based on certain assemblage commonalities and what appeared to be a large overlap in C_{14} assays. Given the overlying stratigraphic position of Marpole to Locarno Beach components at several sites and the now available array of dates, this position seems highly improbable.

The possibilities of some overlap between the end of Locarno Beach and the beginnings of Marpole remain, however. Marpole culture type components at Glenrose Cannery, Musqueam Northeast, Cherry Point and Marpole have dates suggesting contemporaneity or greater antiquity than dated Locarno Beach assemblages at Pender Canal, Belcarra Park and Locarno Beach (Table II) (Figure 7). Of this situation, it should be pointed out that several dates are in dispute. These include the early dates at Marpole (S-17b) (Mitchell 1971: 61) and the later determinations from Locarno Beach II (S-3bis) and Belcarra Park (GaK 3903) (Charlton 1977: 187). If they are discarded, there exists but one overlapping component of the Locarno Beach culture type, Pender Canal. Although one date does not make a case, there seems little reason to reject the sample from which it was run (Wilmeth 1969: 95).

Whatever the case, from Table II there is little doubt that Marpole origins can be affirmatively recognized by 400 B.C. Either shortly before or shortly thereafter, Locarno Beach ends. The transition from one to the other has been open to wide ranging interpretation stressing developmental continuity, large scale diffusion and migration.

In preceding sections, I have broadly outlined the historical development of dislocation models for the Gulf of Georgia. Borden (1951) early proposed that the Marpole phase (intermediate period cultures) had strong affinities with interior plateau cultures. Although the exact mechanisms were never explicitly stated, it is assumed that he believed there to be a population replacement during the Locarno Beach/Marpole interface. The Locarno Beach subsistence pattern was thought to have a more maritime orientation with Fraser Delta sites on the periphery and, probably, indicative of seasonal occupations (Borden 1968a: 18). He also suspected that the major locus of the Locarno Beach phase would be found on the islands in the Strait of Georgia.

Borden's views have significantly changed over the past quarter of a century. However, it would appear that, until recently, he maintained major differences between Marpole and Locarno Beach cultural assemblages such that one could not have developed out of the other. Despite the fact that they have never been thoroughly outlined, three slightly variant themes can be found in his dislocationist perspective.

The earliest model, that of interior origins for Marpole,

Table II Carbon 14 Dates for Marpole and Locarno Beach Culture Type Components

Site	Sample	Date	Culture Type	Reference
Locarno Beach	S-3	480 B.C. ±160	Locarno Beach	Borden 1970
Locarno Beach	$S\text{-}3_{bis}$	320 B.C. ±100	Locarno Beach	Borden 1970
Crescent Beach	WSU 1701	1310 B.C. ±80	Locarno B. (?)	Carlson, per com.
Crescent Beach	WSU 1702	1030 B.C. ±80	Locarno B. (?)	Carlson, per com.
Crescent Beach	WSU 1703	1080 B.C. ±80	Locarno B. (?)	Carlson, per com.
Musqueam N.E.	I-7790	600 B.C. ±85	Locarno Beach	Borden & Archer 1974
Musqueam N.E.	I-7791	1020 B.C. ±90	Locarno Beach	Borden & Archer 1974
Belcarra Park	GaK 3903	A.D. 240 ±90	Locarno Beach	Charlton 1977
Whalen Farm	S-19	500 B.C. ±160	Locarno Beach	Wilmeth 1969
Cherry Point	RL-272	680 B.C. ±240	Locarno Beach	Grabert & Larsen 1975
Bowker Creek	GaK 2760	960 B.C. ±100	Locarno Beach	B.C.P.M. 1976
Bowker Creek	GaK 2761	790 B.C. ±100	Locarno Beach	B.C.P.M. 1976
Montague Harbor	GSC 437	1210 B.C. ±130	Locarno Beach	Mitchell 1971
Montague Harbor	GSC 406	940 B.C. ±140	Locarno Beach	Mitchell 1971
Pender Canal	M-1515	250 B.C. ±120	Locarno Beach	Wilmeth 1969
Georgeson Bay	GaK 2753	870 B.C. ±100	Locarno Beach	Haggarty & Sendey 1976
Marpole	S-17a	A.D. 370 ±180	Marpole	B.C.P.M. 1976
Marpole	S-17a	65 B.C. ±166	Marpole	B.C.P.M. 1976
Marpole	S-17a	A.D. 1 ±125	Marpole	Borden 1970
Marpole	S-17b	950 B.C. ±170	Marpole	B.C.P.M. 1976
Marpole	S-17c	350 B.C. ±60	Marpole	B.C.P.M. 1976
Marpole	S-93	A.D. 170 ±60	Marpole	B.C.P.M. 1976
Marpole	L-337	150 B.C. ±90	Marpole	B.C.P.M. 1976
Marpole	Har 2183	A.D. 440 ±90	Marpole	Burley 1979b
Beach Grove	GaK 1478	220 B.C. ±70	Marpole	B.C.P.M. 1976
Beach Grove	GSC 440	A.D. 220 ±130	Marpole	Wilmeth 1969
Beach Grove	UW 44	A.D. 47 ±120	Marpole	Wilmeth 1969
Beach Grove	UW 43	A.D. 406 ±130	Marpole	Wilmeth 1969
Beach Grove	UW 42	A.D. 560 ±25	Marpole	B.C.P.M. 1976
Glenrose Can.	S-790	390 B.C. ±115	Marpole	B.C.P.M. 1976
Glenrose Can.	GaK 4646	360 B.C. ±105	Marpole	Matson 1976b
Glenrose Can.	S-787	350 B.C. ±70	Marpole	B.C.P.M. 1976
Glenrose Can.	GaK 4647	80 B.C. ±95	Marpole	Matson 1976b
Helen Point	GaK 4937	160 B.C. ±105	Marpole	Carlson 1977, per. com.
Helen Point	GaK 4935	A.D. 580 ±85	Marpole	Carlson 1977, per. com.
Helen Point	GaK 4936	A.D. 830 ±100	Marpole	Carlson 1977, per. com.
Helen Point	GaK 3200	A.D. 850 ±90	Marpole	Carlson 1970
Garrison	GaK 4933	150 B.C. ±100	Marpole	Carlson 1976, per. com.
Garrison	GaK 4934	A.D. 370 ±60	Marpole	Carlson 1976, per. com.
False Narrows	GaK 2754	A.D. 240 ±90	Marpole	Mitchell 1971
Dionesio Point	GaK 2762	A.D. 70 ±90	Marpole	Mitchell 1971
Fox Cove	UW 24	A.D. 436 ±40	Marpole	B.C.P.M. 1976
Cadboro Bay	GaK 2751	A.D. 140 ±90	Marpole	B.C.P.M. 1976
Maple Bank	WSU 1540	A.D. 790 ±70	Marpole	B.C.P.M. 1976
Point Grey	GaK 1480	20 B.C. ±100	Marpole	B.C.P.M. 1976
Musqueam N.E.	GaK 1283	400 B.C. ±80	Marpole	Wilmeth 1969
Cherry Point	WSC (no #)	390 B.C. ±200	Marpole	Grabert & Larsen 1975
Birch Bay	UW 344	A.D. 5 ±98	Marpole	Gaston & Grabert 1975

has been abandoned (Borden 1968a, 1970). There is little doubt that a major contributing factor was the controversy of the mid 1950s (Borden 1951, 1954; Caldwell 1954; Osbourne *et al.* 1956). In addition, with the gathering of more data from interior locales, a direct predecessor to Marpole could not be found. While Borden has all but dropped his early hypothesis, Cressman (1977) has recently revived the model fleshing it out by relating language families to individual culture types. The Locarno Beach population is suggested to be a Penutian speaking group who migrated to the Coast from the Great Basin via the Columbia River and, thence, northward. Subsequently, they were displaced in the Gulf of Georgia region by westward moving Salishan speakers bearing a Marpole type material culture.

Borden's later hypotheses, although again never fully developed or qualified, continue to hint at Marpole dislocation of Locarno Beach. These are laid out in several, what may be termed speculative, statements on the progenitors of Marpole. He first looks to the Fraser Canyon:

> Mention should be made of the obviously broad affinities that exist between the culture of the Marpole phase and that of the somewhat earlier Baldwin phase in the Fraser Canyon. Many of the upriver

> traditions and practises were continued and further developed in the delta region during the Marpole phase. Intriguing also is the fact that the climax at the mouth of the river occurred in the centuries after the arrival of the people of the Skamel phase had brought an end to the Baldwin phase in the canyon region (Borden 1968a: 20).

In a slightly later paper, the suggestion of *in situ* development from an early pre-Marpole base, not including Locarno Beach, was posited.

> The Marpole phase of the Fraser delta region appears to represent a climax of long cultural development. Basic affinities of the Marpole culture with both the Eayem phase (ca. 3,500–1,000 B.C.) in the Fraser Canyon and with the early component at the St. Mungo Cannery site (which is contemporary with the Eayem phase) in the eastern part of the delta suggest that this was essentially a local cultural development. However, many of the cultural features that lend diversity and glamour to the Marpole culture are not yet present in either the Eayem phase or in the early assemblage at St. Mungo. Obviously, strong external cultural stimuli from diverse directions played an important role in generating the cultural efflorescence of the Marpole phase with its many features that are generally regarded as characteristic of the classic Northwest Coast culture of more northerly coastal peoples in recent times (Borden 1970: 107).

I have reported earlier that Borden (1975) has defined the Charles phase, a unit incorporating the St. Mungo, Eayem and Mayne phases. In that it is a regional complex spread throughout much of the Gulf of Georgia, it appears to contradict a direct Marpole evolution out of Fraser River and canyon populations isolated from developments in the Gulf and San Juan Islands. Since he has described the Charles phase as ". . .the important transitional stage which preceded the climatic developments of the ensuing Baldwin, Locarno Beach and Marpole phases. . . (1975: 97)", his thoughts would seem to have shifted towards direct continuity.

The continuity model also has been long considered for the Gulf of Georgia. King (1950), as stated in a previous section, has proposed a developmental sequence at the Cattle Point site based on gradual adaptation to the maritime environment. His chronology, nevertheless, is somewhat confusing and difficult to relate to subsequent and later culture historical units. Both the Developmental and Maritime phases seem to include traits characteristic of Marpole. They also have Locarno Beach elements. Moreover, a recent series of dates from this site (J. Robinson, personal communication to R. Carlson 1977) places the Maritime phase between 910 ± 158 B.C. (USGS 22) and A.D. 1,083 ± 159 (USGS 25) with the Developmental phase intervening.

In a slightly variant manner, Carlson (1960: 584) has proposed an *in situ* continuous evolution of Marpole. Culture change is related to two key variables, progressive adaptation to the environment and long range diffusion. He suggests:

> The factors which are most likely involved are a progressive adaptation to the environment coupled with the development in the Mesolithic and Neolithic cultures of the Old World of the customs of using and manufacturing artifacts of horn, bone, and stone by sawing, abrading, and polishing techniques, and the diffusion of those techniques and artifacts to the cultures of this area. Types differ, but change is a natural consequence of distance in time and space (1960: 584).

The processes involved in this diffusion stream are left open and there is no attempt to answer why such a transition of types was so readily adapted by a regional populace.

The *coup de grace*, so to speak, for those professing dislocation has been put forth by Mitchell (1971). In a well argued case, he reviews all pertinent anthropological data amassing a variety of evidence for continuity from at least the beginnings of the Locarno Beach culture type. Four major points are stated (1971: 68–79):

1) archaeological data are indicative of a continuity. Specifically, for Locarno Beach and Marpole, there is an overlap in chipped and ground slate point styles as well as the common occurrence of a microblade technology, labrets, earspools and grooved and notched sinker stones.
2) the osteological data do not illustrate differing physical populations through time.
3) from glottochronological studies, it would seem that the Coast Salish developed *in situ* and interior Salishan branches are a more recent spread. Moreover, there would be a considerable time depth involved.
4) there is no mythological evidence reported for Coast Salish documenting a migration. Similarly, it is argued that Coast Salish social organization does not reflect one of a militaristic society, a trait which would be needed to displace earlier inhabitants in the Gulf of Georgia.

The transition from Locarno Beach to Marpole is posed as a gradual adaptation to changing climatic conditions. That is, there would be a shift from a warm environment of the hypsithermal to a cooler period during the post glacial (Mitchell 1971: 71). In turn this would have affected local vegetation, particularly oak and camas, and require a greater reliance on the fishery, especially salmon. Further, given that the resource base has always been prone to fluctuations, a less diversified economic orientation necessitated changes in social organization. Thus we see a development of the food to wealth to prestige system, a pattern suited to equalization of productivity variation (Suttles 1960: 304). This pattern is documented in Marpole by the large number of identified wealth objects and

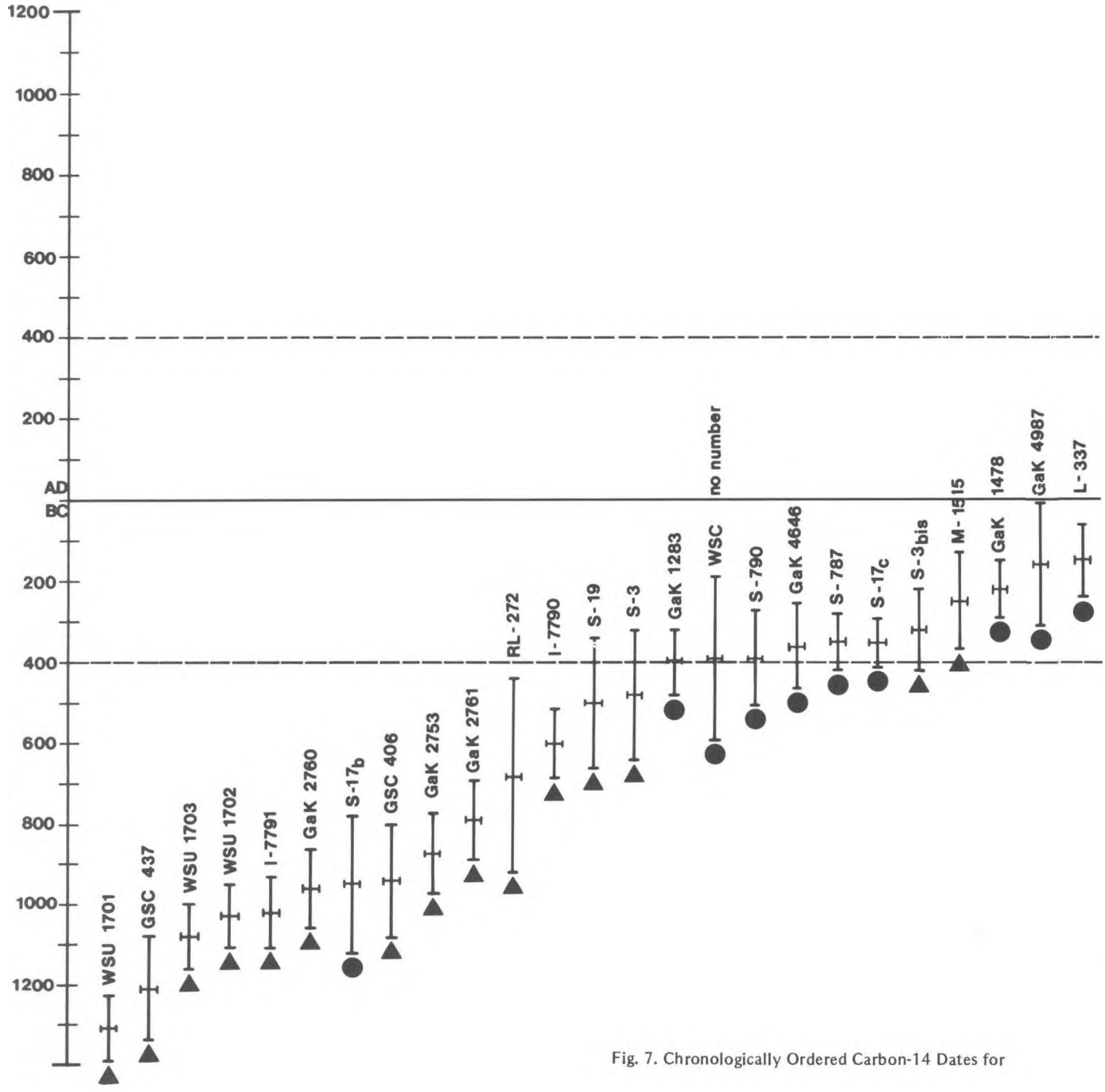
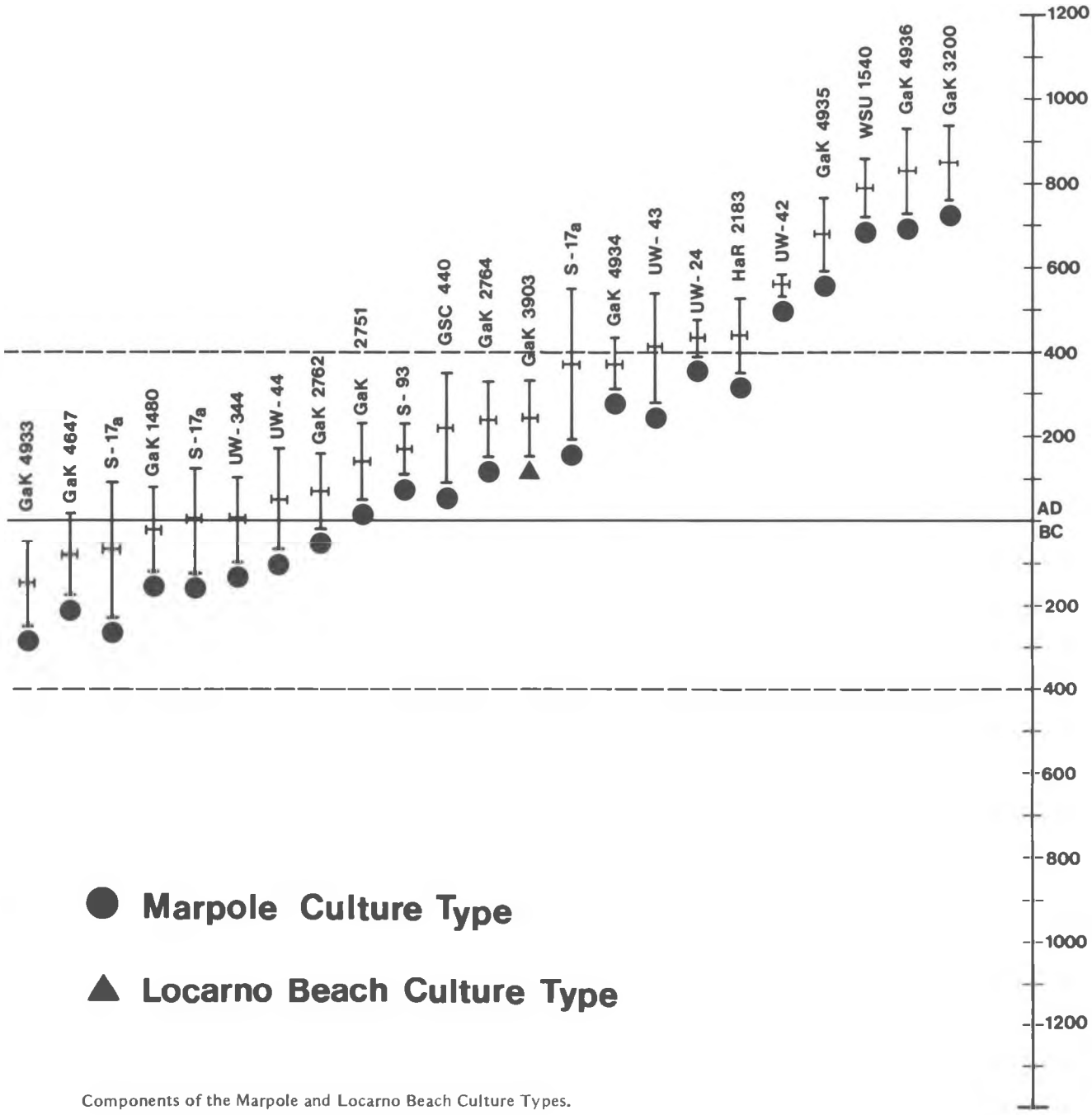


Fig. 7. Chronologically Ordered Carbon-14 Dates for

personal ornamentation. Mitchell (1971: 71) also argues that the occurrence of thin ground slate knives during Marpole illustrates improvements in the techniques of salmon preservation and storage.

Mitchell's concept of continuous local development is, at present, the most widely accepted model. With rare exception, discontinuity has been totally abandoned as an explanation for culture change. However, in a recent paper, Beattie and I (Burley and Beattie 1977) have suggested the case to be far from definitive. Reviewing existent archaeological, osteological, ethnographic and linguistic materials, we argue that dislocation is a viable alternative at the *present* time, given the *present* data base. A compendium of this position follows.

Mitchell has noted that evidence for intruded physical types is absent. He states:



Components of the Marpole and Locarno Beach Culture Types.

Hill-Tout's (1895: 112) postulated change from dolichocephaly to brachycephaly in the local populations was not supported in the later excavations by H.I. Smith (except possibly at North Saanich) and the shift has never been reported for more recent excavations (1971: 69).

While the above citation remains correct, it is important to point out that Hill-Tout's classification may have been describing something other than head shape. Specifically, as Heglar (1958a: 10–11) reported 20 years ago, the differences are equally accounted for by varying forms of artificial cranial deformation. Moreover, the Eburne sample being described, at least in part, could be a contemporaneous population.

The major drawback with reliably distinguishing differing physical populations is the securement of a large sample.

Rarely are midden interments complete enough to allow a total metric assessment of individuals. In addition, given that cranial deformation is widespread from Marpole onwards, comparative studies of cranial metrics are all but impossible (but see Cybulski 1975). Combined, these problems may never be overcome in full.

Those data which are available neither prove nor disprove continuity. On the one hand, as Heglar (1958a, 1958b, 1958c; also see Kidd 1933) found, differences beyond gross cranial shape seem to exist between Marpole and pre-Marpole physical types (Burley and Beattie 1977: 19). On the other hand, however, these differences are not blatantly distinct, are based on an inadequate population size and may be characterizing samples which are not homogeneous in themselves. Further, even if an improved data set were to verify separate populations, it would be necessary to show that localized microevolution is not the causal agent. Beattie (1978, personal communication) is currently involved in a comprehensive study of Gulf of Georgia osteological remains and, hopefully, his findings will shed new light on the situation.

