

CULTURAL COMPLEXITY AND EVOLUTION IN THE DEVELOPMENT OF
COASTAL ADAPTATIONS AMONG THE MICMAC AND COAST SALISH

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INTRODUCTION

The northeast and northwest coasts of North America, in many respects, share a highly analogous geographic and physical environment with regards to human adaptations. This includes both similarities in exploitable resources as well as concomitant restraints such as cyclical fluctuations in the anadromous salmon and environmental stress caused by sea level shifts. Yet despite the recognized similarities, there developed cultural systems so diverse that one finds it difficult to identify even a small number of overlapping characteristics. On the northeastern coastline we find an indigenous population that, with a few exceptions, are typically considered to be hunters and gatherers operating on the composite band level of social organization with all of its implications (see Steward 1955; Service 1962). On the other hand, the northwest coast populations, while still considered to be hunters and gatherers, had achieved a level of cultural complexity bordering on the "chiefdom" level. This includes what Fladmark (1975) has labelled an extravagance in art, architecture and social organization along with an extremely sophisticated technology for resource procurement. How did such variability occur and what are its implications for the archaeological study of coastal systems?

Central to the following paper is the principle that, while such differences do exist, each is an adaptive response to a regional

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ecological milieu. In this regard, one cannot simply pursue a straightforward reductionist philosophy and argue that one element or its absence in the geographic environment is the fundamental basis for an evolution of Northwest Coast complexity as opposed to northeastern egalitarian band organizations. Rather, each adaptation must be viewed within its regional context over time. Such being the case, each of the coastal adaptations is independently modelled in subsequent sections. The ethnographic populations upon which this paper will focus are the Micmac of the eastern Maritime provinces and the Coast Salish of the Gulf of Georgia region (Figure 1). Both groups, it may be argued, are analogous in their composite exploitation of maritime, lacustrine and riverine resources. They are, in effect, first fishers and only then hunters and gatherers.

Micmac Adaptations

The Micmac of the Canadian Maritime provinces are possibly one of the best and earliest ethnographically documented groups along the eastern seaboard (see Hoffman 1955; Wallis and Wallis 1955). From the early ethnographies (i.e., Biard 1959; LeClercq 1910), we find an adaptation characterized by composite band organization, utilization of both coastal and riverine ecozones and, finally, an assigned winter hunting territorial complex. Hoffman (1955) has questioned the efficacy of this adaptation within its regional context and argued it to be a result of modifications induced by the fur trade. Using the available ethnohistoric data, he argues for a more extensive maritime orientation with a brief inland hunting period during the winter. Recently, I have questioned this interpretation on the basis of coastal resource availability and the known distribution of archaeological sites (Burley 1980a). In turn, the data appear to suggest a precontact subsistence pattern which was neither coastal nor interior but one highly attuned to resource diversity in several ecozones. Included here would be a much greater emphasis on the riverine ecozone within the Micmac subsistence strategy (Figure 2). This model can be characterized as a generalized hunting and gathering adaptation whereby no single resource is seen to dominate subsistence pursuits and, hence, restrict settlement pattern mobility. In an ecological sense, this pattern would approximate a fine grained exploitation.

The regional context in which the Micmac are found has an overall similarity in resource diversity. However, it is important to emphasize that considerable variation does exist in the density of those resources as they occur throughout the Maritime area. Because of this, one must be extremely cautious in applying a single subsistence strategy model. For example, if we assume that