Glottochronological studies of Salish linguistic divergence have considerable antiquity in the literature. Swadesh's (1949, 1950, 1954) pioneering research has been refined and evaluated over the past quarter of a century (Suttles and Elmendorf 1962; Jorgenson 1969; Kincade 1976). Although, currently, few linguists would support the tenet that divergence can be measured in absolute time, its status as a relative measure is open to interpretation (see Suttles and Elmendorf 1962: 47). The most significant conclusions for an archaeological perspective may be listed.

1) It would appear that interior probably separated earlier than any other major subgrouping within Salish (Suttles and Elmendorf 1962; Jorgenson 1969; but also see Kincade 1976).
2) The original Salishan groups were associated with riverine and forested valley environments of the Pacific Northwest. In addition, given the geographical position of present day Salishan peoples, there must have been access to both east and west sides of the Cascade divide (Kincade 1976).
3) The most probable homeland and, hence, dispersal centre of the Salish language family is around the mouth of the Fraser River (Suttles and Elmendorf 1962; Diebold 1960; Jorgenson 1969; Kincade 1976).
4) Interior and Coast Salish branches have a maximum divergence between 55 and 65 units. This is relatively early when comparing, for instance, the divergence within Wakashan of Nootka and Kwakiutl (Swadesh 1954; Suttles and Elmendorf 1962).
5) Coast Salish branches developed as a chain along the coast with Bella Coola the northernmost member and Olympia the group furthest south (Suttles and Elmendorf 1962).

These inferences, at least surficially, would seem to support a lengthy continuum for Gulf of Georgia Coast Salish. It must be noted, however, that recent introductions are present within Swadesh's basic word list (Suttles and Elmendorf 1962: 43). Since all glottochronological analyses have, for the most part, relied on Swadesh's data, we may not have a clear picture of Salishan divergence. As Suttles and Elmendorf (1962: 43) have stated, should new word lists be available, ". . .a complete reworking of Salish would yield higher cognate scores". Given that a glottochronological unit cannot be equated with absolute time, in conjunction with the above noted contamination, the linguistic data does not appear quite so defendable.

The problems of time depth aside, from linguistic analyses we can infer with some degree of confidence that interior Salishan, in relative terms, split early and probably represents a migration from the western edge of the Cascade/Coastal range. This is in direct conflict with models positing interior origins for Salish. Still, the linguistic evidence does not rule out all possibilities for dislocation between Marpole and Locarno Beach. In fact, if one looks at Marpole as a separate *in situ* development as Borden (1968a, 1970) at times has done, there remain but few contradictions.

Finally, to bring glottochronology and lexicostatistics into arguments of continuity or discontinuity in the archaeological record, we must assume that linguistic groups are recognizable archaeological manifestations and each can only be replaced by a different linguistic population. Such a hypothesis is not supported within either the ethnohistoric or archaeological literature. The possibility of population displacement by adjacent peoples of the same language family is ever present.

The archaeological evidence, as implicitly stated in earlier discussions, does not settle arguments over the Locarno/Marpole interface. Both similarities and differences exist. Of the traits in common, those most predominant are a microblade technology, labrets and earspools, grooved and notched sinker stones, bone needles, a variety of awls, and some overlap in chipped and ground stone projectile points. Turning to the dissimilarities, the shift in harpoon technologies from a composite toggling variety to the antler barbed form with line hole or guard is striking. Provided that composite styles are more advantageous and have less potential for breakage, the sudden adoption of a unilaterally barbed type is difficult to account for in a continuity model (but see Mitchell 1971: 72). Other distinctive traits include the sudden appearance in Marpole of a wide variety of chipped point styles, the discrete occurrence of several large well made ground bone and stone points in Locarno Beach, the use of well made barbed

antler and to a lesser extent bone points in Marpole, the presence in Locarno Beach of a series of unidentifiable artifacts grouped under the rubric of Gulf Islands Complex and the presence in Marpole of stone and antler pendants with lateral perforations. Since large well made spooled hand mauls, large celts, house platforms and large post moulds would appear to first occur in Marpole, we might speculate on the introduction of the Coast Salish plank house style. As well, a more developed art form and increase in personal ornamentation and grave goods suggest some differences in social organization.

Although it must be admitted that overlapping artifact styles point toward a continuum, several seemingly abrupt shifts are apparent for which transitional stages are lacking. Also, given the temporal overlap of these culture types, the assemblage differences grossly outweigh the similarities. Should a continuity have been the case, we might expect some intermediate stage whereby Locarno Beach and Marpole material culture would appear mixed. Such a situation, at least for the present, cannot be recognized. However, this can be illustrated in the following discussions on the Marpole decline.

From the archaeological data, two sets of qualifications may be drawn. If one accepts a cultural continuum from the archaeological record, then a large number of differences in Marpole and Locarno Beach artifact assemblages must be accounted for. In essence, this would mean a delineation of the stimulant(s) and processes by which this transition took place. On the other hand, if a population displacement is favoured, then the many similarities must also be explained. At present, probably the most acceptable thesis for the latter is that of a single diffusion and/or interaction sphere. In this model, Marpole would be viewed as a separate intraregional development.

Mitchell's (1971: 69) final arguments for continuity turn to ethnographic data. He states specifically that evidence for migration or population replacement is absent in both the mythological traditions and social organization of Coast Salish. To the contrary, from even a brief reading of the ethnographic literature, it is possible to recognize a population fluidity which undoubtedly extended back into prehistory. To cite but a few examples, Barnett (1955: 22–24) reports that the Salishan Comox were forced into a more southerly position by pressures exerted on them by the Kwakiutl. In turn, the Comox harrassed and caused the dispersal of several Pentlatch groups on Campbell River. Duff (1952: 43–44) also reports a population shift by the Chilliwack. In this case, the movements are related to a specified environmental event, the changing course of the Chilliwack River. Although on a less concrete level, it is noteworthy to point out that the Salishan speaking Bella Coola somehow have been isolated (population displacement?) from the mainstream language stock. Further, one must ask why the closest linguistic relatives of the Tsimshian are the lower Chinook on the Columbia River (see Sutherland 1977 for a migration hypothesis)? We can only surmise that population movements did occur in the past and must be given equal consideration with continuity models when working with archaeological data.

To conclude, it must be maintained that, at this time, it is not possible to verify either a continuity or dislocation model. There are arguments for both and each is open to interpretation. Indicative of a population replacement are some rather sudden changes in material culture between the Locarno Beach and Marpole culture types. A number of differences in physical type may also be present although such statements, as yet, are somewhat premature. The major problem with a displacement model, however, is the place of origin and progenitors of Marpole. If they did not evolve out of Locarno Beach, why has a parent cultural complex within the Gulf of Georgia region not been found? The discussions again take up this point.

Marpole Demise and the Gulf of Georgia Culture Type Interface

As with the question of origin, the decline of the Marpole culture type has received close attention within the past several years. The Gulf of Georgia culture type, at least that portion manifest in the San Juan and Stselax phases, is firmly accepted as the ultimate successor (Mitchell 1971; Carlson 1960, 1970). However, between the terminal date for Marpole and an emergence of the more recent complex, there exists an approximate gap of 400 to 500 years (A.D. 600 to 1100). Moreover, until recently, components dating to this intermediate period were lacking. The mechanisms by which the transition has taken place were therefore left open to speculation. Carlson (1970: 122) outlines three possibilities:

1) the bearers of Marpole phase culture were replaced by another human population with a different technology;
2) changes in technology were a response to changing conditions of the natural habitat;
3) the major changes are due to the diffusion in of new techniques for exploiting the environment.

The idea of a population replacement of Marpole peoples by those of some other group has long been in the literature. Borden (1951) has argued that, in the uppermost deposits at Marpole, Beach Grove and Whalen Farm, there exists a cultural complex indicative of discontinuity. This he has labelled the Whalen II phase. Characteristic of these components are the absence of ground slate artifacts; stone bowls and stone carving; the occurrence of microblades; side-notched and corner-notched chipped stone points; olivella beads; and, finally, the reintroduction of the two piece composite toggling harpoon and attendant loss of the unilaterally barbed form (Borden 1970: 108–9).

A single C_{14} assay on the assemblage from Whalen Farm dates this phase to A.D. 370 ± 140 (S-19) (Mitchell 1971: 62) thus indicating contemporaneity with late Marpole. Of this situation, Borden has stated:

> . . .two C_{14} dates from late Marpole phase deposits at Beach Grove fall well within the time of the new phase, suggesting the persistence of the Marpole culture in some parts of the delta even after the appearance of Whalen II groups in the region.
>
> The appearance of somewhat similar points and other new traits in the Fraser Canyon several centuries earlier, terminated the Baldwin phase in that part of the valley. Perhaps these sudden breaks in cultural development are somehow linked with the movement of new ethnic groups into the lower Fraser (1970: 107–9).

The termination of the Whalen II phase is placed at A.D. 800 and, although there are no components associated with its successor, the transition is viewed as a cultural continuum. This gap between the end of Whalen II and beginnings of the Stselax phase (A.D. 1250) has been filled with the hypothetical pre-Stselax phase (Borden 1970: 110).

Despite Borden's insistence on the uniqueness of Whalen II, further components have yet to be discovered. Moreover, the association of the Beach Grove and Marpole sites with this phase remain unsubstantiated (see Abbott 1961; Smith 1963; Burley 1979b) thus leaving the Whalen Farm assemblage as the sole constituent. Given that the collection consists of less than 200 pieces (Mitchell 1971: 56), the possibility of a sampling bias remains. Moreover, if negative traits (those not occurring) are disregarded, the assemblage includes few artifacts which have not already been described as Marpole. Olivella beads are a possible exception and, generally, are rare in archaeological collections from the Gulf of Georgia. Previously, Mitchell (1971) had come to the same conclusion resulting in a Whalen II placement within the Marpole culture type. There is little dispute with such a suggestion.

Ruling out the possibilities for discontinuity between Marpole and the Gulf of Georgia culture type, Mitchell states:

> Origins of the Gulf of Georgia culture type involve us in an almost anticlimatic discussion. The transition from Marpole culture introduces no major shifts in culture configurations, as already has been pointed out. There are many continuities indicating perpetuation of a well established regional tradition and the discontinuities (absence of microblades in the later type, changes in form or material of similar artifact classes, a return to the toggling harpoon as the dominant variety) seem slight by contrast. Possibly, even some of these differences will appear less abrupt as more assemblages are discovered from the present five century gap between the culture types (1971: 72).

Excavations at the Belcarra Park site have revealed what must be considered the elusive transitional component (Charlton 1977). This is Belcarra Park II, a component having dates of A.D. 330 ± 90 (Gak 3905) and A.D. 880 ± 90 (Gak 3904). Including no succinct break in stratigraphy nor evidence for cultural replacement within the component, it would seem to document a continuous development up to at least A.D. 900. The Belcarra Park II material culture includes, in combination, a number of traits one would expect to see in a transitional assemblage. For instance, chipped stone points are abundant and diversified in form with stylistic elements overlapping both Marpole and the local variant of the Gulf of Georgia culture type, the Stselax phase. Also of extreme importance is the direct association of unilaterally barbed harpoons of antler and bone with valves for composite toggling harpoons. The latter type included 93 specimens (Charlton 1977: 8). Unilaterally barbed bone and antler points, numerous small bone points for composite tools and nipple top hand mauls, again, are indicative of an evolutionary stage from late Marpole to the Gulf of Georgia culture type.

Although undated, an assemblage comparable in many respects to that from Belcarra Park has been unearthed by Crowe-Swords (1974) from the Carruthers site on nearby Pitt Lake. Lacking shell deposits, preservation of bone and antler is poor and artifacts of these materials are all but absent. Despite this problem, the lithic assemblage again shows considerable overlap between Marpole and later components. As at Belcarra Park, there is a large number of chipped stone points with several types represented. In particular, the contracting stemmed and corner-notched forms are reminiscent of Marpole while side-notched types are directly comparable to Belcarra Park II and Stselax Village. Excurvate ground slate points in combination with stemmed and notched styles also point towards an intermediate stage.

Two other sites, I believe, may be firmly tied to this transition. These are False Narrows (Burley 1979a) and Deep Bay (see Monks 1977). The False Narrows II component, while unlike Belcarra Park II and Carruthers, has elements of both Marpole and a later culture. Since a majority of the assemblage seems closely related to the Marpole period and there is a date of A.D. 240 ± 90 (Gak 2754), it may be indicative of the beginnings of this transition. Associated with such Marpole elements as a barbed antler harpoon and several antler points are valves for toggling harpoons and a variety of small bone points. Also, there is considerable overlap in the style of ground stone points between False Narrows II and III, the latter a Gulf of Georgia culture type component.

The Deep Bay site is reported to be the most northerly Marpole component yet uncovered. I would also argue that its assemblage appears more like the Gulf of Georgia type

than Marpole. That is, late traits seern to outweigh those of Marpole (cf. Monks 1977: 222). Whatever the case, two dates may illustrate a continuous development from mid-Marpole up to early Gulf of Georgia times. These are A.D. 40 ± 110 (Gak 6037) and A.D. 1050 ± 90 (Gak 6036) (Monks 1977: 61). The latter assay suggests, at least in part, a relatively recent transitional stage for the component.

While there appears to be adequate proof to argue that Marpole evolved into the Gulf of Georgia culture type, there is also evidence that this so-called transition did not proceed at an equal rate through all parts of the region. Several dates from what appear to be "typical" Marpole assemblages overlap with Belcarra Park, False Narrows and Deep Bay. Included here are Marpole II (Burley 1979b), Garrison (Carlson 1960), Helen Point Marpole (Carlson 1977, personal communication) and possibly Beach Grove (Smith 1963).

In light of the preceding arguments what can be said of the demise of Marpole and at what point do we draw the line between it and the Gulf of Georgia culture type? While the contextual dynamics of the transition are unclear, it is interesting to note here what might be considered differing diffusion streams into the area during the late Marpole period. Charlton (1977: 192) has stated of the Belcarra Park II component:

> By the beginning of Belcarra Park II times there is indirect evidence for increased contact (trade and/or diffusion) with populations of the southern interior. In the Belcarra Park II component a number of artifact classes could "fit" comfortably in late prehistoric sequences from the southern interior . . . Such interior traits are not restricted to Belcarra Park. Elements of what might be considered a Kamloops phase are found at Carruthers (Crowe-Swords 1974), Stselax Village (Borden 1970) and False Narrows (Burley 1979a).

In addition to influences from the interior, there is evidence for a diffusion stream from adjacent coastal areas. Specifically, several late traits including a profusion of small bone points, two piece toggling harpoons with channeled valves for insertion of small bone points, and small triangular ground stone points are known in earlier contexts in territories of the Wakashan speaking Kwakiutl and Nootka (Dewhirst 1977; Chapman 1977).

Being a continuous cultural development, it is extremely difficult to draw a line at one point in time and propose a realistic division between the Marpole and Gulf of Georgia culture types. Also, what of the transitional state up to A.D. 1250? Should it be considered a new culture type and, if so, what are its distinguishing diagnostics? These problems are further compounded by the time differential of the transition throughout the region.

I would argue that such questions cannot be answered given the analyzed data with which we are currently working. A single date neither ends Marpole nor starts the recent period. It may only be suggested that items of material culture characteristic of later assemblages are present by A.D. 300 and by A.D. 1000 the transition is virtually complete. We might also anticipate that diagnostic artifacts of the Marpole and Gulf of Georgia culture types have an inverse association of occurrence in this intervening period.

MARPOLE SPATIAL BOUNDARIES

The relationship of the Marpole culture type to populations outside of the Gulf of Georgia is, at present, unclear. As Carlson (1960: 254) has suggested, on a general level it may well be part of a larger pattern encompassing the entirety of the Northwest Coast extending into coastal portions of eastern Asia. As such, it would be one component of a specific form of Maritime adaptation and is not meant to imply a genetic or historical connection.

The distinctive antler unilaterally barbed harpoon which I have earlier suggested to be a relatively reliable diagnostic for Marpole is found in several assemblages at differing times outside of the region. In varying styles, they are reported for a number of stages of the Siberian Neolithic (Okladinkov 1964; Michaels 1958; Chard 1974), for the northern Northwest Coast (Clark 1966; deLaguna 1956; Fladmark 1975; MacDonald 1969; MacDonald and Inglis 1975), on the central coast (Hobler and Carlson 1976; Simonsen 1973), and in southern locales adjacent to the Gulf of Georgia (Dewhirst 1969, 1977). However, with exceptions, the remainder of most accompanying assemblages are considerably different. Also, as noted above, diverse time periods ranging from several thousand years ago up to and including the contact era are involved.

On a more specific level, probably the most striking external association with the Marpole complex as a whole is the Period I and II occupations at Prince Rupert Harbor (see MacDonald and Inglis 1975). Roughly contemporaneous with Marpole, the Period II stage (1500 B.C. to A.D. 500) includes a peak in the chipped stone industry, evidence for widespread trade, status differentiation, large house features, a similar range of harpoon styles and overlapping forms of personal ornamentation. With the beginnings of Period I (A.D. 500 to A.D. 1830), the full Northwest Coast culture pattern becomes fully entrenched. Present are massive pecked and ground artifacts, a slightly variant form of unilaterally barbed harpoon, the introduction of composite harpoons and ranked village structure has been inferred. Previously, these parallels had been noted by Borden (1969: 257) who suggested a large scale south to north diffusion beginning some time near the end of Marpole. Despite such similarities, there is little reason to argue for discontinuity in either region. In particular, the Prince Rupert Harbor sequence appears to illustrate at least a 5,000 year evolutionary development (MacDonald and Inglis 1975: 8) and, on the basis of preceding discussions, Marpole also seems indicative of an intraregional manifestation.

Lacking major external relations, I would agree with Mitchell's (1971) arguments for a distinctiveness in archaeological materials from the Gulf of Georgia from at least the beginnings of Marpole. However, this pattern may be even more restricted than Mitchell has proposed. For instance, of the three areal divisions suggested by him (the southern Gulf, the northern Gulf and northern Puget Sound), only within the southern Gulf is there a truly identified Marpole element or, at least, one with several undisputed affiliated sites. It is to the intraregional distribution of Marpole components which I now turn (see Figure 8).

The most northerly claim for a Marpole culture type site in the Gulf of Georgia has been posited by Capes (1977). The site, Millard Creek, is situated three miles south of Courtenay in the Comox Valley along the eastern shore of Vancouver Island. Being multicomponent, its most recent component has a date coeval with the Marpole period and, subsequently, has been labelled Marpole-like. However, this affiliation remains unsubstantiated with specific diagnostics either rare or lacking true association (Capes 1977: Table VIII).

South of Millard Creek, though still within the northern Gulf subregion, is the already mentioned Deep Bay site (Monks 1977). Situated a few kilometres north of Qualicum Beach, its closest intraregional neighbour is the False Narrows site, a distance by water travel in excess of 80 kilometres. A terminal date of A.D. 1050 ± 90 (Gak 6036) (Monks 1977: 61), as stated previously, suggests a transitional or intermediate stage between Marpole and Gulf of Georgia culture types for this assemblage. Considering its spatial position, distance may also have had an effect on material culture variability. In this regard, it is again emphasized that many Gulf of Georgia culture type traits are found in earlier contexts within the Wakashan province (cf. Dewhirst 1969, 1977; Chapman 1977).

Recent excavations by MacMillan and St. Claire (1975, 1976) at the head of Alberni Inlet may help to clarify the northern boundary question when the site is fully reported upon. In addition, it could have a profound effect on our knowledge of westerly distributions for Coast Salish peoples, not to mention implications for trade. Historically the territory of a Nootkan speaking population, DhSe 2

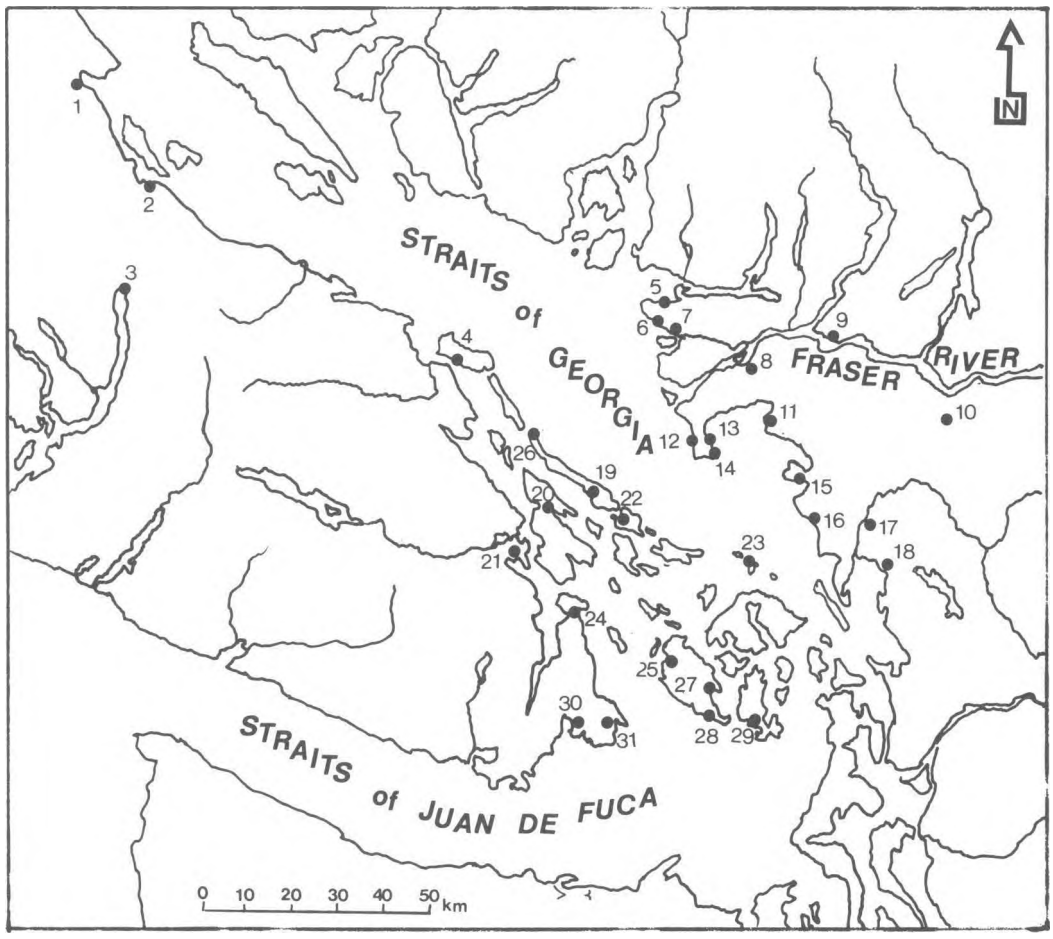


Fig. 8. Spatial Distributions for Possible Components of the Marpole Culture Type.

1 Millard Creek
2 Deep Bay
3 Shoemaker Bay
4 False Narrows
5 Point Grey
6 Musqueam Sites
7 Marpole
8 Glenrose Cannery
9 Port Hammond
10 Sumas
11 Crescent Beach
12 English Bluffs
13 Beach Grove
14 Whalen Farm
15 Birch Bay
16 Cherry Point
17 Nooksack
18 Bellingham Bay
19 Montague Harbor
20 Hill Site
21 Birds Eye Cove
22 Helen Point
23 Fossil Bay
24 North Saanitch
25 Garrison Bay
26 Dionisio Point
27 Argyle Lagoon
28 Cattle Point
29 Richardson
30 Maple Bank
31 Cadboro Bay

revealed a 4,000 year old sequence. Surprisingly, cultural materials were similar more to assemblages from the Gulf of Georgia than other adjacent west coast locales (MacMillan and St. Claire 1975: 72). Specifically, abundant chipped stone artifacts including projectile points and microblades as well as ground stone points and knives are considered anomalous in contemporaneous Nootkan material culture. They are not out of context to the east, however. Since this site is at the end of a long divide and is accessible overland via the Alberni Valley, it may not be necessary to

Table III
Shortest Travelling or Route Distances in Kilometres Between Marpole Culture Type Sites.

	Deep Bay	False Narrows	Dionisio Point	Hill Site	Montague Harbor	Helen Point	Birds Eye Cove	North Saanitch	Cadboro Bay	Maple Bank	Garrison Site	Cattle Point	Argyle Lagoon	Richardson Site
Deep Bay	0.0													
False Na.	81.0	0.0												
Dionisio	102.0	21.0	0.0											
Hill	129.0	49.5	30.0	0.0										
Mont. Ha.	120.0	39.0	21.0	12.0	0.0									
Hel. Pt.	127.5	45.0	27.0	12.0	7.5	0.0								
Bird E.C.	126.0	48.0	27.0	37.5	39.0	33.0	0.0							
N. Saan.	145.5	69.0	46.5	28.5	28.5	22.5	22.5	0.0						
Cad. Bay	177.0	99.0	78.0	55.5	57.0	51.0	51.0	33.0	0.0					
Map. Bnk.	195.0	117.0	96.0	73.5	75.0	69.0	69.0	51.0	18.0	0.0				
Garrison	159.0	76.5	60.0	40.5	40.5	34.5	95.0	22.5	21.0	36.0	0.0			
Cat. Pt.	181.5	99.0	85.5	66.0	66.0	60.0	63.0	42.0	24.0	36.0	24.0	0.0		
Argyle	177.0	96.0	78.0	58.5	54.0	51.0	63.0	45.0	36.0	48.0	28.5	12.0	0.0	
Richard.	187.5	103.5	85.5	64.5	66.0	60.0	69.0	48.0	30.0	43.5	33.0	6.0	12.0	0.0
Fos. Bay	162.0	75.0	57.0	48.0	43.5	36.0	57.0	36.0	49.5	63.0	30.0	45.0	42.0	42.0
Pt. Grey	115.5	43.5	39.0	61.5	57.0	49.5	66.0	72.0	102.0	117.0	84.0	102.0	96.0	105.0
Musqueam	120.0	45.0	36.0	57.0	51.0	45.0	63.0	66.0	94.5	109.5	78.0	96.0	87.0	96.0
Marpole	124.5	48.0	39.0	54.0	49.5	42.0	66.0	63.0	93.0	108.0	75.0	90.0	90.0	93.0
Glenrose	139.5	57.0	51.0	57.0	51.0	42.0	78.0	69.0	96.0	111.0	69.0	84.0	78.0	87.0
Pt. Hamm.	159.0	78.0	75.0	81.0	75.0	66.0	99.0	91.5	127.5	142.5	93.0	108.0	102.0	111.0
Cres. Bh.	153.0	60.0	51.0	51.0	48.0	39.0	75.0	63.0	76.5	91.5	57.0	63.5	66.0	76.5
Bh. Grove	141.0	49.5	37.5	40.5	36.0	27.0	78.0	51.0	75.0	90.0	54.0	70.5	63.0	73.5
Whal. Fr.	144.0	54.0	42.0	42.0	37.5	30.0	64.5	54.0	70.5	85.5	51.0	67.5	60.0	70.5
En. Bluff	129.0	46.5	34.5	37.5	33.0	25.5	60.0	48.0	72.0	87.0	54.0	69.0	63.0	72.0
Birch Bay	159.0	75.0	60.0	54.0	51.0	52.0	75.0	60.0	72.0	87.0	51.0	63.0	57.0	66.0
Cherry P.	162.0	78.0	63.0	57.0	54.0	45.0	72.0	57.0	66.0	81.0	48.0	57.0	52.5	57.0
Belling.	195.0	108.0	90.0	75.0	78.0	69.0	90.0	72.0	78.0	93.0	60.0	57.0	51.0	54.0
Nooksack	207.0	120.0	99.0	84.0	87.0	78.0	90.0	84.0	87.0	102.0	69.0	67.5	61.5	66.0
Sumas	201.0	132.0	120.0	111.0	114.0	111.0	129.0	111.0	107.0	122.0	99.0	96.0	90.0	94.5

postulate a Marpole population on the west coast of Vancouver Island. Still, should it bear out as having a Marpole component, it would provide support for claims of a northern Gulf Marpole occupation.

Disregarding the Port Alberni site for the time being, the westerly distribution of Marpole sites seems to closely follow the spatial boundaries for Straits Salish. Several components are situated along the eastern and southern shoreline of Vancouver Island extending up to at least Esquimalt Harbor and probably further along (see McMurdo 1976; Blacklaws 1978). To the south, Marpole components are yet to be reported west of Puget Sound on the Olympic Peninsula.

As with the northern case, few positively identified Marpole culture type sites are known below the southern Gulf subregion. Mattson has suggested a likeness between his Skagit Delta II phase at Pederson #2 (45 SK 51) and Marpole, albeit differing in "several important aspects" (1971: 50). However, his constituent components are neither fully quantified nor well dated and require further verification. I suspect that, on close scrutiny, less interphase cultural variability will be found.

If we accept Bryan's (1963: 81) observation that the southern terminus of major midden sites within the Gulf of Georgia follows a line drawn across the northern tip of Camano and Whidbey Islands, then the possibilities of finding a Marpole occupancy on the Skagit drainage are lessened. As well, Onat (1978, personal communication) has suggested that the delta proper may not have a great enough antiquity to include a site of this period. Even so,

the presence of a Gulf of Georgia culture type component at Fishtown (45 SK 99) (Onat 1976) may be indicative of an intertwined cultural development between the lower Fraser and lower Skagit drainages.

Finally, turning to the east, with but a few exceptions Marpole sites are restricted to the mainland shores or Fraser River mouth. The major anomaly is a site (45 WH 5) on the Sumas River near the international border. Reported by Grabert and Larsen (1975: 22–23), materials within the assemblage are distinctively Marpole. Since the component includes seven zoomorphic bowls, its present interpretation is one of a "trade and manufacturing seat". To my knowledge, the only other inland sites with possible Marpole affiliations are Port Hammond (H.I. Smith 1907) and 45 WH 34. Site 45 WH 34, seven miles from the mouth of the Nooksack River, would appear to have had intensive

Fossil Bay	Point Grey	Musqueam Sites	Marpole Site	Glenrose Cannery	Port Hammond	Crescent Beach	Beach Grove	Whalen Farm	English Bluffs	Birch Bay	Cherry Point	Bellingham Bay	Nooksack River	Sumas
0.0														
69.0	0.0													
60.0	7.5	0.0												
57.0	15.0	6.0	0.0											
46.5	30.0	21.0	15.0	0.0										
69.0	51.0	42.0	36.0	24.0	0.0									
33.0	40.5	31.5	27.0	13.5	36.0	0.0								
33.0	33.0	24.0	21.0	16.5	42.0	13.5	0.0							
30.0	31.5	27.0	21.0	18.0	43.5	12.0	4.5	0.0						
34.5	37.5	24.0	24.0	18.0	43.5	16.5	3.0	7.5	0.0					
24.0	60.0	48.0	42.0	30.0	55.5	16.5	24.0	21.0	27.0	0.0				
19.5	63.0	54.0	48.0	37.5	61.5	24.0	30.0	27.0	33.0	11.5	0.0			
33.0	93.0	84.0	78.0	69.0	66.0	55.5	60.0	48.5	58.5	42.0	30.0	0.0		
45.0	102.0	93.0	87.0	78.0	75.0	64.5	19.0	66.0	72.0	51.0	39.0	12.0	0.0	
72.0	96.0	87.0	81.0	69.0	45.0	84.0	87.0	90.0	90.0	78.0	66.0	42.0	10.0	0.0

utilization as a habitation locale (Grabert and Larsen 1975: 23). The specific nature of this component awaits the full site report. Although Port Hammond has never been adequately excavated or analyzed, artifact illustrations by Smith (1907) argue for a Marpole occupancy.

The lack of major inland sites during Marpole and the contemporaneous interior pattern in the Fraser Canyon, the Skamel phase, raise several problems regarding the eastern perimeter of Gulf of Georgia cultures at this period. Only intensive research in the areas intervening between the mouth of the Fraser and the Canyon will clarify the situation.

From this discussion it is easily seen that, on the basis of present knowledge, the Marpole culture type may be proposed as a southern Gulf of Georgia pattern. Furthermore, within this zone there does not appear to be a clustered distribution at any one particular locale but a dispersal throughout the Gulf and San Juan Islands, Vancouver Island and the mainland of southern British Columbia and northern Washington (Figure 8).

To gain a measure of spatial extent, I have calculated the route distances (Table III) between individual Marpole sites with the exception of a few of the more contentious components previously mentioned. For almost all, a water route was considered to be the most optimal choice. Subsequently, these distances were scaled using two dimensions in a multidimensional scaling routine (see Kruskal 1964) and replotted using the dimensional loadings as coordinates. The end product (Figure 9) shows the relationship of route distances between sites as straight lines without the problem of interceding land forms or other barriers. Again, evidence for discrete spatial patterning appears to be absent. The dimensional plot does, however, blatantly illustrate the extreme peripheral position of the Deep Bay site.

Interjecting the time dimension, I have further calculated the mean centre of distribution (Hammond and McCullagh 1974: 34) for Marpole sites for three temporal intervals: pre 300 B.C.; 300 B.C. to A.D. 1, and A.D. 1 to A.D. 700 (Figure 10). Although the number of dated components is small, especially prior to 300 B.C. (n=4), a pattern does seem to be emerging. That is, while the mean centre for a combination of all Marpole components falls within the Strait of Georgia south of the Fraser River, there appears to be a temporal gradient away from the mouth of the Fraser progressing westward and, after A.D. 1, slightly northward. Provided further research substantiates this movement, it might be proposed that the complex as a whole originated, or at least was first manifest, in sites of the Fraser Delta. Subsequently, either through diffusion or some other mechanism, it spread outward into the Gulf of Georgia. It may not be surprising then that the only positively identified overlapping component of the Locarno Beach culture type comes from an island locale (Pender Canal). I suspect others may eventually be found.

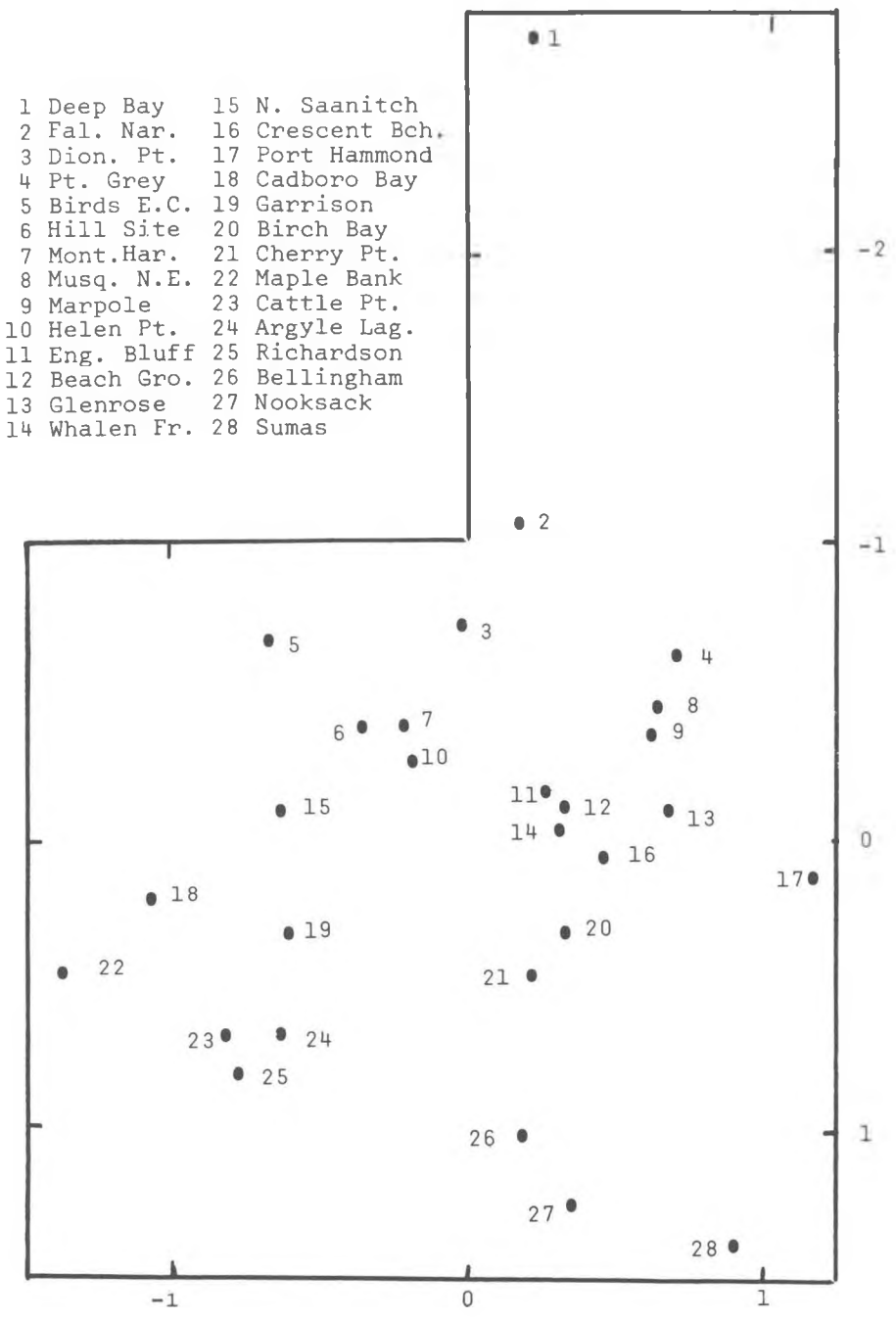


Fig. 9. Two Dimensional Plot of Scaled Distances Approximating Straight Line Intervals (Stress Value of 0.057 was achieved).

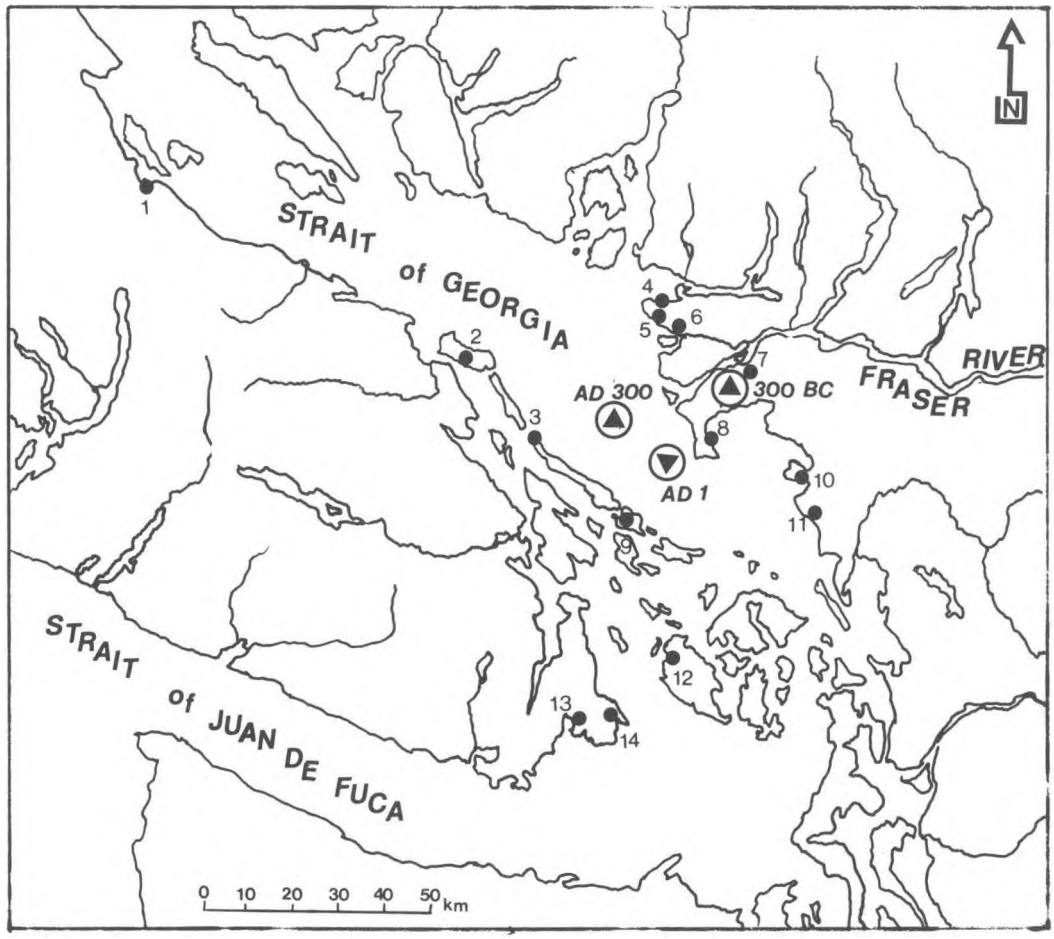


Fig. 10. Distribution of Dated Components of the Marpole Culture Type and Mean Centre Movement for Three Chronological Intervals.

1 Deep Bay	***	8 Beach Grove	**
2 False Narrows	***	9 Helen Point	**
3 Dionisio Point	**	10 Birch Bay	***
4 Point Grey	**	11 Cherry Point	*
5 Musqueam N.E.	*	12 Garrison Bay	**
6 Marpole	*	13 Maple Bank	**
7 Glenrose Can.	*	14 Cadboro Bay	***

* First date for Marpole component occurs prior to 300 B.C.

** First date for Marpole component occurs between 300 B.C. and A.D. 1

*** First date for Marpole component occurs between A.D. 1 and A.D. 300

With the exception of Glenrose Cannery, all components are assumed to have been occupied from their earliest Marpole component date up to the last interval (A.D. 1 to A.D. 300).

MARPOLE INTERASSEMBLAGE

VARIABILITY

Although I have discussed stylistic variability within specific artifact groups and, to some degree, how each relates to the temporal dimension, I have yet to look at interassemblage variation beyond broad observation. Several recent studies of Northwest Coast data (Thompson 1975, 1977; Matson 1974; Monks 1976) specifically deal with this problem. In a sense, they have laid the groundwork for the present analysis. This section is an attempt to outline formal variation between assemblages of the Marpole culture type. It is hindered by the quality and quantity of available data.

Eighteen components, each of which has been assigned to the Marpole culture type, are being examined. With but a few exceptions where assemblages are exceedingly small, these represent the total of Marpole components with quantified collections. The components are Deep Bay II (Monks 1977), Montague Harbor II (Mitchell 1971), False Narrows I and II (Burley 1979a), Marpole II (Burley 1979b), Old Musqueam (Monks 1976), Glenrose Cannery III (Matson 1976d), Helen Point IIa and IIb (McMurdo 1974; Hall 1968), Crescent Beach III (Percy 1975), Beach Grove (D. Smith 1963), Point Grey, Musqueam Northeast II (Matson 1974), Fossil Bay I (Kidd 1969), Whalen Farm (Seymour 1976), the Hill site (Haggarty and Hall 1976), English Bluffs (Sutherland n.d.) and the Garrison Site (Carlson 1960). It must be pointed out that not all of the above collections have undergone full analysis. In the case of Old Musqueam, Musqueam Northeast and Point Grey, assemblages have been quantitied for individual comparative study (Monks 1976; Matson 1974). Further, I have included pairs of components from each of False Narrows, Helen Point and Musqueam as a check on sample representativeness and reporter bias.