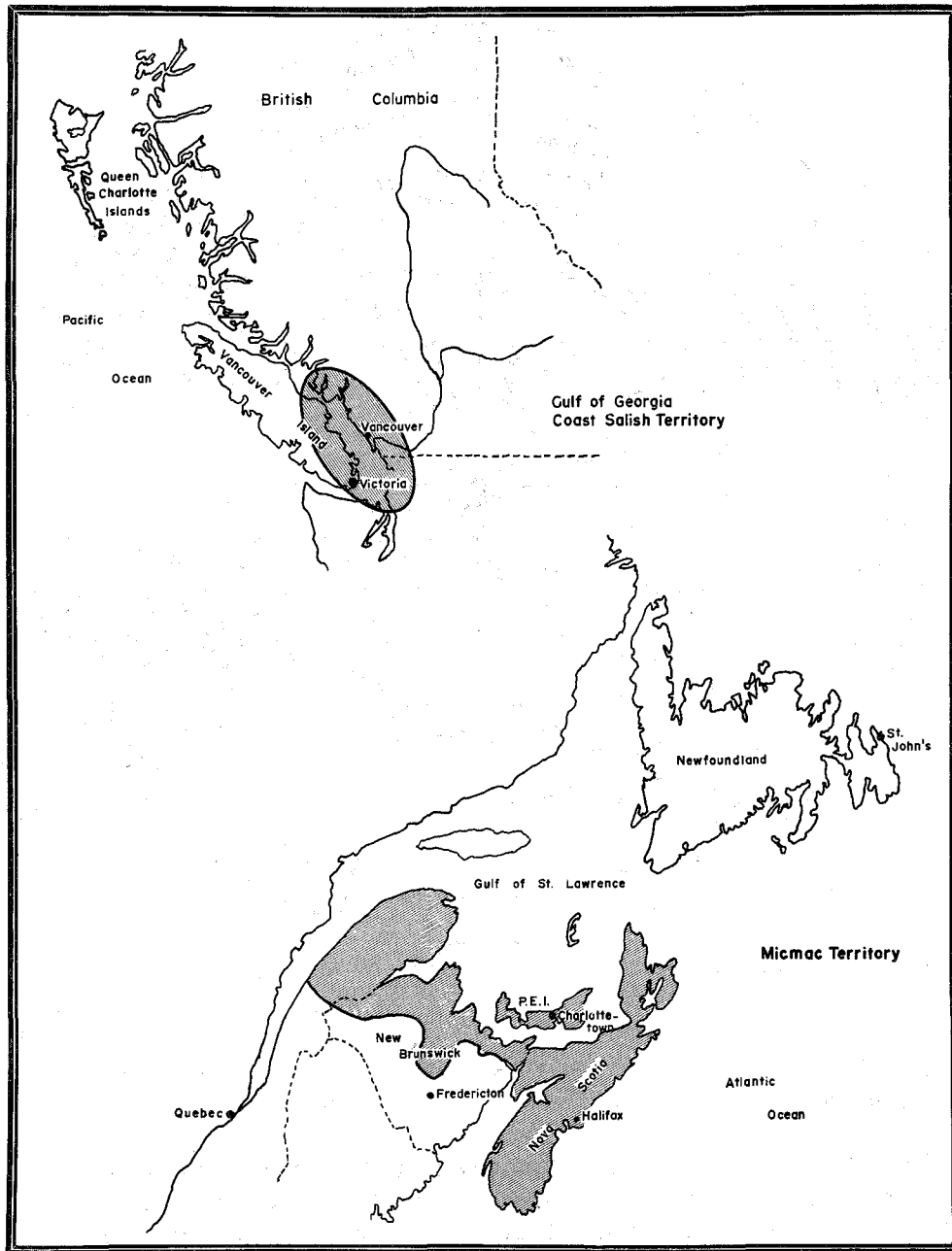


Figure 1. Micmac and Gulf of Georgia Coast Salish territorial boundaries.

commercial catch statistics for the Atlantic salmon are a reflection of individual watershed densities (see Huntsman 1931) then it is possible to argue for considerable variation in abundance. A similar case may also be made for shellfish resources (Burley 1980a; Newcombe 1936). Because few studies have looked at potential differences in localized adaptations, it is difficult to project exactly where these differences may be. Nash (1980a) has suggested that at least for the Cape Breton area a concentration on eels may