Several multivariate approaches are available for the measurement of interassemblage variability (see Doran and Hodson 1975). That used here is a multidimensional scaling routine based on the city block metric distance coefficient. Matson (1974), in a seriational study of Gulf of Georgia

Table IV Assemblage Content for Quantified Marpole Culture Type Components

	CHIPPED STONE											
	Flake edge tools	Slate/Sandstone disc	*Pièce esquillée*	Microblade/ core	Chopper/ chopping tool	Corner-notch/ basal-notch pts.	Leaf-shaped points	Contracting stem point	Expanding stem point	Triangular point	Formed bifacial cutting and/or scraping tools	Perforators
Mont. Harbor II	0	3	0	3	1	0	0	3	0	5	0	0
Cres. Beach III	55	0	2	0	8	0	1	3	0	0	8	6
Old Musqueam	101	0	15	2	0	8	5	5	2	1	1	0
Musqueam N.E.	80	8	35	5	0	0	3	2	5	1	0	2
Helen Point IIa	38	4	0	3	3	0	1	2	0	8	2	0
Helen Point IIb	23	10	0	3	0	0	3	2	0	5	2	0
Fossil Bay I	36	1	0	0	0	0	2	1	0	0	0	0
Hill Site	11	1	0	0	4	0	1	1	0	0	0	0
Glenrose Can. III	65	0	3	6	7	1	9	3	3	0	7	1
Deep Bay II	9	2	0	0	2	0	1	1	0	2	1	0
Garrison	5	0	0	0	0	0	4	1	0	17	2	2
Whalen Farm	18	1	0	0	0	0	1	0	1	1	4	0
English Bluffs	12	1	0	0	1	2	2	2	5	8	3	0
Point Grey	13	2	0	0	2	0	0	2	0	0	3	0
Marpole II	19	33	0	6	2	4	6	17	7	14	3	0
Beach Grove	20	3	1	0	6	0	6	8	2	3	9	3
False Narrows I	11	4	2	2	2	0	1	2	0	5	3	2
False Narrows II	12	5	5	3	3	0	0	3	1	5	3	1
Total	528	78	63	33	41	15	46	58	26	75	51	17

Table IV Assemblage Content for Quantified Marpole Culture Type Components

	GROUND STONE										
	Triangular point	Stemless points	Stemmed point	Facetted large point	Celts/adze blades	Decorative and decorated objects	Labrets	Shaped abrasive stones	Irregular abrasive stones	Handstones	Stone saws
Mont. Harbor II	1	0	1	0	1	0	0	4	20	1	4
Cres. Beach III	0	0	0	0	1	1	6	1	9	0	0
Old Musqueam	1	1	0	0	7	1	0	0	39	0	0
Musqueam N.E.	0	5	0	1	6	0	0	2	6	0	0
Helen Point IIa	0	0	0	0	0	0	0	13	53	0	0
Helen Point IIb	1	9	1	0	5	3	0	2	21	0	0
Fossil Bay I	0	0	1	0	1	0	3	2	1	0	0
Hill Site	0	2	0	1	1	0	5	1	20	0	6
Glenrose Can. III	2	2	0	0	12	2	4	0	29	0	0
Deep Bay II	3	3	1	0	1	2	0	1	11	0	1
Garrison	0	7	0	0	2	1	0	0	7	0	0
Whalen Farm	0	1	0	0	1	1	0	0	13	0	0
English Bluffs	0	1	0	0	5	1	0	0	13	0	0
Point Grey	0	0	0	0	0	0	0	2	11	1	0
Marpole II	0	8	0	4	17	2	0	4	84	3	1
Beach Grove	0	2	0	0	14	3	0	0	78	0	0
False Narrows I	0	1	1	4	4	5	0	1	29	2	0
False Narrows II	1	10	0	1	3	4	0	3	27	2	2
Total	9	52	5	11	81	26	18	36	471	9	14

sites, has employed this technique with some measure of success. The distance measure used frequency counts as opposed to data in a binary format. While recognizing the many drawbacks associated with this type of data, the measurement of quantified differences as opposed to a simple presence or absence was felt to be inherently superior. For instance, since the majority of collections under analysis have come from multicomponent sites, the possibility of intercomponent mixing, as I have argued in an earlier chapter, is considerable. The mere presence of a particular artifact form, therefore, might be due to non-cultural depositional events. This would skew the resultant solution.

Table IV Assemblage Content for Quantified Marpole Culture Type Components

	PECKED STONE				
	Hand maul	Hammer-stone	Perforated stone	Notched stone	Mortar/bowl
Mont. Harbor II	0	5	2	6	0
Cres. Beach III	0	9	0	0	0
Old Musqueam	0	4	1	0	1
Musqueam N.E.	0	7	1	0	0
Helen Point IIa	0	2	0	1	0
Helen Point IIb	0	1	0	0	0
Fossil Bay I	0	0	1	0	0
Hill Site	0	3	0	0	0
Glenrose Cannery III	0	5	0	0	1
Deep Bay II	0	0	0	0	0
Garrison	1	6	0	0	0
Whalen Farm	0	3	0	0	2
English Bluffs	0	3	0	0	2
Point Grey	0	3	12	0	1
Marpole II	1	2	1	0	0
Beach Grove	0	9	0	0	0
False Narrows I	1	1	1	0	2
False Narrows II	0	1	4	8	0
Total	3	64	23	15	9

The artifact taxonomy employed (see Table IV) is one of necessity more than design. Relying primarily on the analyses of Mitchell (1971) and Matson (1974) for its basis, a definition for the vast majority of types can be found within their studies. Additional categories, formed by the placement of several types into a more generalized grouping, are defined in Table V. The subsequent taxonomy is unspecialized incorporating elements of style, morphology and function. While it may have been more profitable to investigate individual problems with specialized taxonomies (for instance, see Thompson 1975, 1977) without full reportage on many assemblages, this remains virtually impossible.

The final taxonomy includes 51 artifact forms of stone, antler, bone and shell, each of which occur in a minimum of three assemblages. Classes of artifact fragments and a few types which tend to occur *en masse* (i.e. slate and shell disc beads) are omitted. In the case of the latter, it may be noted that such artifact types often double or triple the size of the related assemblage. Since each artifact, individually, has some effect on dimensional associations, the results could be drastically altered. Aside from simple exclusion, an alternative for the handling of this material was lacking. Table IV provides a component breakdown by artifact counts. As may be noted, assemblage size varies from a

Table IV Assemblage Content for Quantified Marpole Culture Type Components

	BONE													
	Barbed point	Small unipoint	Bipoint	Mammal bone awl	Bird bone awl	Needles	Chisel/ wedge tools	Ulna awl	Decorative or decorated object	Bird bone point	Bird bone tube	Incisor tool	Ground canine and other tooth pendants	Unbarbed fixed bone point
Mont. Harbor II	1	4	2	9	1	2	6	4	0	0	3	0	1	0
Cres. Beach III	1	0	2	5	0	0	5	0	0	0	1	4	1	0
Old Musqueam	0	1	0	9	19	9	4	0	5	0	0	3	2	4
Musqueam N.E.	0	1	2	2	1	0	3	1	1	0	0	0	1	0
Helen Point IIa	1	0	2	0	0	0	0	0	2	0	1	0	0	0
Helen Point IIb	5	3	3	3	0	0	0	0	0	0	1	0	0	0
Fossil Bay I	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Hill Site	0	0	0	5	0	0	3	2	0	2	1	3	0	0
Glenrose Can. III	0	0	0	6	0	2	2	1	1	0	0	1	1	0
Deep Bay II	0	3	8	4	0	0	4	0	2	0	1	0	0	0
Garrison	1	0	0	6	0	1	5	11	2	0	1	0	0	0
Whalen Farm	0	0	0	5	2	1	0	0	2	0	0	0	0	0
English Bluffs	11	0	0	10	0	0	2	1	12	0	5	4	0	4
Point Grey	0	3	6	10	2	2	3	1	0	0	0	0	1	0
Marpole II	0	0	0	11	3	3	5	0	2	0	2	0	3	1
Beach Grove	0	0	0	16	0	4	14	3	14	1	7	2	1	0
False Narrows I	5	2	0	30	2	11	1	2	2	0	3	0	2	1
False Narrows II	0	5	1	26	3	2	5	2	2	6	6	0	2	7
Total	25	22	26	160	33	37	62	28	47	9	32	17	15	17

Table IV Assemblage Content for Quantified Marpole Culture Type Components

	ANTLER							SHELL		
	Toggle valve	Unilaterally barbed harpoon	Barbed points	Wedges	Haft	Pendants	Decorated or decorative objects	Edge tool	Pendant/ gorget	Total
Mont. Harbor II	0	3	2	3	2	0	0	2	0	105
Cres. Beach III	0	0	0	4	2	0	0	0	1	136
Old Musqueam	0	0	0	2	0	0	3	1	1	258
Musqueam N.E.	0	0	0	0	0	0	0	0	0	181
Helen Point IIa	0	0	1	2	0	0	0	0	0	139
Helen Point IIb	1	1	6	2	1	1	3	1	0	122
Fossil Bay I	0	0	1	2	0	0	0	1	0	56
Hill Site	1	0	0	0	1	0	0	1	2	78
Glenrose Can. III	0	1	1	2	0	0	0	0	0	180
Deep Bay II	4	0	1	2	0	0	0	0	0	70
Garrison	0	3	3	2	0	4	1	1	1	97
Whalen Farm	1	0	3	8	0	0	0	0	0	69
English Bluffs	0	3	3	13	0	0	0	0	2	131
Point Grey	0	2	3	4	0	0	0	0	0	89
Marpole II	0	1	13	3	0	3	0	0	0	288
Beach Grove	0	3	15	19	1	0	0	1	0	268
False Narrows I	1	3	14	4	0	3	1	1	2	176
False Narrows II	2	1	13	10	2	8	1	6	7	224
Total	10	21	79	49	9	19	9	15	15	2667

minimum number of 56 specimens to a maximum of 288.

The Manhattan city block metric coefficient (Sneath and Sokal 1973: 125–6) is a non-Euclidean distance measure. Since it is an average distance, its primary advantage lies in a sensitivity to proportional rather than absolute differences. For the present case, the data were neither standardized nor transformed into percentages. It is realized that gross assemblage size will dominate the eventual solution. However, by recognition of this fact, subsequent interpretation may be so adjusted. It was felt that standardization and/or normalization would mask much of the real variability by injecting characteristics of the number system into

Table V Definition of Artifact Categories Used in the Interassemblage Variability Analysis

Flake Edge Tool:
all unformed flake implements with marginal retouch either intentional or use-related. Intentional retouch is normally unifacial.

Chopper/Chopping Tool:
all large chipped stone implements which, probably, were used in a chopping capacity. This category incorporates cobble core tool, modified cobble tools, pebble choppers and the like.

Corner-notch/Basal-notch Points:
a combined category including all chipped stone points with notches placed either on the corners or basal margins. Basally-notched barbed specimens are also found here.

Formed Bifacial Cutting and/or Scraping Tools:
a general chipped stone grouping of nonprojectile point intentionally formed bifaces regardless of shape or size. The intended use of this category is assumed to have been cutting and/or scraping.

Stemless Ground Stone Points:
a broad class including all stemless points with the exception of triangular specimens. Outline forms range from excurvate to tear shaped to bipointed.

Stemmed Ground Stone Points:
a general grouping of all points having a definable stem. Here included are all notched forms.

Ground Stone Decorative and Decorated Objects:
all objects which might be considered personal ornamentation (except labrets) as well as any ground stone object with incised or pecked decoration. Whereas the former would include such items as earspools or pendants, examples of the latter might be fish head effigies or small sculptured pieces.

Bone Decorated or Decorative Objects:
identical in context to the above grouping, these specimens are manufactured of bone. Examples for this category would be bone beads, bone carvings, bone pendants and the like.

Antler Decorated or Decorative Objects:
although made of antler, these implements are identical to the preceding category. Few differences in content are found between this group and that of bone.

Shell Edge Tool:
all shell implements with a prepared functional edge. No standard employment is characteristic of this group nor is there a defined shape. Shell celts, scrapers, knives and similar implements are included here.

All other categories used in the interassemblage variability analysis are defined in either Mitchell (1971) or Matson (1974, 1976a).

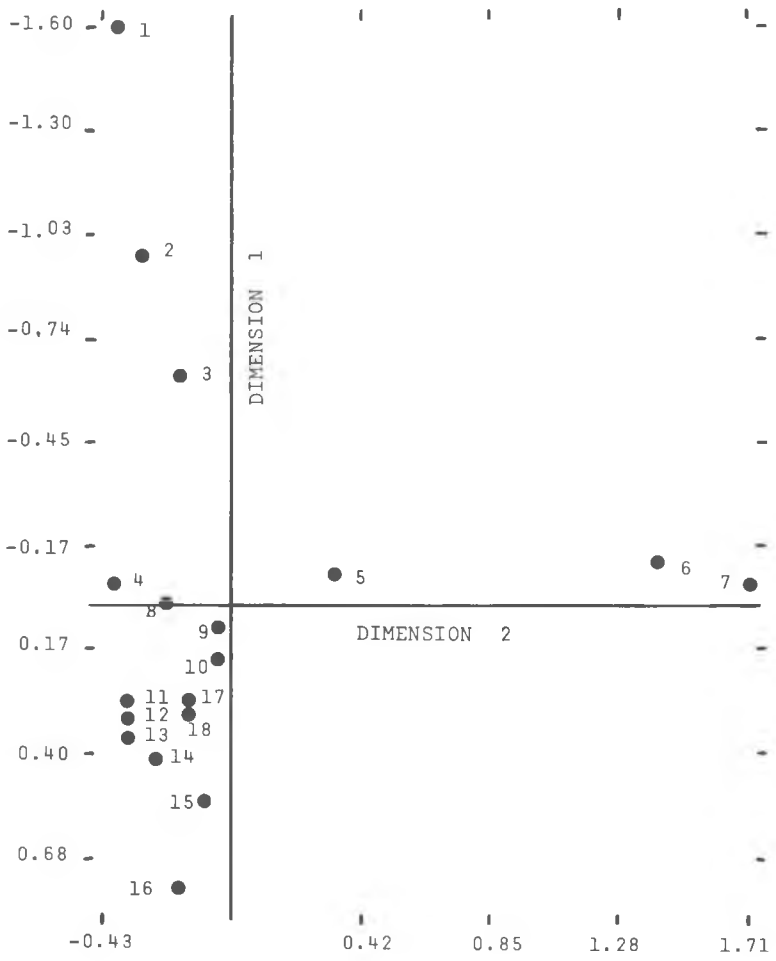
the data.

Following the computation of intersite distances (Table VI) the data was nonmetrically scaled in four dimensions with a minimum stress value of 0.074 achieved (see Kruskal 1964). Dimensions are plotted in Figure 11. Finally, the rank order correlation (r) between gross assemblage size and frequency of individual artifact categories was computed for each dimension. The correlation coefficient is Spearmans rho (Thomas 1976), a statistic ranging between positive and negative one.

The first dimension, as anticipated, seems to reflect size or artifact abundance (r=-0.61). Sites scoring highest on this dimension tend to have the lowest artifact totals and the converse is also true. However, should artifact abundance be the only variable moulding this vector, then we must expect types having the greatest frequencies to also have a high negative dimensional association. When individual artifact categories are correlated with their rank order on Dimension 1, this is not found to be the typical pattern. Six types, including edge tools (r=-0.86), *pièce esquillée* (r=-0.61), microblades (r=-0.50), leaf shaped points (r=-0.54), contracting stem points (r=-0.52) and shaped abrasive stones (r=-0.42), have high inverse associations. Of these, only the initial pair are among the ten largest artifact classes (see Table IV). In addition, the absence of irregular abraders (n=471) and mammal bone awls (n=160) as negative correlating variables is somewhat surprising. On this basis, I feel it is reasonable to suggest that other factors, at least on a low level, may be operative in Dimension 1. Although several possibilities could exist, three can be given further consideration. Specifically, these include site use, temporal relationship and reporter bias.

Five of the six artifact types inversely correlated with Dimension 1 are chipped stone implements. Of these, three (microblades, edge tools and *pièce esquillée*) are tools used in processing or manufacturing tasks while the remaining pair are thought to be hunting implements. The complementary nature of the activities represented, in terms of subsistence pursuits, may be indicative of a specialized site use. In this regard, microblades and edge tools are well suited for cutting and/or scraping duties in the processing of larger fauna and, at least one hypothesis on the function of *piece esquillée* suggests they are bone/antler/ivory working tools (Semenov 1964; MacDonald 1968). To be more explicit, it is speculated that sites with a high negative loading on Dimension 1 may be part of a group specific activity set, the hunting of larger fauna. Despite finding some support in the fact that five of the eight negative scoring components are on the mainland, the lack of a complete faunal analysis and usewear study precludes a positive association.

Chronology might also be considered as a factor in Dimension 1. Although it is difficult to order the components on the basis of antiquity since occupation at a majority of these sites probably spanned several hundred years, it is interesting that the earliest dated Marpole components (Musqueam Northeast, Glenrose Cannery, Marpole and Beach Grove) are also negatively loaded. In fact, only Garrison stands out as a serious challenge to this statement. If this proves to be the case, and I have already suggested that one would expect contracting stemmed points, leaf shaped points and microblades to be more frequent in early Marpole, then it could be inferred that chipped stone abundance might also correlate with time. At least generally, this would appear to be true for gross culture historical development within the Gulf of Georgia region (Matson 1976d).

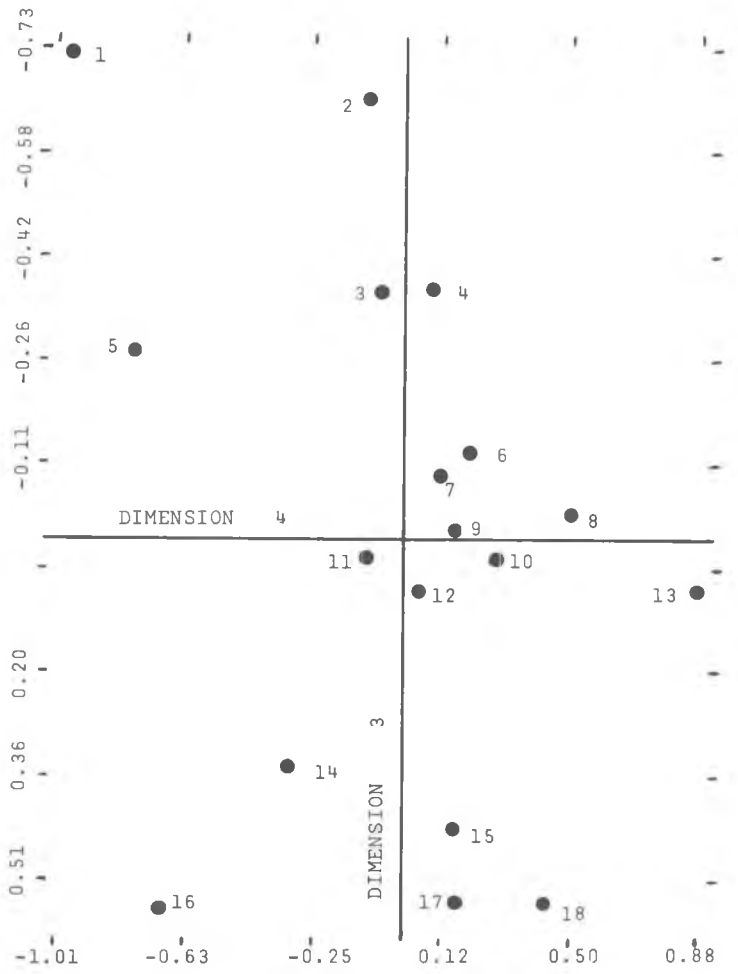


1 Old Musqueam
2 Musqueam N.E.
3 Glenrose Cannery
4 Crescent Beach
5 Helen Pt. IIa
6 Beach Grove
7 Marpole
8 Fossil Bay
9 Helen Pt. IIb
10 False Narrows I
11 Hill Site
12 Montague Harbor
13 Point Grey
14 Deep Bay
15 English Bluffs
16 Garrison
17 Whalen Farm
18 False Narrows II

Figure 11 Plots for Four Dimensions Based on a Multidimensional Scaling of Marpole Culture Type Components.

A final possibility as an influent on Dimension 1 is that of reportage bias. Such implements as *pièce esquillée* and flake tools are often overlooked in the field and, unless a close analysis of level materials is undertaken, might be characterized as debitage (see Matson 1974). In addition, shaped abrasive stones are not always singled out as a specific artifact class distinct from other implements of similar function.

Although the second dimension, to some extent, also has a correlation (r=0.32) with assemblage size, it is much less apparent. As with Dimension 1, several artifact categories are found to have a high correlation with site placement. Included are chipped slate discs (r=0.54), chipped stone triangular points (r=0.60), decorative objects of stone (r=0.52), irregular abrasive stones (r=0.53), bird bone tubes (r=0.60) and barbed antler points (r=0.74). Despite these correlations, since only two sites have a high loading on this vector, the list may be misleading. The sites, Marpole and Beach Grove, are proximally located, contemporaneous and expected to have had intensive interaction during their occupation. The only other site to load positively is Helen Point A. It is interesting that all three of these components have figured heavily into the definition of a Marpole pattern. Further, looking at the list of correlated artifact



1 False Narrows II
2 Marpole
3 Montague Harbor
4 Helen Point IIb
5 False Narrows I
6 Deep Bay
7 Garrison
8 Helen Point IIa
9 Hill Site
10 Fossil Bay
11 Point Grey
12 Whalen Farm
13 Musqueam N.E.
14 English Bluffs
15 Old Musqueam
16 Beach Grove
17 Glenrose Cannery
18 Crescent Beach

Fig. 11 cont'd.

types, it may be noted that at least three could be considered *fossil directeur* of the Marpole culture type. Certainly barbed antler points and decorative items in stone are "diagnostic hallmarks". Therefore, it seems reasonable to suggest that Dimension 2, in some way, reflects a modal or definitional pattern of Marpole.

Dimension 3 is the most intriguing of the four. In no way can it be viewed as a reflection of assemblage size having a rank order correlation of 0.06. To the contrary, from even a cursory inspection, it is apparent that the dimension is one of spatial association. With one exception, all sites with a positive loading are situated on the islands. Of the latter, the Marpole site stands as the major anomaly. Similarly, all but one of the negative scoring components are proximal to the mouth of the Fraser.

A large number of artifact types correlate both positively and negatively with this dimension. Included are antler pendants (r=0.68), small bone unipoints (r=0.56), notched sinker stones (r=0.50), perforated stones (r=0.41), sandstone saws (r=0.60), handstones (r=0.66), shaped abraders (r=0.68), large facetted ground points (r=0.47), stemmed ground points (r=0.44), chipped slate discs (r=0.63), formed bifaces (r=0.54), hammerstones (r=-0.58), flake tools (r=-0.57) and beaver incisor tools (r=-0.70). While

Table VI Manhattan City Block Metric Distances Between Components of the Marpole Culture Type

	Montague Harbor	False Narrows I	False Narrows II	Deep Bay	Old Musqueam	Glenrose Cannery	Helen Point IIa	Helen Point IIb	Crescent Beach	Beach Grove	Point Grey	Musqueam N.E.	Fossil Bay	Whalen Farm	Hill Site	English Bluffs	Garrison	Marpole
Montague Harbor	0																	
False Narrows I	142	0																
False Narrows II	149	111	0															
Deep Bay	95	147	176	0														
Old Musqueam	251	253	29	246	0													
Glenrose Cann.	185	189	226	176	160	0												
Helen Point IIa	146	180	219	133	217	161	0											
Helen Point 11b	113	131	160	92	236	168	119	0										
Crescent Beach	161	211	242	128	208	112	147	156	0									
Beach Grove	237	217	240	250	306	220	207	236	250	0								
Point Grey	84	136	167	67	243	169	146	115	129	239	0							
Musqueam N.E.	214	244	269	203	145	139	166	175	171	299	210	0						
Fossil Bay	109	159	204	82	198	126	85	80	98	244	95	153	0					
Whalen Farm	110	134	175	65	221	153	122	93	115	221	66	194	65	0				
Hill Site1	91	145	174	70	234	156	135	108	114	236	89	193	68	75	0			
English Bluffs	138	144	183	117	245	187	172	133	165	209	108	240	135	86	115	0		
Garrison	110	158	193	95	265	197	170	123	151	251	114	230	127	96	109	120	0	
Marpole	251	223	246	256	314	256	215	216	310	188	249	291	256	237	260	255	245	0

at least a few may be fortuitous or circumstantial, there seems to be a definite pattern. First, there can be little doubt that mainland sites do have a greater abundance of flake tools. It may be, as earlier suggested for Dimension 1, indicative of some specialized aspect of Marpole subsistence. However, it seems striking that such a spatial schism is present and argues for an alternative explanation. One possibility worthy of consideration is that of interior influence. As a corollary, it is interesting to note that island sites are associated with three types of ground stone points as well as three implements important in the ground stone industry (shaped abraders, saws and handstones). Moreover, the correlation of two types of sinker stones and the small bone unipoint might be reflective of a slightly varied subsistence technology. The latter are most often interpreted as fish hook barbs, herring rake teeth or arming tips for small composite harpoons.

The final dimension also has a large number of correlated artifact types while being independent of assemblage size (r=-0.13). Among these are unilaterally barbed harpoons (r=-0.76), barbed antler points (r=0.85), antler wedges (r=-0.76), bone needles (r=-0.66), antler pendants (r=-0.49), bird bone tubes (r=-0.53), ulna awls (r=-0.46), bird bone awls (r=-0.44), mammal bone awls (r=-0.63), handstones (r=-0.64), stone decorative items (r=-0.57), formed bifaces (r=-0.45), flake tools (r=0.47) and labrets (r=0.47). Ignoring the final two categories with positive associations, it is somewhat remarkable that 13 of 51, or 25 percent, of the artifact types are negatively correlated with Dimension 4. Moreover, as with the second dimension, a good number of these are considered to be prime diagnostics of Marpole and, thus, seem indicative of a definitional pattern. In fact, Dimension 4 might best be viewed as a mirror (inverse) reflection of Dimension 2. When we note which sites are among those loading lowest on this factor, (those having the most abundance of types mentioned above) the Beach Grove variant of the Marpole culture type seems to appear (Figure 12). If this is indeed the case, then we might tentatively add English Bluffs, Marpole, Point Grey and Montague Harbor to the list of constituents.

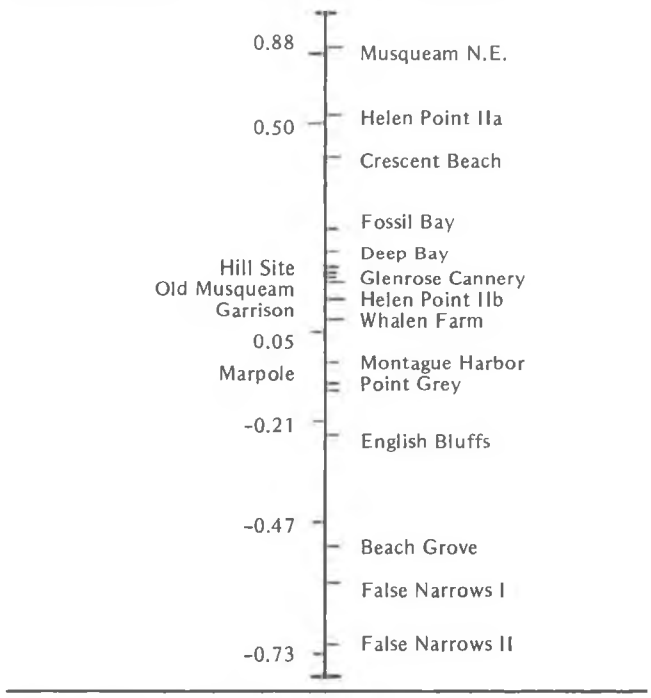


Figure 12 Site Loadings on Dimension 4—An Approximation of the Beach Grove Variant of the Marpole Culture Type

Related to the above discussion, Dimension 4 might also be important by illustrating an inverse relationship between

such Marpole characteristics as barbed antler harpoons and points with flake tools and labrets. While I would like to write it off to sampling bias, it may not be the case. The consequences of this association must await further verification.

Turning to the problems of sampling bias, we may note from the various dimensional plots (Figure 11) that a tendency does exist for overlapping components from the same site (Musqueam N.E. and Old Musqueam, Helen Point A and B, False Narrows I and II) to be strongly associated. In fact, on none of the four dimensions is there extreme interpoint distance between them and, in at least two instances (Dim 1 and Dim 4), the nearest neighbour is found to be the exact counterpart. On the surface, this would suggest that sample skewness may not be a major influencing variable.

In summary, it may be stated that formal variation does exist and may be measured among assemblages of the Marpole culture type. At least one dimension appears to be spatial (Dim 3) while another, at least in part, could be reflective of settlement/subsistence patterns (Dim 1). The final two dimensions I have argued as modal or definitional vectors. Finally, it is suggested that sampling bias, or its effect upon representativeness of individual components, may not be an extreme problem within the preceding analysis.

SYNCHRONIC MODELS

> Unless anthropology is to interest itself mainly in the unique, exotic, and nonrecurrent particulars, it is necessary that formulations be attempted no matter how tentative they may be. It is formulations that will enable us to state new kinds of problems and to direct attention to new kinds of data which have been slighted in the past. Fact-collecting of itself is insufficient scientific procedure; facts exist only as they are related to theories and theories are not destroyed by facts – they are replaced by new theories which better explain the facts
>
> (Steward 1949: 24).

Few reports on Northwest Coast archaeology have proceeded beyond the realm of culture history thus far outlined. Cultural interpretations, for the most part, have been restricted to a basic review of major manufacturing industries which can be directly observed in the archaeological record. Even in such areas as subsistence strategies, a standard research objective in other regions of North America, there has been a scarcity of interest. For instance, it is hard to believe that over the past quarter of a century only four fully quantified reports of faunal materials from individual sites within the Gulf of Georgia region have been produced (Boehm 1973; Boucher 1976; Imamoto 1976; Monks 1977) and these have been within the past five years. Other topics of a less tangible nature (i.e. social organization, political groupings, religious behaviour) are all but absent. In fact, beyond a single attempt by Matson (1975, 1976e) to provide a broader framework in which to view his materials from the Glenrose Cannery site, and a cursory review by Mitchell (1971), they are absent.

The present section sets forth a synchronic reconstruction of Marpole lifeways. It attempts to review those areas of culture which have been traditionally shunned or written off by regional prehistorians. Specifically, these include four major categories: 1) economic organization and subsistence strategies; 2) socio-political organization; 3) intergroup relations, and 4) religious/ritualistic patterns. Since few of these topics can be addressed on the basis of existing archaeological data, a major portion of subsequent discussion is theoretical, hypothetical and speculative. If resulting interpretations lead to even a single testable model, the section will have served its purpose.

In the following analysis, the basis for most interpretation must be extensive analogy to ethnographic Coast Salish culture. In preceding sections, Marpole is posited as a direct ancestral population to historic peoples and the environmental milieu is suggested to have been identical to that of the present day context. Thus, there is some justification for such analogies. However, the possibilities of differing cultural traits are not ruled out. Given the time depth interval of 1,500 years and the extent of Euro-American acculturation when most ethnographic data were being collected, this is highly probable. In a few cases, alternatives to ethnographically recorded features are proffered.

Here it is recognized that I tread beyond the realm of strict archaeological interpretation as argued for by Abbott (1972) and discussed previously. The material culture of Marpole is taken out of its archaeological abstraction and viewed as a reflection of a cultural system, possibly even a "society". If we do not proceed into this stage of theorizing, then, as Steward (1949) has argued, we must relegate future research to strict descriptive report writing with a minimum of inference.

Economic Organization

Intraregional studies of settlement subsistence patterns within the Gulf of Georgia region have only recently come into interest. The major efforts thus far have focused on faunal analyses (Boehm 1973; Imamoto 1976; Boucher 1976; Monks 1977) and seasonality (Ham and Irvine 1975; Ham 1976). Still, the data which have been collected to date come from diverse areas and time periods and are too few to provide a detailed reconstruction of subsistence modes within various culture types. As well, an attempt to delineate settlement pattern strategies through a strict functional typology of existent assemblages (Thompson 1975, 1977), I believe, has provided minimal new information. Since the present study can neither offer new data nor new forms of analysis, the discussion is limited to a synthesis of available information on Marpole economic organization and a comparison of it to the reported Salishan pattern.

As has been stated in the introductory section, Mitchell (1971: 29) outlines four types of subsistence strategies for the ethnographic culture within the Gulf of Georgia. To briefly recount, these include: northern Gulf diversified fishermen; central and southern Gulf river fishermen; Straits reef-net fishermen, and Puget Sound diversified fisherman. Here it is important to note that access to the Fraser River salmon run is the key defining variable. That is, whereas the first and last adaptive strategies are suited

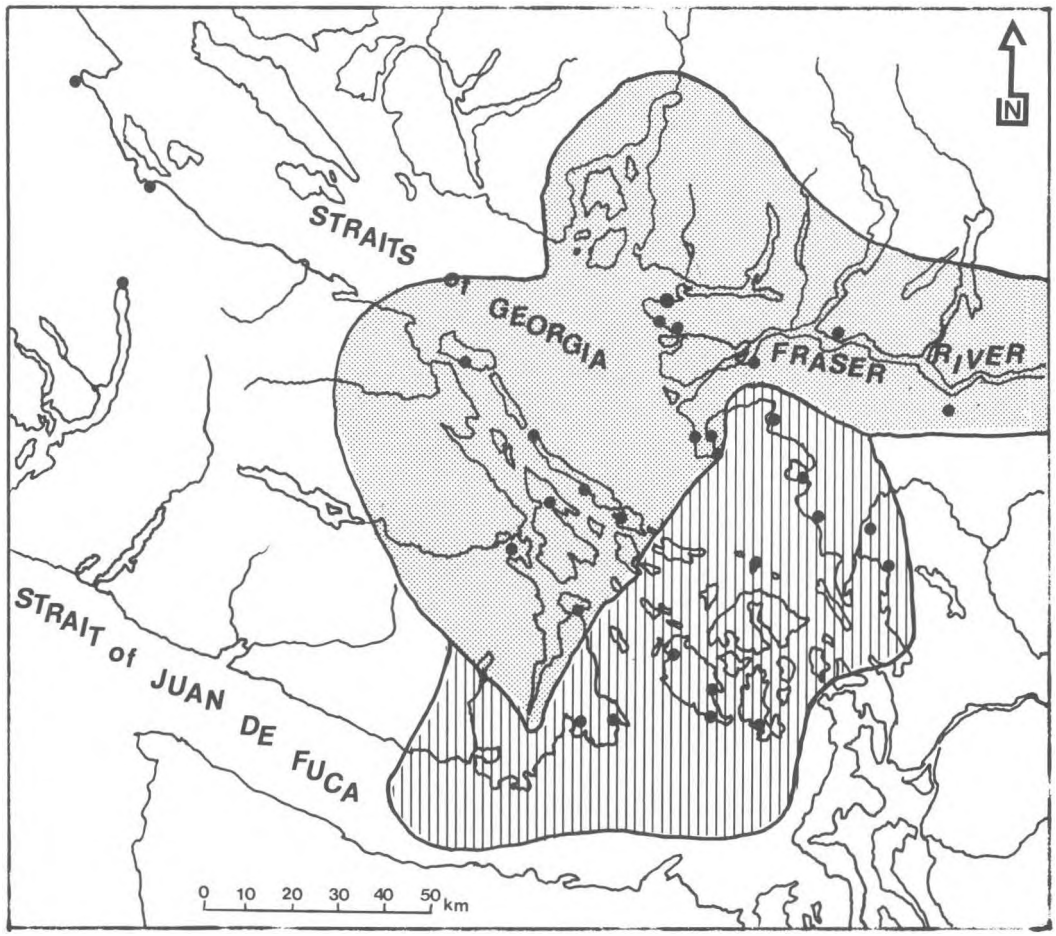


Fig. 13. Distribution of Marpole Sites and Fishing Strategies.

Straits Reef-Net Fisherman

Central and Southern Gulf River Fishermen

to exploitation of lesser runs in localized rivers and creeks, the second and third types intercept the major migratory run of the Fraser. If we compare the spatial extent of Marpole culture type sites with the proposed spatial boundaries for each of these subsistence patterns (Figure 13) an interesting parallel is found. With minor exception, Marpole sites are concentrated within the resource zones of the Straits reef-net and central and southern Gulf fishermen. In fact, as illustrated in the previous discussion of the spatial extent of Marpole, the areas associated with diversified fishing (the northern Gulf and northern Puget Sound subregions) are shown to be peripheral and, as yet, in doubt as to a significant Marpole presence. Therefore, we might argue that from our present knowledge of site distribution, the Marpole culture type is related almost solely to the prime salmon runs of the Fraser River. Mitchell (1971: 52) had earlier come to this conclusion in stating "...it seems the subsistence of the [culture] type was closely identified with the major fish runs of the Fraser River, and it is probable that a mainstay of the economy was the salmon runs, perhaps to even a greater extent than was true of the Gulf of Georgia culture type."

Analyses of faunal material from Marpole components at Glenrose Cannery (Imamoto 1976), Helen Point (Boucher 1976) and Deep Bay (Monks 1977) suggest the range of other fish, bird and mammal species being exploited was identical to that reported for historic peoples. As well, while it is possible that more extensive use of shell fish characterizes components postdating A.D. 1 (Grabert 1978, personal communication), shell fish abundance in even the earliest of Marpole contexts attests to the importance of this resource (Ham 1976: 57). As a result, we may conclude that, at least in types of resources being procured, Marpole peoples differed little from their historic counterparts.

Suttles (1960: 302) has characterized the environment of the Coast Salish as one of both resource abundance and fluctuation. Fluctuation is attributed first to productivity cycles in different fish populations and, to a lesser degree, unpredictable changes in weather. The idea of resource fluctuation has led to several explanatory models of social organization and intraregional relations. Thus, it has important consequences for a theoretical dissertation on Marpole economics and related lifeways. Since the Fraser River salmon runs would appear to be among the most important subsistence resources utilized during the Marpole culture type, to extend such models we should anticipate either major variation in year to year escapement or variation in some other variable affecting procurement.

Both Sneed (1971) and Kew (1976) have looked at the relationships of the Fraser River salmon run and human populations along its major drainage. That both document cyclical behaviour in yearly escapement figures is unquestionable. However, of major importance is not so much the fluctuations of the resource, but the number of spawners returning in a run, the number of species available at any one locale, and the nutritional value of the catch (see Sneed 1971: 231–232; Kew 1976: 4–6). When each of these aspects is investigated, the effect on subsistence pursuits of cyclical fluctuations in salmon populations in the lower Fraser and its approaches is seen to be less than substantial.

Kew (1976) provides us with the most explicit model of "salmon abundance" on the lower Fraser. In the Stalo/Halkomelem zone, all five salmon species were present, albeit in varying quantities. Estimating total poundage for a four year period between 1801 and 1804, he proposes a quadrennial range of between 27.12 million pounds per year and 186.41 million pounds per year. Moreover, these figures are considered to characterize a conservative model which ". . .if and where it errs it does so by underestimating sizes of runs" (1976: 5). If the smaller runs which pass through the Strait of Juan de Fuca destined for waterways other than the Fraser are added to these numbers, we see a pattern of abundance even in the lowest productivity year (in excess of 30 million pounds). As Kew and Sneed point out, however, this situation exists only in the lower Fraser watershed with areas beyond the Fraser Canyon more markedly affected.

Aside from relative abundance, the nutritional value of the salmon resource is highest in the lower Fraser and salt water zones as compared to upriver locales. In fact, since salmon stop feeding upon entering fresh water, there is a linear relationship between distance travelled and caloric value (see Kew 1976: 6). Simply put, the farther a catch is taken from the river mouth, the greater the number of fish required to meet subsistence needs. Sneed (1971) has taken these principles and shown that the salmon resource alone has high predictive value for population size (also see Donald and Mitchell 1975).

While it is one thing to argue for abundance even in low productivity years, it is another to argue for the ability to exploit this resource to its fullest. As Kew (1976: 9) has suggested, where the salmon are most abundant and of highest nutritional value, they also are the least accessible. We know that ethnographic peoples possessed sufficient technology for salmon harvesting in both salt and freshwater micro-environments. The extension of this knowledge back to the beginnings of the Marpole culture type, although not easily proven, is hypothesized.

Returning to the ethnographic exploitation patterns outlined by Mitchell, a more explicit review is necessary. Concerned with only those subtypes correlating with Marpole spatial boundaries, the major distinction is drawn between salmon procurement in salt water prior to the spawning run versus that in freshwater. It is, as Suttles (1951: 6) has observed, a division between those groups procuring salmon through means of a reef-net (Lxungeneng or Straits Salish) and those who do not (Halkomelem). It must also be pointed out that we are not dealing with a strict dichotomy of mainland versus island peoples and adaptations to associated environments. Rather, it is a more complicated relationship with the Fraser River entrance a prime focal point.

The intricacies of reef-net fishing are aptly described by Suttles (1951: 152–222) and, more recently, Stewart (1977: 93–94). Reef-net fishing is a highly cooperative venture requiring six to 12 individuals to work the nets, a minimum of three canoes and several additional onshore people to process the catch. Since the principles of reef-netting rely on tidal currents and passage restrictions, certain locales are better suited than others. Historically, several of the prime reef-netting stations were located on the extensive banks and shoals off of the Point Roberts uplands. These were owned and worked by prestigious family groupings (Suttles 1951: 202–215). In addition, reef-netting was ethnographically reported at several sites in the Gulf and San Juan Islands (Barnett 1955: 86; Suttles 1951: 154).

The major fishing technique for peoples of the lower Fraser is poorly documented. Most of these Halkomelem groups would appear to have moved seasonally upriver to Canyon locales where dip netting could be practised. However, since several archaeological sites on or near the mouth of the river seem to have been used as fishing stations (see Burley 1979b), we might suspect some other strategy in the precontact period. At least two possibilities exist. First, in that a number of the major down river sites are associated with small streams capable of supporting some kind of salmon run (Ham 1979, personal communication), a portion of the subsistence requirement could have

been obtained through weirs or traps. The size of these streams, nevertheless, seems to preclude the acquisition of the total need. The second possibility is the use of a trawl or bag net; a technique which, in principle, parallels the reef-net. In fact, Kew (1976) has suggested that it may have been the evolutionary predecessor of the reef-net. As its name implies, a bag type net would be spread between two canoes and held against the flow of the river. While requiring less cooperation than reef-netting, it remained a group effort.

Historically, a number of additional techniques for salmon procurement were used by Gulf of Georgia peoples. These include trolling by hook and line, basketry traps, harpooning and, possibly, gill netting. Barnett (1955:86) believes the latter to be a Euro-American introduction. These techniques, nevertheless, would appear to be subsidiary to reef and dip netting although each was applicable in varying environmental conditions.

It is not surprising that the Fraser River was a central factor in settlement subsistence strategies. While several groups of Straits speaking Salish gathered annually at Point Roberts to reef-net, Halkomelem speakers from both Vancouver Island and the northern mainland proceeded up the Fraser River to established village sites or fishing stations near the canyon. With regard to the relationships between the aggregation of these groups, it is interesting to note Duff's statements:

> Summer brought an abundance of salmon, and in their wake many hundreds of salt water Indians. Willingly or unwillingly, the Stalo had to share their river and its bounties with outsiders (1952: 25).

Despite the fact that it may have been unwilling, this population congregation must have encouraged activities beyond subsistence pursuits. At least one of major consequence was trade; a topic later discussed in detail.

Since the majority of equipment associated with fishing strategies are manufactured of perishable materials, from archaeological remains it is not readily determined whether Marpole peoples possessed a similar technological capacity. Certainly, the recovery of net fragments and wrapped sinkers from a preMarpole context at Musqueam (Borden 1976b: 247) suggests a major portion may have been present. This is supported by the relatively frequent occurrence at a number of Marpole sites of various sized sinkers, both perforated and grooved, as well as an assortment of needles, bodkins and miscellaneous tools for fibre preparation (see Stewart 1977: 79–80). Furthermore, expansive long occupied sites at Point Roberts (Whalen Farm and Beach Grove), at least by implication, argue for the early practice of reef-net or possibly drag-net fishing in this locale as was the historic case (but see Abbott 1961).

The presence of fish hook shanks and associated barbs in Marpole assemblages at False Narrows (Burley 1979a) suggests the presence of a salmon troll and it seems probable that most other historically reported salmon fishing techniques were known. There is one notable exception. As reported in previous discussions, within early to middle Marpole culture type assemblages composite harpoons are a rarity. While the unilaterally barbed form might be argued as an able substitute for most hunting pursuits, an alternative to those used in fishing has yet to be found. Since harpooning tends to be a solitary type of fishing strategy (Duff 1952: 67; Suttles 1951: 140–1), its absence could signify an emphasis on more cooperative ventures. Duff (1952: 67) lists harpooning as one of the major fishing techniques of upper Fraser River groups.

Turning to other fishing practices, with qualification, it may be hypothesized that those of the Marpole period differed little from the Coast Salish horizon. Most other food fish species have been reported in various faunal analyses including herring, eulachen, rock fish and sturgeon (see Casteel 1976; Boucher 1976). In addition to netting and trolling, it is thought that line and gorge fishing was practised due to a presence of bipointed bone objects with medial constrictions. Large unbarbed bone points may also have served as a centre prong in a leister. Aside from composite fish harpoons, the only other possible absence in fishing gear during Marpole is the herring rake. Herring rakes are paddle-like instruments up to 15 feet long which have sharp pointed teeth inserted in one end to impale their prey. Although the paddle is made of wood and subject to decay, bone unipoints were often employed as teeth (see Carlson 1960: 580). Occurring infrequently in Marpole collections, this implement is assumed absent. Of course, one cannot rule out the possibility of wooden instead of bone points to explain their scarcity.

Of the other major faunal resources, I have noted that the complete range of species exploited by ethnographic peoples was present in Marpole. Carlson (1960: 258) has argued that the abundance of chipped stone projectile points is indicative of a greater dependence on land mammal hunting for food; as a corollary, he implies a shift to ground stone implements in the more recent assemblage signifies the introduction or evolution of a maritime adaptation. While faunal data from the Marpole component at Helen Point supports this hypothesis (Boucher 1976: 114), quantified analyses of faunal remains are too few to fully substantiate this pattern.