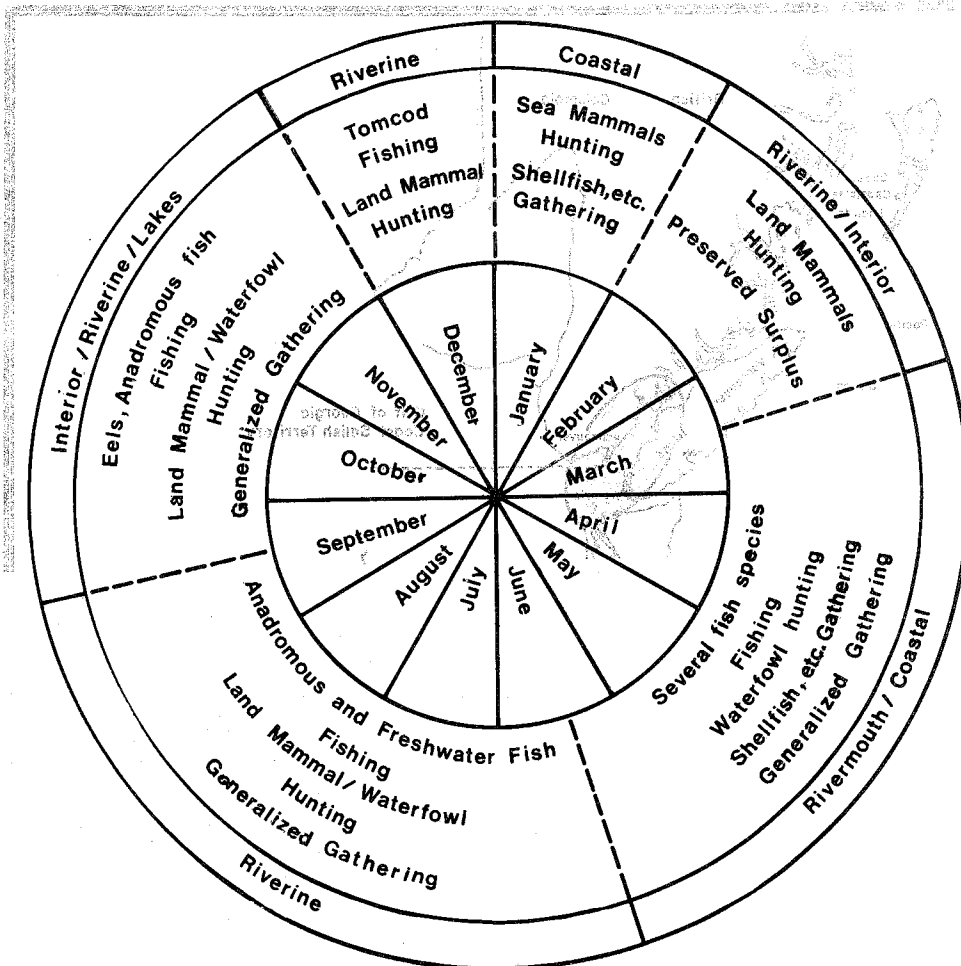


Figure 2. Precontact Micmac settlement pattern cycle.

have attained a much greater importance than that usually attributed to the anadromous species.

Despite the fact that intraregional variations most probably did exist, there is no evidence to imply that the generalized character of the adaptation differed to any considerable degree. We must ask, therefore, what are the supportive mechanisms behind that adaptation? As Hoffman (1955) intimates, clearly one of the most important considerations must be the great range of diversity in the available resource base. In addition, I would further suggest that the nature of those resources, their distribution across the landscape and seasonal variations in productivity climaxes would actively select for the generalized hunting and gathering adaptation (also see Christianson 1979).

As I have noted, the Micmac seemed to have had a strong riverine/lacustrine orientation. This is not overly surprising considering that a minimum of eight anadromous fish (salmon,

alewife, shad, smelt, sturgeon, striped bass and white and yellow perch), another that might be considered partially anadromous (tomcod) and one that is catadromous (eel) are present. Spawning runs for each are varied throughout the year with a number being present during the cold weather period (tomcod, eel and smelt). It is also of note that the spring run of Atlantic salmon (*Salmo salar*) can be procured from holding ponds in interior locales during the summer and early fall. While I do not want to give the impression that these resources totally dominated Micmac economic activities, they most certainly were an important element in the overall subsistence strategy. This resource base was crosscut by a variety of other available food species which, in many cases, could be conjunctively exploited from a central place. For example, a rivermouth/coastal locale in the early spring allowed for, in addition to the procurement of several anadromous fish, an exploitation of coastal foreshore resources and the interception of northward migrating waterfowl (see Biard 1959:81). Perhaps the only period where the Micmac larder was severely reduced was that of late winter where a greater reliance on land mammal resources was necessitated. This, however, could be offset through preserved surpluses from the summer and fall.