At Glenrose Cannery, we find a marked increase in avian fauna at the beginning of the Marpole culture type (Imamoto 1976: 30). It is tempting to suggest that a more intense utilization of this resource correlates with the apparently sudden introduction of finely made barbed antler points. However, a number of alternative site specific explanations are available for the Glenrose materials and it is notable

that such an increased usage has not been documented elsewhere. Among these other possibilities are differential bone preservation between Marpole and earlier components (Matson 1976e: 295) as well as increased avian stocks in the vicinity of the site due to delta progradation. Further analyses are needed to clarify this situation.

To summarize thus far, I have argued that subsistence practices of the Marpole culture type roughly parallel those of the historic Coast Salish. Although a few differences are seen to be present in exploitive technology, there can be little doubt that a major variable in resource scheduling patterns was salmon. Further, when the spatial parameters of Marpole related sites are reviewed, they are found to fall primarily within the boundaries of ethnographic groups who relied heavily on the Fraser River runs and, subsequently, undertook regular migrations to sites in the vicinity of its mouth. Finally, I would question the idea of salmon run fluctuations being significant for cultures within the lower Fraser River economic zone and would prefer a model of salmon abundance after Kew (1976).

The argument for an analogous pattern of resource exploitation between Marpole and historic peoples does not necessarily mean a static settlement pattern over the past 2,500 years. Undoubtedly, there have been a number of developments necessitating shifts for local groups. Among these would be delta progradation, population increase and relations with extralocal cultures. Of the former, we know that delta development must have had a direct impact on foreshore resources and, hence, led to the abandonment of a number of sites. This is most probably the case at the Marpole site (Burley 1979b) and Glenrose Cannery. A second effect of delta progradation would be that of shifting migration paths for salmon entering the Fraser River. Many sites traditionally employed for salmon procurement and processing would probably become unsuitable. Although the consequences of this change are yet to be documented archaeologically, I suspect that future work in the Point Roberts area may shed light on the situation.

The measurement of population increase, external relations and subsequent effects on economic organization is not easily undertaken. Grabert and Larsen (1975), citing Dancey in personal communication, suggest a population boom on the Fraser Delta at roughly A.D. 1. To my knowledge, beyond what seems to be an increased site density for later periods, there is no supportive evidence for this assertion. If it did take place, however, we could expect splintering into new areas and reliance on new technological innovations. In part, this model might explain the introduction of such implements as the salmon harpoon and herring rake. On the other hand, these implements are reported in earlier contexts outside of Marpole boundaries and may be accounted for by alternative considerations.

Turning to aspects of economic organization beyond settlement pattern, from the available evidence it could be suggested that, as with the Coast Salish, Marpole culture had established part time specialists for a number of tasks. The distances travelled by localized groups are indicative of well made water craft and, given the presence of a fully developed woodworking technology, argue for the massive dugout canoes of historic times. Barnett (1955: 111) reports that, although any one could make a canoe, the knowledge involved was a jealously guarded secret with specialization tending to follow family lines.

Similar to the situation for specialists in canoe making is that of more generalized woodworking. Again, although everyone undoubtedly had some ability in this trade, "considerable training" was needed to be proficient, especially in the manufacture of elaborately carved items, boxes and household utensils (Barnett 1955: 107). Since, aboriginally, such implements were thought of as wealth, the exchange of these goods for subsistence resources would probably have been a widespread trait. As will be subsequently discussed, in that the wealth, prestige system has a notable presence in Marpole, we might once again project this pattern into the past.

It is slightly more difficult to argue for part time specialists in subsistence exploits, as was the case historically. However, given the assumed presence of woodworkers and canoe makers, it may not be unreasonable. In fact, the hunting of more aggressive fauna (i.e. bear) or less accessible species such as mountain goat may have demanded some form of specialization. Of course, the degree to which this occurred would be directly proportional to the demand for the commodity.

Finally, the stone sculpture complex in Marpole may have been, at least in part, the work of specialists. That is, since many of the figurine bowls and zoomorphic pendants seem to be related to the spiritual realm of Marpole culture discussed later, its production most probably required specialized knowledge or power. As well, the exotic nature of many raw materials suggests the finished products were undoubtedly viewed as wealth and status items. Again, economic incentives could have selected for specialization by individuals with known abilities.

A concluding aspect of Marpole economic organization which may be addressed is the sexual division of labour. Again, a reliance on, and analogy to, ethnographic information is necessary.

Division of labour within Coast Salish subsistence pursuits was not rigid. Suttles has stated that, while the task may be related to one specific sex, in several instances there were neither taboos nor norms against both sexes taking part. Of this relationship, he reports:

> Men hunted and fished while women gathered shellfish and vegetal foods and preserved the food brought in both by the men and by themselves. But women

> might also fish for some fishes, and men might help women in gathering and in some of the heavier work of preserving (Suttles 1951: 491).

In the realm of craft production and material goods, however, the division was somewhat more defined. In at least a few cases it was exclusive. For instance, Collins (1974: 180) has noted that a male who worked in basketry was likened to a "transvestite". Similarly, it would be highly improbable that women undertook extended efforts in stone working. On a general level, for major manufacturing industries:

> Men worked with wood, stone and bone, dressed skins and made nets. Women made baskets, mats, and blankets, sewed skins and worked with bark. Perhaps the only craft both sexes engaged in was the manufacture of cordage, though women may also have made nets (Suttles 1951: 491).

It is noteworthy that Suttles (1951: 492) has suggested women's crafts provided slightly greater amounts of "pure wealth" than those of men. Baskets, mats, blankets and skins could easily be converted into food resources through potlaching (indirect) or trade (direct). In addition, the labour involved in the preservation of winter food supplies was almost totally carried out by women. We may conclude, then, that the female role in Coast Salish society was one of important magnitude for the production of surplus and the maintenance of the wealth/prestige system in Salish culture.

There seems little reason to propose that the sexual division of labour in Marpole was, to any significant degree, different than the historic case. In particular, a similar range of domestic items is present in recent collections and, with the subsistence economy varying little, we must assume that food preservation was of equal import. The abundant frequencies of ground slate knives at a number of Marpole sites, and their supposed use in the preservation of salmon, would support such a case.

Socio-Political Organization

Of all cultural features, among those most difficult to delineate with archaeological data are aspects of socio-political organization. Here I refer to the major political units of society as well as social organizational principles including kinship and stratification. Unlike economic patterns, these traits are not readily inferred from the archaeological record (see Trigger 1968; Piggot 1959). Attempts to reconstruct such information have thus far met with extreme skepticism. In fact, it might be argued that many aspects of socio-political organization can never be delineated by the archaeologist and should be left to the ethnographer (in particular see Allen and Richardson 1971). Whether or not this is the case could long be debated (Binford 1972; Deetz 1968). However, if we are to progress beyond our theoretical nemesis, the pot sherd/projectile point syndrome, such attempts are worth continuing. With this rationale, the following discussion is tendered.

For historic Coast Salish, Suttles (1951: 271) sets off three basic units of society beyond the family – the household, the community and the tribe. While the former pair are fully accepted by the majority of Gulf of Georgia anthropologists, the concept of a tribe with "self" recognition is more contentious. Barnett (1955: 241), for instance, emphatically states "there was no tribe or state; hence, there were no offences against or loyalty to either". Similarly, Abbott (1972: 269) suggests that tribe may be employed only with certain "misgivings" and "qualifications". Specifically, it is not to be viewed as a politically integrative mechanism with a defined regulatory body. As Olsen (1936: 93) reports for the Quinault, it would be ". . .merely a loose aggregation of villages, without formal organization of any form of centralized authority, with nothing beyond territorial, cultural and linguistic unity to bind its members together".

Not only was there a lack of political organization on the tribal level, this appears to have been the case for the village (community). Coast Salish villages were composed of anywhere from one to several households which, in themselves, seem to have been autonomous. Despite this, it is clear that economic and social ties cross cut and bound village aggregates together.

A village chief *(siep* or *siem),* or that person holding most authority, was the headman of the wealthiest and most prestigious household (Jorgensen 1969: 281; Suttles 1951: 277; Collins 1974: 109). Even so, the position seemed to be more of a social functionary than political leader. His primary role was the organization of potlatches and feasts (Suttles 1951: 277). I suspect, however, such "chiefs" exerted more influence than actually reported due to their control over major resource locales (i.e. reef-netting stations, clam beds, camas patches).

The most integrated social unit above the nuclear family was the winter household. Of its members, Suttles (1951: 272) states:

> The winter household was capable of holding four or more families. Each family occupied a section of the house. Usually a section was the space between two posts on one side of the house. . . .Besides the nuclear family that were the permanent residents of the section, there might be more or less permanent guests. The number of people in each section might vary from a childless couple to more than a dozen people.

While Suttles' remarks refer specifically to Straits peoples, a similar situation is found in ethnographies of various other Coast Salish groups (Collins 1974: 16; Barnett 1955: 59; Duff 1952: 48).

From available ethnographic documentation, it is

possible to isolate three factors which seem to have bound together winter household units. While there exist no mandatory requisites for membership, each of these exerted varying degrees of influence. Here included are:

1) kinship variables – post nuptial residence tended towards patrilocality. The nucleus of each residence unit, therefore, would be related through the male line (Duff 1952: 79; Barnett 1955: 143; Suttles 1951: 273). Patrilocality, however, was not a hard and fast proscribed rule. Instances of bilocality or of residents unrelated to the household head are also known (see Suttles 1951: 345–346). Such flexibility in residence norms is an important trait and one used to illustrate mobility and family autonomy (Abbott 1972: 240).

2) social variables – in many respects, the winter household serves as the basic *social* unit of Salish society. That is, it was the central body for organization of feasts and potlatches. Since the status position of each group in the feast/potlatch complex was directly related to the prestige and wealth of its family and/or community leaders (Suttles 1951: 362–373), these traits might well be responsible for the attraction of new household members. Similarly, household heads with low status, in themselves, might discourage potential members from joining associated groups.

3) economic variables – in the past, economic motives have been considered as one of the least important factors in household composition (see Barnett 1955: 59). Individual nuclear families are reported as distinct economic entities responsible both for the acquisition and preparation of food resources (Suttles 1951: 272). However, food sharing between household members was both practised and expected, dependent upon availability. Further, food sharing was a virtuous act and one characteristic of nobility (Suttles 1960: 59). The ownership (control) of resource locales by household heads and the advantages accrued by aligning oneself with individuals of high position (i.e. redistribution of potlatch wealth), argue for a more corporate role for the household than presently maintained.

Historically, both winter villages and multifamilied households had a supplementary function, that of defence. This is manifest in fortification structures and "segmented house" forms at several sites (for examples see Suttles 1951: 322). Also, village exogamy was employed as a mechanism to ensure widespread defensive alliances. Thus, this pattern would have great effect upon household composition with a tendency for married females to originate in any number of distant locales. Moreover, Suttles (1951: 292) has suggested that, to gain maximal (defensive) spatial coverage, neighbouring communities might be "parcelled" out to individual households for specific marriage bonds. This could have been enhanced by the practice of polygyny of both normal and sororal forms.

The importance of intervillage ties through marriage would appear to have reasonable antiquity if we may take the integration of kinship terminology as a measure of time depth. Recognition of descent groups was bilateral with kin terms of the Hawaiian generational type. This was supported by a system of bilateral inheritance and primogeniture although well defined sexual differences in terms of type and amount of properties received did exist. The eldest male acquired title to resource locales (it was assumed to have been a shared family ownership), technological devices, control of elaborate ceremonial displays, family songs and prestige items. Daughters might inherit such wealth only when there were no surviving male relatives. Female inheritance, as far as may be determined, included incorporeal properties such as songs and dances as well as specific articles relating directly to female occupations (Barnett 1955: 251).

Although lacking discrete political organization, this system is cross cut and cemented by Coast Salish principles of social structure. As I have previously outlined, three definable classes are present, that of nobles, commoners and slaves. Between the former pair there existed a relatively fine dividing line and social mobility was possible to some extent. On the other hand, the slave class was distinct and unequivocal. Slaves were normally captives taken from neighbouring groups through raiding activities. Despite the fact that a slave's freedom might be gained by ransom or escape, the attached social stigma was irreversible not only for them but for future generations of their offspring.

The basis for Coast Salish stratification was, to a large measure, one of ascription. Individuals received status from their ancestry and inheritances including both resources and incorporeal property. The social personae of nobility was maintained and elevated within several formalized codes of behaviour and mandatory practices. The most notable of these has already been stated as the potlatch.

To recap the preceding description, it is necessary to reiterate that Coast Salish society was of a highly flexible nature. As with other hunter/gatherer populations, sociopolitical groupings were, at best, informally organized and fostered regional mobility. There is little evidence to substantiate the existence of a centralized political body beyond the winter household while, for all intents and purposes, it served as the basic social and economic unit. Even here, individual families tended to be distinct entities and, theoretically, were free to separate at their discretion. Widespread marriage alliances, bilateral kinship recognition and alternatives in post nuptial residence patterns illustrate the potential for economic and social autonomy on the family level. Finally, even though an ascribed ranking system was present, social mobility was possible.

Does this ethnographic pattern characterize the Marpole culture type? First, I believe there are few Northwest Coast

prehistorians who would presently question the postulate that a stratified society, similar to that of the historic period, was in existence during Marpole (see for instance Borden 1970: 101; Mitchell 1971: 54; Matson 1976e: 304). Marpole burial practices, reviewed in an earlier section, diagnostically include many interments with extensive grave goods. While several artifact types might be found, those most often associated are disc beads, dentalia, copper ornaments, stylized pendants and several items of a possible ritualistic nature. Since dentalia and copper are imported materials obtained through trade, they must be considered primitive valuables. Similarly, disc beads, pendants and many of the ceremonial goods represent extended labour investment and must also qualify as wealth beyond the subsistence base. Their combined presence in the mortuary subsystem and unequal distribution within burial populations strongly argue for differential ranking. This is further reinforced by the inclusion of females and subadults in the group with interred wealth (see Matson 1976e: 304; Tainter 1977: 332).

Peebles and Kus (1977: 431) have suggested that "ascribed" status cannot be proven simply on the basis of grave goods. Rather, one must show at least two independent levels of rank or class. Following Winters (1968), in an analysis of burials from the False Narrows site (Burley 1979a), relative values were assigned to specific grave associations and, thus, cumulative totals were derived for each burial. As tentative as such an approach may be, a comparative review of intrasite burials resulted in four separable categories of individuals. In turn, these seemed to represent two distinct social classes which mirrored the nobility/commoner groupings of the ethnographic period. Although I have yet to employ such a technique in populations outside of the False Narrows site, preliminary inspection of burial data from two other components, Beach Grove and the Hill site, illustrate a tendency toward the same pattern. Both samples are noted to have differential distribution of grave goods with a few interments including extreme wealth (D. Smith 1963; Haggerty and Hall 1976).

In other aspects of socio-political data, Marpole reconstructions are more tenuous and speculative. From the documentation of habitation features (see page 29.30) there is little doubt that the basic core of the settlement cycle, the multifamilied winter household, was in existence. Similarly, as I have already noted, integrated artistic and technologic traditions argue for a fairly widespread interaction sphere among Marpole peoples within the Gulf of Georgia. However, the degree of mobility, the level of family and household autonomy and possibly preferential marriage rules may have been considerably different. It is maintained that each has been affected to some degree by rapid culture change in the historic period. This culture change was stimulated by four consequences of Euro-American contact: population decimation; increased warfare; the introduction of a market economy, and increased interaction at trading posts by formerly dispersed aboriginal populations. It is postulated that the residuals of the former system are present in the ethnographic literature but the total integration of new characteristics has more or less relegated associated principles to societal ideals rather than requisites.

Population decimation in the immediate post contact era is well reported for regional cultures (Duff 1952, 1964). While a thorough review is unwarranted, Duff (1964: 39) marks a drop in Coast Salish peoples from 12,000 to 5,520 between 1835 and 1885. Since smallpox and fever epidemics were known to have occurred prior to 1835 (see Duff 1952: 28), it is possible to estimate a decline of well over 60 percent and possibly even as high as 75 percent. We may surmise that this situation necessitated radical adjustments both economically and socially.

At least two primary effects on subsistence patterns might be hypothesized. First, one would expect a substantial increase in the quantity and quality of available resources (for instance see Piddocke 1969: 242). Since many of the prime resources, including camas plots, clam beds and fishing stations, were controlled by families and usable only on permission, the decimation of not only families but complete villages would give access to subsistence goods previously unavailable. As a side effect, in that many subsistence pursuits were most efficiently undertaken by cooperation, one might anticipate an increase in competition among high ranking families for the services of lower order individuals. Thus, an intensification of prestige gaining practices such as the potlatch is an expected corollary and one which has been documented in the historic record (Dalton n.d.: 31; Barnett 1955: 256). As well, an amplification of slave raiding, both to increase wealth and manpower, may also be a direct consequence of competition.

The second postulated effect of decimation relates directly to preferential marriage norms and social interaction. The results on both of a 60 to 70 percent population loss can only be speculated upon. However, if the group from which one gets his wife and has extensive social exchange with is no longer in existence, of necessity he must go elsewhere. As a result, more widespread contact throughout the region must be anticipated. Further, such a situation would be strengthened by greater interaction of intraregional groups at fur trading posts. Should warfare as a result of competition be intensified, the necessity of defensive alliances might also select for extralocal marriage practices.

Of the Samish, Suttles (1951: 280) has reported:

> The local exogamy practised at least by the upper class in this area meant for a group as small as the Samish in the last half of the last century virtually tribal exogamy. Only one marriage of a Samish to a Samish is recorded in this table, and the woman had been married previously to a Klallam.

"Tribal exogamy" in a number of instances means linguistic exogamy (see Suttles 1951: 284, Table 2). Although it is possible that bilingualism and the Chinook jargon may have been present prehistorically to offset dialectic differences between husband and wife, I feel such marriage practices constitute a highly anomalous system (but see Abbott 1972: 270). For instance, if this interweb of marriage and social ties had been in existence for any length of time, then should we not expect a single homogeneous linguistic population within the region? To the contrary, virtually an opposite situation has occurred. With this being the case, I would hypothesize that, in a precontact context, marriage partners probably came from spatially contiguous groups thus leading to and supporting dialectic divergence. Such a marriage exchange network would also form a core group for social interaction and, conceivably, political organization.

In a similar manner, the possibility for several alternatives in Coast Salish post nuptial residence, on a theoretical plane, might be incongruent with other recorded traits. For example, Murdock (1949: 204) argues that bilocal residence should be correlated with parity between men and women in subsistence productivity. Ideally it would be manifest in strict *equality* of inheritance principles and status. From previous discussion, this is clearly shown not to be the case for Coast Salish. Sexual division of labour is far from strict but the settlement pattern is geared to the major subsistence exploits of males. As well, although there is a system of bilateral inheritance, females receive considerably less real property than males and are entitled to less prestigious names and ceremonies.

Polygyny, outside of the sororal form, is a culture trait totally at odds with bilocality and neolocality but favoured under conditions of patrilocality. Murdock states:

> Polygyny is relatively inconsistent with the individualism under neolocal residence and with the high and independent position of women under bilocal residence. . . .It is, however, particularly congenial to patrilocal residence, where women are isolated from their kinsmen and tend to be economically and socially inferior to men. Hence, anything which favors polygyny likewise favors the development of patrilocal residence (1949: 206).

Although one cannot fully outline the conditions favouring polygyny, the supplementary role of women in the preservation of salmon and other food stocks may well be a supportive factor. Moreover, I have already noted that, at least historically, women were producers of "pure wealth" in excess of that manufactured by males. It was the male, however, who acquired this wealth. Since both of these situations presumably existed in Marpole (preservation of food supplies and wealth), polygynous marriage practices may have a similar antiquity. Concomitantly, the option for bilocality could be argued as having more recent origins. In this light, it is interesting that Embers (1973: 179) has proposed that ". . .bilocal societies generally are societies that have recently been severely depopulated."

The final effect of European contact which may have had considerable influence on Coast Salish socio-political organization is the introduction of a wage labourer economy. Drucker (1939: 63) has suggested that a specific consequence of wage labour was an increase in social mobility. Individuals, who in a traditional setting had little opportunity, could amass extensive wealth for potlatching. This situation is most vividly described by Jenness (n.d., 58) for the Saanitch:

> . . . .when Europeans abolished slavery, furnished a labour market as open to the ex-slave and commoner as to the noble, and enabled one man to purchase with his year's wages as much food and goods as a whole village could have gathered previously in one year, then commoners and even ex-slaves began to rival the nobles in the numbers and magnificence of their potlatches, and to assume titles to which they had no legitimate claim. This inevitably led to much friction and jealousy, but the helpless nobles could no longer uphold their authority or stem the new economic and social currents that swirled around their doors.

Aside from increased social mobility, wage labour provided an alternative to aboriginal subsistence practices for slaves and commoners. Indeed, whereas this group may have been economically dependent upon the upper class in precontact times through the latter's control over primary resources (see Jenness n.d., 59), they now gained a considerable measure of autonomy. Consequently, the potential work force aligned with individual nobles would become even more depleted; therefore, once again, competition between high ranking individuals for this labour would be intensified.

To complete this discussion, a speculative model of socio-political organization is tendered. It must be emphasized that the current data base is inadequate to critically evaluate many of these inferences and, in a number of instances, it is recognized that evidence may never be collected for such an assessment. However, I do not intend a definitive statement on Marpole socio-political organization. Rather, I offer but a hypothetical model open to further interpretation and future modification.

Some degree of interaction must be expected of intra-regional Marpole peoples. In previous chapters I have noted the high degree of similarity between such dispersed Marpole

assemblages as False Narrows I, Cadboro Bay, Beach Grove and Marpole II. This similarity ranges from highly important functional categories including harpoons and barbed points to smaller items of ceremonial use and ornamentation (i.e. tear drop pendant form). I suspect that two key factors are responsible for the homogeneity. They are an exploitation of the Fraser River salmon fishery as argued previously (also see Burley 1979b) and a widespread trade network about to be discussed. However, the defined borders of the Marpole pattern do not parallel those of the Coast Salish province, and a more limited spatial extent is argued for. Moreover, this may have been combined with a tendency for less widespread marriage exchange and social intercourse. In essence, an antiquity for the regionalized kinship network so characteristic of historic peoples is questioned.

Despite the lack of seasonal documentation for most Marpole sites, I believe it safe to propose that a winter village based settlement pattern was in existence. Within these villages, as suggested earlier, multifamilied household units were present. The basis for household groupings, however, may well have differed from the historic pattern. First, since primary resource locales would have been more restricted and controlled by virtue of a greater population size, then economic motives come to the fore as influential variables. In conjunction, as Collier (1975: 50) has argued, the significance of descent based groups will increase as resources become scarce. Thus kinship principles, stimulated by economics, may have had a much greater effect on household composition. Whatever the case, it may be suggested that individual and family autonomy were considerably reduced if not totally absent. This coincides with more spatially limited marriage exchange networks.

There is no reason to assume that kinship principles have been drastically altered since Marpole times. A system of bilateral reckoning seems most probable with male primogeniture the basis for inheritance. Nevertheless, as I have already implied, the possibilities for post nuptial residence outside of the patrilocal household may not have been present. Again, this coincides with restricted autonomy. It must be emphasized that bilateral kinship and patrilocal residence are compatible and are present in many hunting and gathering systems (see Murdock 1949).

Finally, a system of ascribed ranks including at least two classes has been illustrated for the Marpole culture type. A third group, that of slaves, may also have been present. They are, however, yet to be identified archaeologically. It is further expected that, as was the historic case, the most noble lineage of a village, or, more particularly, its "head man", served as the leader. Since he also controlled the use of prime resource locales upon which lesser individuals depended, his role could have been something beyond that of a social functionary. Correspondent with this situation would be little social mobility between upper and commoner classes.

Intergroup Relations

While previous discussion, to a great extent, has overlapped with the theme of intergroup relations, here I wish to address three specific aspects: trade, warfare and the potlatch. Reconstructive interpretation again must be based on theoretical and ethnographic analogues. However, the degree to which this may apply varies considerably between topics. For instance, our present knowledge of extralocal materials in Marpole culture type sites provides a relatively supportive base for making direct inferences of exchange networks outside of the Gulf of Georgia. On the other hand, not only do we lack recognizable data on the potlatch, there has yet to be a study outlining the types of materials we should be searching for.

Trade

Within Coast Salish culture, and I believe it is extendable into the Marpole period, trading patterns may be analyzed from two basic levels. Overlapping to some degree, these include intraregional and extra-areal transactions. However, as will be pointed out, each may have played a slightly varied role in the development and maintenance of the local version of Northwest Coast culture.

Exchange on an intraregional level, because the basic materials are not foreign to a specific locale, is difficult to detect in the archaeological record. We know that for the Coast Salish at least three forms of commodities were being traded: subsistence goods; manufactured utilitarian items, and nonutilitarian objects encompassing what are best described as primitive valuables.

The importance of basic trade in everyday subsistence practices for the Coast Salish has been given little treatment in the ethnographic literature. However, it must be recognized as an extremely important aspect of their economic system and may have played an equal if not greater role prehistorically. For instance, not all intraregional village units had equal access to the wide range of coastal resources, yet, through trade, they were able to acquire a majority of the available subsistence commodities. This situation has been most aptly pointed out by Barnett (1955: 67–68):

> Eulachon ran in the Squamish and Homathko rivers but not elsewhere. The Comox and Pentlatch used the oil of this fish but had to obtain it by trade with groups to the north. The others did without it. No halibut to speak of were caught by the Tswasan, Squamish, or Klahuse. . . .Sockeye were not available to the Squamish, Klahuse, Sanetch or Nanaimo. These groups either did without them or made such seasonal shifts as the Sanetch made to obtain them. According to the Tswasan informant, there were no cod-fish near his village; otherwise cod-fish were

> known everywhere. Clams were at a premium near the mouth of the Fraser River for they could not live in the fresh water from Vancouver to Point Roberts.

Camas, the wild potato, specific types of rushes for basketry, lithic materials such as lignite and any number of other items might be added to this list.

It is probable that settlement pattern, at least to some extent, reduced the inequities in resource availability that have been itemized above. Still, if population boundaries and control over resource locales were more restrictive in the Marpole culture type as I have previously suggested, then we must anticipate a widespread exchange pattern.

Aside from raw materials, finished commodities of both a utilitarian and esoteric nature were exchanged intraregionally among Coast Salish groups. The development of part time specialists in woodworking, hunting and other occupations necessitated and supported this system.

Despite such a large scale trading network, post contact peoples lacked a formalized marketing system. Exchange seems to have been based on a system of generalized reciprocity. Nevertheless, it is notable that relatively large gatherings at major resource exploitation locales may have provided a market place-like atmosphere. This point has been implied by Barnett (1955: 68) when he described the situation at Lulu Island as a place where "all could fish and trade to mutual advantage."

It may be anticipated that marriage ties were of extreme importance in the maintenance of intraregional exchange patterns. In fact, in the long term, trade may prove to be the most powerful explanatory variable for the development of a bilateral kinship system. Sahlins (1972: 279) suggests that, in a pre-state society, trade is most likely to occur between relatives. Reciprocal exchange is based on moral codes of behaviour which, at times, necessitate the acceptance of "useless" materials in order to perpetuate the system (e.g., Sahlins 1972: 309–311). Moreover, since there appears to have been a lack of standardized exchange rates, it was necessary to trust the fairness of trading partners to eventually even out gross inequities of individual contractions. Only through kinship are such requisites assured.

Coast Salish extralocal trade, again, would appear to be of a linked reciprocal nature. Duff's (1952: 95) descriptions of Upper Stalo dealings with the upriver Thompson and downriver Coastal groups provides us with a classic example of such a model. This pattern might equally describe transactions during the Marpole culture type. He states:

> To the Thompsons they took dugout canoes, dried salmon, rush mats, and goat wool blankets. In return they received soopalalie oil, dried saskatoon berries and Indian hemp. The canoes, at least, were taken up at low water usually by people who had relatives or friends among the Thompson. For trade with downriver groups, dried salmon was the most important commodity, in return for which they obtained fish, wild potatoes, and sometimes seal skins.

Ideally, groups at the mouth of the Fraser would be linked to villages on the islands which, subsequently, traded to populations on the west coast. Partial effects (north/south and east/west) of this chain network are documented by Jorgenson (1969).

Direct evidence for trade outside of the Gulf of Georgia during the Marpole period has been cursorily dealt with in other discussions. To briefly recount, frequent recovery of Oregon obsidian, west coast dentalia, and Fraser Canyon nephrite and soapstone illustrate the intensity to which it was being practised. To this list we must also add copper although, as I have noted before, it tends to be a rare commodity and its source is unknown.

Aside from basic raw materials, it can be easily speculated that Marpole exchange with external populations incorporated such food resources as cited by Duff above as well as finished manufactured items. Nephrite adze blades out of the interior and basketry from the west coast may be prime contenders for the latter (Suttles 1951: 318). Further, there seems to be a strong possibility that items such as human and zoomorphic figurine bowls came into the region as a finished commodity (Duff 1956; Grabert and Larsen 1975).

It is difficult to determine exactly what Marpole peoples at the mouth of the Fraser may have been giving in return for such extralocal items. Since it is both possible and probable that a surplus of preserved foodstocks as salmon and clams were obtained, these may have formed the predominant basis (see Burley 1979a). In addition, it must be remembered that spatially, Marpole peoples were virtually "middle men" between the interior and the west coast. Such a commodity as dentalia, an extremely valuable item for many historic peoples (Luciw 1976), was traded for and passed on. The intervening increase in value from the western edge of the region until it reached the opposite periphery can only be speculated upon. A reverse situation existed for nephrite, soapstone and obsidian.

I have suggested that intraregional reciprocal exchange requires a formal code of conduct which is safely guaranteed through marriage alliances. While intermarriage could also have been the case of extralocal trade by Marpole groups on the periphery in dealing with adjacent peoples, an additional factor may have played a significant role. This factor is the mercantile element of the Northwest Coast, the Chinook. Immediately to the southeast of the Gulf of Georgia, it is possible that the Chinook controlled the majority of exchange in that direction. Consequently, this may have led to a standardization of exchange rates. Such a characteristic is a prime requisite in external reciprocity where one must deal with foreign elements (Sahlins 1972: 278).

The importance of exchange in nonutilitarian items and imported exotic materials to the development and maintenance of Marpole social organization is best left to a later discussion. Here, however, it must be noted that reciprocal exchange on both an intra- and extra-regional scope is difficult without such media. Specifically, Pires-Ferreira and Flannery (1976: 290; also see Rappaport 1968) argue that goods of this nature act as "systemic regulators" for exchange in utilitarian and subsistence materials. They provide alternatives for trade when one partner, temporarily, may not have a need or want for basic commodities being produced by the other. They insure future exchange relations. This trait could be particularly important for explaining external transactions in Marpole where marriage alliances may not be expected.

To summarize this discussion of possible exchange patterns and mechanisms during the Marpole culture type, I see two distinct levels. Intraregionally, trade is expected to have been intense and widespread. This was necessitated by the inequities of resource distribution and part time specialization. Marriage may have been the prime factor in this network. On an extraregional scope, we have definite evidence that materials from both the interior and west coast were being traded for and passed on in other directions. It is hypothesized that trade in utilitarian materials was maintained by trade for other nonutilitarian or exotic items. The mechanics of both intraregional and extralocal transactions are assumed to have been of a linked reciprocal nature although the possibilities of Chinookan entrepreneurs cannot be ruled out.

Warfare

We have no substantive archaeological evidence, either from burial populations or physical structures, for large scale warfare during Marpole. However, historic Coast Salish culture was permeated with intervillage conflict, raiding for slaves and looting (Barnett 1955: 266–267; Duff 1952: 96; Suttles 1951: 319–324) and is illustrated by such protective structures as trench embankments and segmented houses as well as widespread marriage alliances for defense. Whether this pattern may be extended back into the Marpole culture type must be assessed.

Historically, the most apparent enemy of the Coast Salish was the southern Kwakiutl. Despite the fact that this conflict may have considerable antiquity, its magnitude would appear to be intensified in the historic period. First and foremost, the introduction of firearms is expected to have significantly altered the outcome of traditional warfare practices. Earlier I have cited the example of Kwakiutl displacement of Comox speakers as an ethnographic case of population replacement. Without denigrating the usefulness of this situation to illustrate the potential for population fluidity, the apparent ease with which it occurred may be related to the superior position of the Kwakiutl by virtue of their possession of guns (Duff 1964: 59). Similarly, Suttles (1951: 320) suggests that slave raids by southern Kwakiutl may have been a serious threat only after they obtained firearms. The devastation which could now be wreaked by even the smallest of war parties must have provided a compounding effect of reprisal after reprisal.

A second possibility that may have led to increased conflict in the post contact period has been outlined by Collins (1974: 140). She states:

> Because of trading posts, notably Victoria (which was founded in 1848), the northern peoples, such as the Haida, Kwakiutl and Tsimshian were drawn more frequently into the Gulf of Georgia and Puget Sound than ever before. These trips often combined raiding with trading or working.

Trading posts would not only provide an incentive for movements south and, consequently, slave raiding, but undoubtedly brought together in face to face contact traditional enemies and foreigners. The net result could be little other than aggravated friction.

Aside from increased conflict with groups outside of the Gulf of Georgia, Coast Salish intervillage feuding also may have been amplified. Again, the situation of increased contacts at trading posts and other centres could have served as a prime stimulant. In addition, I have earlier suggested that, following population decimation and the introduction of alternatives to the subsistence economy, a heightening of competition for the available labour force may well have been established between high ranking individuals. In itself, this provides at least two major incentives for slave raiding. On the one hand, slaves were wealth and so increased a noble's prestige. On the other, they added to the working population under one's command and, indirectly, helped to gain greater surpluses or ensure adequate productivity.

Collins (1974: 43) has suggested that, once begun, blood feuding among the Skagit was difficult to stop due to a lack of internal conflict control mechanisms. More important, the social controls which were present began to break down when alternatives to traditional lifeways were available for the younger generations. In particular, the influence of elders was considerably lessened. I believe this situation probably characterizes the Coast Salish province as a whole.

From the preceding discussion I do not wish to give the impression that either external warfare or feuding was absent during Marpole. Rather, the intention has been to simply illustrate the problems of accepting a direct analogy. Still, if we assume less mobility throughout the region and less familial and individual autonomy, then less conflict would be an expected correlate. Of course, if a displacement model for the origins of Marpole is proven, by its

nature it implies a certain degree of conflict. Since aggression may be expressible in the archaeological record in a number of forms (i.e. osteological remains, defensive features), further research could answer the basic questions posed here. At the least, it might serve to stimulate additional hypotheses of Marpole and historic Coast Salish culture change.

Potlatch

As Drucker (1965: 55) has defined it, a potlatch is "a ceremonial given by a chief and his group, as hosts, to guests composed of another chief or chiefs with their respective groups, at which the guests were given wealth goods". Potlatches differ from feasts by the distribution of materials other than food items (ibid.). To further extend this definition, a potlatch is considered to be a formalized exchange of wealth between specified component groups in ceremonial recognition of major rites of passage, life crises, inheritance and similar events.

Of all topics in Northwest Coast anthropology, the potlatch has received the most concentrated scrutiny. Several relatively diverse frameworks are now proposed to explain both its function and systemic integration into regional adaptations. While an assessment of each is beyond the scope of this study, the widespread acceptance of a functionalist-ecological model by many Northwest prehistorians necessitates at least a cursory review.

The functional-ecological model, originating with Suttles (1960) and followed by Vayda (1961), Piddocke (1969) and Donald and Mitchell (1975), views the Northwest Coast resource base not as one of extreme abundance, but extreme abundance at unpredictable intervals. It is marked by fluctuations in certain key subsistence variables which are expected to have had a profound effect on indigenous cultures. In this light, the potlatch is argued to be a major mechanism of redistribution whereby surplus foodstocks in times of plenty are converted into wealth and ceremoniously given away. This act restores the purchasing power, so to speak, of other communities who may be undergoing hardship or low points in their subsistence cycle. For the host, status is gained and there is an assurance of participation in future potlatches given by his guests. Suttles (1960: 304) best describes the workings of this system as one enabling "the whole social network, consisting of a number of communities, to maintain a high level of food production and to equalize its food consumption both within and among communities".

Although the potlatch, in historic times, may have actually been a major means for equalization of productivity among Coast Salish communities, when one attempts to argue that its origins lie totally in a cultural system's adaptive response to fluctuating environmental factors, certain questions arise. I have already proposed that, for groups dependent upon the mainstream Fraser River salmon runs, the influence of fluctuations from this particular resource would be negligible. If there are major effects, they will occur in peripheral locales where subsistence patterns are centred around smaller runs with less numbers of species. Moreover, if escapement trends reported by Donald and Mitchell (1975: 332) for southern Kwakiutl territory may be extended southward, it is argued that the lower the median salmon escapement, the greater the fluctuation from year to year. It would follow that those who have the resource locales best suited for surplus production also have the most predictable resource base. Conversely, those within areas of low resource potential are the most susceptible to fluctuations.

For the potlatch to have originated as a specific cultural adaptation to fluctuating environmental variables, it must be assumed that if a hypothetical Group A is experiencing a low point, a Group B is producing a surplus. Group A may then cash in on "banked" status, receive wealth and eventually trade for subsistence goods. The situation described above, however, suggests that if Group A is in a high productivity zone and Group B is in a more marginal region, then it is improbable that Group B will ever turn a surplus sufficient to offset fluctuations which may be affecting Group A. Further corroboration is present by the direct correlation of salmon productivity and population size (Sneed 1971; Donald and Mitchell 1975). With such a situation being the case, the motives for Group A's participation in the potlatch system could hardly be the expectation (either recognized or not) of some future equalization payment. In effect, Group A's involvement would be altruistic unless, of course, Group B's resource pool included commodities unavailable in Group A territory. If the latter, then reciprocal exchange and associated processes would be supporting this pattern.

To relate this to the Marpole culture type, I must first argue that it is a faulty assumption to suggest a direct correlation between resource fluctuation and the presence of the potlatch. In essence, while year to year salmon productivity in Marpole may have been irregular, the potlatch as a means of redistribution is not a necessary requisite. If the potlatch were present, I suspect it may have been in a less extreme form. Perhaps its origin lay in a simple feast associated with the redistribution of productivity to those who directly partook in the acquisition of surplus (Langdon 1976). Equally plausible, it may be tied to the development of a reciprocal exchange network for trade.

Although positive archaeological data to support this position are lacking, it is proposed that the inclusion of wealth in burial practices may be contrary to the principles of the potlatch. The potlatch, as delineated by Drucker (1965: 55), tended to be a corporate event on

either a household or village level. A successful host not only enhanced his position but also that of his extended family and associated others. To take potlatch wealth out of the system by interment in mortuary practices would undoubtedly have some effect on a group's position by jeopardizing its future ability to potlatch. In this regard, it is notable that grave inclusion of any consequence were all but absent in Coast Salish burial practices. However, such a hypothesis would be applicable only to a precontact and early historic situation where available wealth was more restricted. With a possibility for massive accumulation of Euro-American goods through the fur trade and wage labour, a loss of valuables could easily be recouped. Also, as Barnett (1955: 256) notes, the system becomes so hypertrophied in the late historic context that a rationale for its existence is difficult if not impossible to determine.

To briefly summarize, although the possibilities for a potlatch type ceremony during the Marpole culture type cannot be ruled out, if it were present, I would suggest it to have somewhat of an altered form and a more restricted scale. Further, despite the fact that a functional-ecological model may adequately explain the potlatch in its historic context, it is suggested that such a model may not fully account for potlatch origins. Consequently, a direct correlation between fluctuations in subsistence resources and the presence of a redistributive potlatch is not a requisite. Finally, the interment of wealth in burial practices of the Marpole culture type is seen to be contradictory to the general maintenance of a precontact potlatch system.

Ritual Behaviour

Driver and Massey (1957), among others (Sahlins 1958; White 1959; Jorgenson 1969), have suggested that culture change should first be manifest in economics and technology, second in social organization and only third in ritualistic and religious behaviour. By virtue of such an evolutionary process, we might expect Coast Salish ceremonialism to reflect that of the Marpole culture type. At the least, it serves as an interpretive model from which analogous practices may be inferred through similar material culture associations.

The basis of Coast Salish ritualism lay in the possession of a spirit power (Suttles 1951: 327–397; Jenness 1955: 48–64). Power might come in some unexpected manner or be specifically sought after in a vision quest. A spirit could be derived from any number of inanimate objects, living things, mythological beings or forces of nature. Normally, acquisition of power brought with it a spirit song and sometimes a related dance. Dependent upon one's spirit, special abilities might also be instilled. Consequently, spirits and specialization would tend to be correlated (Jenness 1955: 50–56). Suttles (1951: 330), for example, notes the association of a wolf spirit with deer hunting and a blackfish (killer whale) spirit with capturing sea mammals. Also, as I have previously mentioned, within individual trades such as woodworking, special powers were not only desired but sometimes mandatory.

There appear to have been two qualities of spirits, those associated with the layman and those of the shaman. Shaman power always had an associated song and was stronger than that of the nonshaman. Shamans had the abilities to grasp souls, cure sickness through disease extraction, communicate with ghosts, provide spells, or see distant objects and events. Shaman power was both revered and feared. Those with excessive power would be given segregated living quarters outside of the household to which they belonged. Although the majority of shamans were men, certain women might also gain this power.

The expression of Coast Salish ritualism took place on two basic levels. The first, that of day to day acts and major rites of passage, was dominated by ritual cleansing and purification. The "smell of humanity" was offensive to most spirits and had to be scrubbed away (Suttles 1951: 327–328). In a similar fashion, the undertaking of individual acts might be associated with sexual abstension, food taboos and the like.

The second significant level of ritualistic behaviour comes in the form of winter ceremonials. During the winter months when major subsistence exploits were at a minimum, a person's spirit "welled up" inside him creating an outburst of song and dance (Jenness 1955: 41). Should this not be expressed in a proper manner, it would be dangerous to the health. Spirit dancing, although impromptu in the sense of formal organization, was carried out on the majority of winter nights with ever changing hosts. Among most Coast Salish groups, dancers required a specific knowledge and initiation ceremonial (Jorgenson 1969: Appendix C).

The concept of power and the association of ability and particular spirits may possibly be seen in the Marpole artistic tradition. Art not only has an aesthetic value but is symbolic representation. Thus, zoomorphic realism in Marpole may be one person's statement of spirit power, charms to influence some future act, or objects associated with a particular ritual. For instance, ethnographically the artistic expression of a salmon serves to illustrate this point. It might represent a spirit power derived from the dogfish or sockeye (Jenness 1955: 53); it could be meant to affect the outcome of a fishing expedition; or, perhaps, it is related to the first salmon ceremony (Suttles 1951: 172). Of course, it could be any combination of the three. It is noteworthy that the salmon head is a conspicuous Marpole motif (see Burley 1979a).

To provide a more specific example of a possible power association during Marpole, we may refer to a single burial from the False Narrows site (Burley 1979a). This individual is an adolescent (?) male interred with a variety

of wealth items. Since wealth reflects status, it may be assumed that the individual had a consequential position in the social hierarchy. Among the grave goods are what has been interpreted as whale bone armour and an elaborate lignite pendant representative of a beetle. The protection or covering of the armour seems analogous to the hard shell of the beetle. Both could be indicative of warrior power.

This particular burial, although other examples could be cited from within the False Narrows population, seems to provide a link between power and wealth. Such an association is characteristic of the Coast Salish and explicitly described by Suttles (1976: 8):

> The value of the vision, the ritual word and the ancestors was reflected in wealth. In native theory, they were responsible for one's having wealth and so having wealth demonstrated their presence and efficacy.

Wealth, in the form of beads, pendants, art and so on were ". . .social announcements, statements of power addressed to the members of the community and, possibly, to all the animate and inanimate powers that permeate the Salish world view" (Stryd 1976: 18). Barnett (1955: 76) supports this position when he notes that body ornaments were not part of everyday dress but were worn only on ceremonial occasions.

The decorative art of Marpole, at least that found on harpoons, clubs, hafts and a host of other functional implements, must also be interpreted as statements of power. As Stryd (1976: 18) has suggested for interior Salishan art, "these decorations transfer the supernatural powers of the owner to the tool and the tool uses that power to function better or to make a greater impact on its surroundings". A stone fish club from False Narrows, in the design of a seal, could be indicative of such a transference (Burley 1979a). Similarly, three harpoon points from the Marpole site are decorated with varying forms of sea animals (Smith 1903: 183) whose supernatural abilities may have provided aid in sea mammal hunting.

On a less abstract level, specific inferences of Marpole ceremonial and ritualistic practices may be drawn. They are based on a common presence of idio-technic items with Coast Salish culture. Among the most important of these is the stone bowl complex and, in particular, the seated human figurine bowl. Duff (1956: 56–59) outlines several possible uses and meanings of these implements as suggested to him by informants. All, however, associate it with spirit power, the shaman and water. The water served as a medium for the seer(ess), purification and curing. Both Borden (1950: 23) and Mitchell (1971: 54) liken the "starved appearance and frequently upturned face and open mouth" on many of the receptacles to a supernatural being among the Kwakiutl, the *Tso noqua.* Mitchell (citing Harris 1901) points out that a similar cannibal ogress was present for the Coast Salish.