The presence of a preservation and storage technology, while yet to be proven in the archaeological record, does have a basis in the ethnohistoric and ethnographic literature. Christian LeClercq (1910:110), for example, makes mention of both drying and smoking in meat and fish processing. LeClercq's observations document the years between 1675 and 1687 (Christianson 1979:85). Similarly, Speck and Dexter (1951) note the presence of smoked salmon, shad, herring and gaspereau while Wallis and Wallis (1955:61, 64, 251) provide various references to food preservation. The importance accorded to food storage is another matter. Despite the fact that they are probably overstated, the comments of Father Pierre Biard could be taken as a reflection of the Micmac perspective on storage and future needs. He states:

This nation takes little care for the future, but, like all the other Americans, enjoys the present; they are not urged on to work except by present necessity.... If you tell them that they will be hungry in the Winter: *Endriex*, they will answer you, 'It is the same to us, we shall stand it well enough: we spend seven and eight days, even ten sometimes, without eating anything, yet we do not die.' Nevertheless, if they are by themselves and where they may safely listen to their wives (for women are everywhere better managers), they will sometimes make storehouses for the Winter, where they will keep smoked

meats, roots, shelled acorns, peas, beans, or prunes bought from us, etc.

(Biard 1959:107).

Baird's observations are succinctly supported by LeClercq (1910:110) who concluded that "They (the Micmac) are convinced that fifteen to twenty lumps of meat, or of fish, dried or cured, in the smoke, are more than enough to support them for the space of five to six months." In light of these statements, I would conclude that food storage was but a minor effort limited to providing dietary supplements for a short winter period. The Micmac environment appears to have been viewed as one of steady state abundance within the Micmac adaptation.

To hypothesize on the development of this adaptation, one must turn to the evolutionary context of regional prehistory. For the Maritime provinces this is no simple task. From an archaeological perspective, it may be one of the poorest documented areas on the eastern seaboard and the limited knowledge that is present shows an extremely complex pattern that poses more questions than answers. Nevertheless, these data in conjunction with those from surrounding areas, do allow some speculation on general trends.

Snow's (1980) recent synthesis of New England prehistory effectively reviews the current state of knowledge of cultural sequences and changing adaptations in those areas immediately south of the Micmac occupied territory. Speaking of northern Maine and, by implication, the Maritime provinces he posits a tundra based paleo-Indian population with a localized adaptation on large game animals and a "free wandering" settlement pattern strategy. With the local geography being dramatically transformed into dense forest regimes predominated by white pine after 10,000 B.P., Snow among a host of others (Sanger 1979b; Ritchie and Funk 1971; Fitting 1968) postulates a severely reduced carrying capacity which would have necessitated drastic alterations to the adaptive pattern. This transition would require a shift to a more diffuse or fine grained adaptation and of necessity, a "restricted wandering" strategy (Snow 1980:171). Tuck (1974) characterizes this time as a period of "settling in." With but a few exceptions, (Sanger 1979c; Benmouyal 1976; Tuck and McGhee 1976), all of which occur outside of the Maritimes, we lack firm archaeological data to accept or reject such a hypothesis. After circa 5000 B.P. (see Sanger 1979a), the forests of northern Maine are seen to be dominated by various hardwoods. In turn, the regional carrying capacity is increased and, not unsurprisingly, we have what appears to be a more intensive, albeit complex prehistoric occupation documented in the archaeological record.