The lack of recorded provenience for the majority of figurine bowls (Duff 1956: 42–43) prohibits conclusive statements as to meaning in a prehistoric Marpole context. One, a specimen recovered from the Marpole site, was seated atop a burial cairn (Hill-Tout 1948) while several others of interior origin are reported as grave goods (Stryd 1976). The above interpretations, therefore, gain some measure of credence.

Suttles (1976: 21) has suggested that scallop shell rattles may be part of the ritual paraphernalia of the *sxwayxwey* dancer. Since rattles are found within interior plateau prehistoric assemblages, he goes on to argue for the *sxwayxwey* presence in a precontact situation. Scallop shell rattles are also known from Marpole components at False Narrows (Burley 1979a) and Beach Grove (Abbott 1961) and could illustrate a similar dancing society. Interestingly, Barnett (1955: 278) argues that the *sxwayxwey* diffused outward from the mouth of the Fraser River, thereby suggesting it to be a local development. We might now add time depth to this ceremony. The *sxwayxwey* is a ritual cleansing or purification performance (see Suttles 1976: 20–21).

A variety of other objects associated with ceremonial activities are frequent occurrences in Marpole culture type collections. Sucking or drinking tubes are ritualistic implements used by both males and females to protect their teeth during the transition into puberty (Barnett 1955: 151, 167). Dentalia headresses, a possible example of which might be present in a female burial at the False Narrows site, are reported to have been worn by menstruating women. Graphite and ochre have a widespread employment in the ethnographic period as paint for a large number of dances and ceremonies and, again, they are abundantly found in Marpole collections. Possibly the only major class of implement which I take to be of a ceremonial nature in Marpole that does not appear to have a counterpart in Coast Salish culture is that of the large well made chipped stone biface. Their frequent occurrence as burial goods and the exotic nature of most base materials suggest a significance beyond functional or aesthetic qualities. Furthermore, similar implements were ceremoniously used by historic Californian groups for ritual purposes and wealth (Kroeber 1951).

That a major similarity in religious practice between Marpole and recent times exists is, I believe, indisputable. This hypothesis is based on continuity of style and symbolism. However, we may note at least one primary difference, the implications of which are presently unknown. This difference lay in the form of mortuary practices. Whereas a variety of subsurface midden interments (box, pit, cairn) characterize the Marpole period, surface inhumation in burial houses, canoes, boxes and/or trees is the predomin-

ant ethnographic Coast Salish practice (for general descriptions see Suttles 1951; Duff 1952; Yarrow 1880; Barnett 1955; Haeberlin and Gunther 1930). Moreover, I have reported that the lavish display of wealth interred with some individuals in Marpole has a temporal distribution limited to that culture type. Whether such a shift mirrors a change in religious belief in the nature of afterlife or soul cannot be answered. Nevertheless, a possible explanation for the lack of historic grave goods might well be found in the growing importance of wealth within the corporate group, the ability to potlatch.

MARPOLE AND ITS IMPORTANCE IN THE DEVELOPMENT OF THE NORTHWEST COAST PATTERN WITHIN THE GULF OF GEORGIA

Interpretations of the Marpole culture type have focused thus far on a totally synchronic perspective. In only a few cases have I approached the developmental problems associated with individual cultural traits. Moreover, the position of Marpole in the evolution of the Gulf of Georgia variant of Northwest Coast culture, beyond a strict culture historical framework, has yet to be addressed. This final section, therefore, brings together many of the disjointed discussions of previous chapters into a, hopefully, coherent structural model. For the most part, it is a theoretical dissertation on the cultural origins of Marpole. Since preceding arguments have suggested a close analogy between Marpole and Coast Salish cultures, it also reflects upon the evolution of the ethnographic pattern.

In a general sense, few researchers would argue against a thesis that the exploitation of salmon stocks is intricately tied into the development of complex societies on the Northwest Coast. The surplus potential of this resource allowed for cultural characteristics normally associated with chiefdoms to develop and take root in a strict hunting and gathering economic sphere. Included within this list would be ascribed principles of social stratification, semi-sedentary villages, relatively large population aggregates and part time specialization (see Fladmark 1975 for an elaboration).

Whereas the importance of salmon reserves is a given, the processes by which the associated cultural developments arose are currently under scrutiny. The issue to be addressed is that of a transition from a generalized hunting and gathering subsistence strategy to a specialized format heavily dependent upon the production and preservation of a surplus in the salmon resource. The former pattern incorporates a highly mobile settlement pattern strategy attuned to the interception and exploitation of individual resources during climax points in their yearly cycle. While some food resources may contribute to the economic base more than others, no single factor dominates resource scheduling. On the other hand, the specialized hunter and gatherer needs to expend greater effort and time in the procurement of one single resource, hence interrupting the possible utilization of others. In turn, this would lead to semisedentism and population aggregation for cooperative efforts.

Salmon surpluses are meaningless without the technological capabilities to store away winter food supplies. Obviously, there could not be a transition from generalized to specialized pursuits without the presence of a preservation and storage technology. Whether this technology has prevailed on the coast from time immemorial is a point of controversy for present day theoreticians. On the one hand, it is argued that immediately following the attainment of climax productivity in the salmon resource, indigenous cultures automatically made the shift with "little or no adjustment" in exploitative technology (Fladmark 1975: 296; also Langdon 1976). On the other, it has been suggested that the mere presence of the resource in a climax state is not the important variable; it is the incentive for gathering larger amounts and the necessary development of a preservational technology (Schalk 1977: 235–237). Storage strategies are not viewed as simple techniques automatically associated with all post Pleistocene technological inventories.

Turning to more specific terms of reference, we are able to frame the major differences between the Locarno Beach and Marpole culture types in the perspective of generalized versus specialized hunting and gathering systems. Such a model is not without precedent in the Gulf of Georgia region. Matson, in this manner (1976e: 299–305), chose to view pre-Marpole and Marpole components at the Glenrose Cannery site to facilitate his adaptation and cultural reconstructions. A similar construct has been employed in an interpretation of the early component (Marpole I) at the Marpole site (Burley 1979b).

While it is redundant to reiterate the cultural traits present in the Marpole culture type which qualify it as a specialized pattern, some clarification of the Locarno Beach case is necessary. Despite the fact that much less data are available on the Locarno Beach period than for Marpole, several lines of evidence suggest a more frequently mobile hunting and gathering strategy with salmon procurement of less import than in later culture types. Of its known site distribution alone, Mitchell (1971: 57–58) concludes that "the locations of sites so far attributable to this type, do not, at present, suggest the populations had direct access to the Fraser River salmon runs in the river itself, although some sites are located along the saltwater approaches from the south." Borden (1968a, 1970) also points this out by suggesting that Locarno Beach peoples

may have been more "maritime oriented" with greater emphasis on sea mammal hunting than their historic counterparts. Concomitantly, Borden (1968: 18) advocates a Gulf Islands focal point for Locarno Beach with but seasonal movements to the Fraser River mouth.

The full documentation of a generalized economic base in Locarno Beach must await a larger data pool and controlled faunal analyses. Unfortunately, the presence/absence faunal trait lists provided in presently analyzed Locarno Beach components (Haggarty and Sendey 1976; McMurdo 1974; Mitchell 1971) do not allow a quantified comparison of food resources. The gross pattern, however, seems to be one of increasing emphasis on fishing through time with exploitation of other faunal resources becoming less important (Boucher 1976; Boehm 1973). This difference in subsistence exploits between preMarpole and Marpole populations may be reflected in a study of local skeletal populations by Beattie (1978, personal communication). Specifically, he has identified a sudden rise in the occurrence of an anemic condition in adult individuals of the latter sample. This trait, *cribra orbitalia*, tends to be associated with dietary deficiencies (Cybulski 1977b) and might be explained by a more intensive exploitation of fewer resources in a specialized hunting and gathering context.

The preceding discussion does not mean to denigrate the role of salmon in the subsistence exploits of Locarno Beach peoples. Undoubtedly this resource was an integral part of their adaptive strategy (for example, see Matson 1976e) and motivated seasonal movements for its procurement. Rather, it simply suggests that *intensive* specialization had not yet occurred in the face of climax productivity. This would be contrary to the arguments for specialization as the inevitable consequence of putative surpluses. Therefore, we must turn to some other factor which provided the stimulant for a transition.

Schalk (1977) has suggested that the alternative explanation lies in the expansion of a preservational technology. Applying this to the Gulf of Georgia region, I would suggest that, although the potential for storage may have been present during the Locarno Beach culture type, it had yet to be fully developed. The improvements in post Locarno Beach times seem to be documented through an introduction of the thin ground slate fish knife. Slate knives are known to be important historically for the scoring of fillets in the wind drying of salmon (Stewart 1977: 138). They provide a lengthy and consistent cutting edge and are easily curated. The curation aspect is all important when looking at the possibilities for functionally analogous implements based on chipped stone and possibly shell (see for example Hayden 1978: 31). Furthermore, ground slate knives are probably not the stimulating causal agent, but only a signal for the full development of the ethnographically recorded drying technique which is conducive to massive processing. It does, nevertheless, seem consequential that ground slate knives and intensive specialization co-occur.

With the ability to preserve surplus stocks of salmon, it is argued that the basis for other major cultural traits was laid. In part utilizing the developmental models proposed by Schalk (1977) and Langdon (1976), a theoretical framework may be proposed. Figure 14 illustrates this evolution.

1) The technological requirements of catching and storing surplus stocks of salmon at the mouth of the Fraser River in particular and throughout the Gulf of Georgia in general require cooperative efforts. The system is self supporting in that prepared reserves allow for greater population aggregation and a semisedentary settlement pattern.
2) Manifest in a cooperative effort would be greater complexity of labour organization and the origins of a centralized head (Schalk 1977: 237). This leader could serve several group functions including regulation of labour expenditure, control over resource locales and redistribution of productivity. Of the latter, we might predict the act itself to be the immediate progenitor of the historic potlatch.
3) The most obvious unit of production and cooperation would be the extended family. Thus, it may be possible to postulate a shift in social organization from a nuclear family based socio-economic unit to that dependent upon ties in the male line. These ties are reinforced by the formalization of inheritance principles whereby males receive the majority of corporeal property. Inheritance rules insure the ordered transference of resource procurement locales and technology (see Langdon 1976: 26; Collier 1975: 50).
4) With an enlargement of the corporate group and patrilocal residence patterns, given the technology for production, large scale multifamilied plank houses would be a simple step.
5) When preserved surpluses escalate beyond that necessary to maintain subsistence needs, we should expect a more widespread trading pattern in non-utilitarian or primitive wealth items. The procurement of these materials by the group leader would tend to enhance his position *vis à vis* other members. In essence, they provide the visual basis for social differentiation and stratification (see Dalton 1975; Pires-Ferreira and Flannery 1976).
6) A secondary effect of surplus beyond subsistence needs would be the possibilities for craft specialization. Excess subsistence commodities would now be turned into wealth objects and, hence, select for the best goods produced by the most skilled individuals. Subsequently, a concentration and perfection of efforts by those individuals, to the detriment of generalized subsistence activities, may have occurred. Thus, the proliferation of an

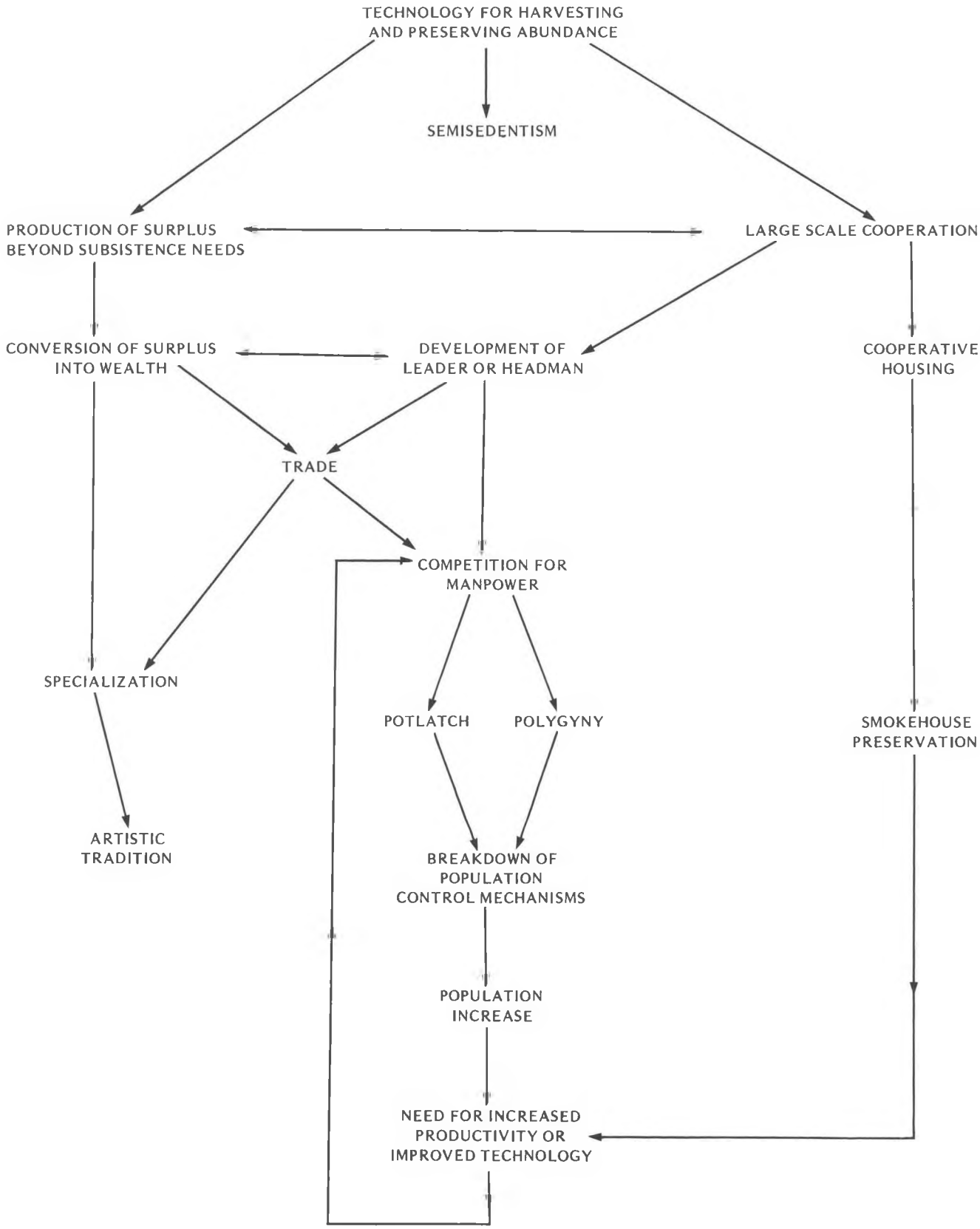


Figure 14. Schematic Illustration for the Development of a Gulf of Georgia Variant of the Northwest Coast Cultural Pattern.

artistic tradition in Marpole may be a direct consequence. It is an interesting parallel that both McGhee (1975) and Wolfe (1969) find a correlation between art production and tendency toward sedentism; the latter a development argued for in the present model.

7) Increasing social stratification and increasing potential for wealth would serve as a stimulant for the production of a greater surplus.

8) The incentives for greater production may affect technological innovations (Schalk 1977: 235). Although undocumented, the development of the reef-net from drag-netting (Kew 1976) could eventually be tied to this interval. Additionally, improvements in preservational technology may have been instigated. As Suttles (1951: 260) has suggested, there may well be a historical link between the smoke house and multifamilied plank dwellings. Smoking preservation in itself is a revolutionary introduction in that weather exigencies could now be negated.

9) A second means by which surplus production could be increased is to enlarge the corporate group size. Polygynous marriage practices are able to accomplish such an expansion without threatening the kinship basis of the productive unit. It is noteworthy that control of wealth by males selects for this trait (Murdock 1949). The possibilities for outside labour as a means of expansion also cannot be ruled out. The recognition of bilateral kin has been argued by Langdon (1976: 27) as one way of ensuring adequate workers. Possibly a more formalized development of the potlatch served as the means of competition both for an expanded labour force and marriage exchange.

10) At some point in this evolutionary process, we might expect a general population increase as Grabert and Larsen (1975) have anticipated. Any number of factors in combination could potentially be responsible. Lee (1968) has suggested that reduced mobility allows for females in hunting and gathering societies to decrease the period of time between births. Possibly a more predictable resource base may have cut down on the rate of infant and child mortality than previously was the case (note it is not a more nutritional diet). Finally, given the incentive to have a larger group size, there may have been some breakdown in cultural population controls such as sexual abstinence for long periods after birth, lengthy periods of lactation, infanticide and the like (see Hayden 1972).

11) Finally, this pattern is expected to have spiralled upon itself until some equilibrium point is accomplished. This may have come about either by the attainment of a maximal ratio of group size to production or population pressure on the primary resource locales. It is at this stage whereby splintering into less productive zones would occur. It may also document the end of the Marpole culture type.

The preceding model, while suggesting how things came about, does little to answer the question why. If one accepts a continuity model and views the differences between Locarno Beach and Marpole as analogous to those of generalized versus specialized hunting and gathering patterns, then it becomes mandatory to account for the sudden transition. To date, the only formalized hypothesis for Locarno Beach to Marpole culture change is Mitchell's (1971) "environmental pressure" model. As I have earlier reported, he suggests that the shift from a warm hypsithermal environment to the cooler and moister post glacial meant a lessening of the subsistence base, forcing a greater reliance on salmon stocks. Primary resources which were affected include oak and camas "crops" with a lesser amount of influence on the deer and wapiti populations. The data, however, do not support this hypothesis. If, in fact, there was a hypsithermal, and Mathewes (1973) argues there was not, its terminus would predate the origins of Marpole by some 600 years (Heusser 1960). Moreover, to produce such seemingly instantaneous culture change, the transition must have been both sudden and catastrophic. This does not seem to be the case.

One cannot rule out the possibilities of some basic single element or complex of traits diffusing into the region which, in turn, set the transitional wheels in motion. Schalk (1977: 235) has suggested that the motivation for and implementation of a storage technology probably occurred in areas where salmon runs would be of short but intense duration, such as the northern latitudes. We might expect, therefore, a parallel development outside of the Gulf of Georgia prior to Marpole which may have had a significant impact (see Langdon 1976 for a discussion of the Nootkan case). However, the possible effects upon local populations are yet to be measured. In addition, diffusion is not a rationale but a historical record. The acceptance of a specific trait or complex must be explained in a local context.

Because there is difficulty linking Locarno Beach to Marpole in a theoretical developmental scheme, the possibilities for population displacement must again be considered. In fact, earlier suggestions by Borden (1968a) that Marpole could have originated on the periphery of the Gulf of Georgia region at the entrance to the Fraser Canyon has merit. For instance, thin slate knives and, presumably, the techniques of wind drying salmon may have been present in that locale as early as the Eayem phase (*circa* 3,500 – 1,500 B.C.) and most definitely are associated with Baldwin (*circa* 1,000 – 350 B.C.) (Borden 1968a: 14–15). Concomitantly, Borden (1968: 14) has argued that a "cultural efflorescence" was attained in Baldwin which had no counterpart in the Gulf of Georgia until Marpole times. Including *extensive* personal ornamentation (disc beads, labrets, ear spools, pendants) and a *proliferated* artistic tradition in sculpture, we might infer at least the beginnings

of social stratification and part time specialization. In essence, it could be suggested that a transition from a generalized hunting and gathering pattern to the more specialized mode occurred earlier and may be documented over a longer period of time at the terminus of the Fraser Canyon, the Hope/Yale locality.

There are a number of possible explanations why such a configuration may have been selected for in an upriver setting. First, and probably most important, is the fact that procurement of surplus salmon stocks is most easily carried out in the Fraser Canyon. Given climax productivity of salmon by 3,000 B.C., we could anticipate local populations to be confronted with massive migratory runs funnelling into the Canyon gorge. These runs could be tapped with a simple technology including the dip net, traps and/or weirs. The former has been suggested as an evolutionary prototype for all later netting equipment (Kew 1976).

Not only would procurement be easier, there are other factors selecting for specialization. A less diverse resource base than was the case for coastal populations would favour the utilization of a storage technology for canyon groups. In fact, we might expect an existent semisedentary population by virtue of restricted winter mobility due to more abundant snowfall (see Mitchell 1971: 10). Winter supplies of salmon would therefore provide a stronger basis for a previously established subsistence pattern. With this in mind, it might now be possible to argue that the mechanisms by which a full storage technology was introduced (independent development, diffusion, etc.) are unimportant although the chances seem good that it was an independent development. The key explanatory variable is the fact that storage and associated lifeways would be readily accepted.

Equally important in the evolution of the Northwest Coast pattern which, again, is seen early in the Fraser Canyon, is the possibility for trade and the transference of surpluses into wealth. Groups in the vicinity of Hope/Yale had virtual control over movements of commodities out of the Fraser Canyon. Primarily included here are such raw materials as nephrite and soapstone with other possibilities being obsidian and several interior derived exotic cryptocrystalline lithics. If future research extends the Canyon sequence even slightly downriver, then a southern trade route via the Nooksack may also have existed.

The present discussion is not meant to suggest that the full development of Marpole originated in the Canyon. Since production of surplus salmon stocks on the coast required greater cooperation, there may have been an amplification of the evolutionary trend already described. Plank houses are assumed to be totally coastal structures while smoking, as part of the preservational technology, could also be late. In fact, given an analogous climatic pattern to the present context, it might be argued that specialization in the Gulf of Georgia region could not be maintained without the development of the latter trait. That is, if one must depend upon coastal weather conditions as part of the processes for storage, then unpredictability and instability are characteristics of such a subsistence system. Indeed, if wind drying was the only storage technique known prior to Marpole, then climate might be taken as the mitigating factor against earlier coastal specialization. Of course, should the presence of a "classic" hypsithermal eventually be proven, this argument is without basis.

In conclusion, I must emphasize that the preceding model is one based on gross theoretical speculation interwoven with the little factual data which are available. Moreover, it is an inductive model and may have little validity for the evolution of the Northwest Coast cultural pattern outside of the Gulf of Georgia region. Thus, upon the acquisition of a larger inferential data base, it is subject to modification or possibly rejection. It does, nevertheless, have the capability of being tested both in terms of culture history and culture process.

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