The picture is complex because of the conflicting views held by regional archaeologists and the virtual absence of controlled excavation on period occupation sites in the Maritime provinces. Wright (1972) has proposed that, at least for the interior highlands, we can expect to find elements of his Shield Archaic (also see Sanger 1971a). Coterminous with the Shield Archaic (but see Tuck 1975c) and more or less adapted to a coastal/riverine setting is a regional variation of the Laurential tradition (Sanger 1973) with its associated Moorehead burial complex. On the other hand, Tuck (1978) suggests this regional variation to be virtually identical to that of cultural developments in Newfoundland and Labrador and defines it as the Maritime Archaic tradition. However, while the Maritime Archaic would be present along the Fundy Bay coastline of New Brunswick, all other areas including the northeastern shore would be occupied by populations of his Lake Forest Archaic tradition (ibid). Until more data are in, it may be somewhat premature to argue for the validity of one scheme over any other. Nevertheless, each of these concepts does propose an adaptation that exploits a range of localized resources including the anadromous fish runs on a seasonal basis. Greater reliance on land and sea mammal hunting and possibly some specialization on swordfish (Sanger 1975) seems to differentiate the pattern from those of the later precontact era.

The terminal archaic presents an equally complex setting in the archaeological record of the Maritimes. Even so, I along with others (Allen 1981:133) believe the evidence is *slowly* coming to the fore to possibly extend Sanger's (1975; also see Snow 1980:245) and Bourque's (1975) hypothesis of a late archaic population replacement or assimilation by peoples associated with the Susquehanna tradition (but see Tuck 1975c). Sanger (1975:72) has proposed such a model to account for not only stylistic changes in a few artifact types, but drastic shifts in the subsistence, settlement, technological and mortuary subsystems. Moreover, he is able to relate it to rapid changes in the marine ecology of the Gulf of Maine and the development of foreshore resources as well as a transition in the forest regimes to increasing conifer densities. The Susquehanna movement is seen to be an expansion by groups already adapted to the new environment while the population being replaced or assimilated would be subjected to considerable environmental stress requiring drastic adaptive alterations. Snow (1980:248) also notes that the linguistic split between Micmac and other eastern Algonquian languages may be tied to the terminal Archaic.

Whether or not the dislocation model proves to be true has extreme implications for determining the origins of the Micmac precontact adaptive pattern. Susquehanna subsistence patterns appear to have been a highly diffusive exploitative strategy with,

possibly, a more intensive use of the soft shelled clam (Bourque 1975) and a greater concentration on migratory fish species as found in the primary tributaries (Turnbaugh 1975; also see Snow, 1980:247-248). This pattern with its decreasing emphasis on marine resources and increasing exploitation of lacustrine and riverine species includes all of the basics in the previously defined subsistence model. Once in place, it undoubtedly underwent alterations to account for localized variations in the resource base. Nevertheless, the basic principles, including a supportive egalitarian social organization, are suggested as being present.

Arguing that the Susquehanna tradition is a precursor of the Micmac peoples implies a cultural continuity from circa 3500 B.P. up to contact. This, in fact, may not be the situation. For example, in northeastern New Brunswick there can be little dispute that the Augustine mound had an association with Adena developments (Turnbull 1980). Such being the case, Allen (1981:144) has argued there to be an infiltration of Adena related peoples by 2600 B.P. This infiltration is seen to intensify over time. Subsequently, she also proposes that by 2100 B.P. this population was actively interacting with a second immigrating group from the south and west. Characterized by "Lagoon and/or Rossville" projectile points, these peoples brought with them a subsistence pattern heavily dependent upon shellfish. An *in situ* ontogenous cultural development is proposed for the post 2100 B.P. period.

That Adena and later influences are present cannot be disputed. These, however, might equally be explained by a regionalized participation in a broad based exchange network (see Snow 1980:268) supported by the widespread Adena mortuary complex. Whatever the case may be, there exists little evidence to suggest a radically altered subsistence strategy for these groups. The generalized pattern is suggested to have not only been maintained, but continued to be maintained up to the protohistoric period.

Because the Micmac seem to have been linguistically isolated to the point of a separate grammatical evolution (Goddard 1978:76) from that of Maliseet-Passamaquoddy, the linguistic data may be taken to support a relatively segregated existence to those on its borders for possibly as much as 2000 years. A large part of this segregation might well be related to the facts of geography. For example, assuming that post archaic prehistoric populations are concentrated in areas adjacent to at least intermediate sized tributaries, the northwestern shore of Fundy Bay (from the Saint John to Petticodiac Rivers) would have been poorly suited for concentrated settlement. In addition, since Nova Scotia and Prince Edward Island are in themselves virtual geographic isolates, a

sustained interface between proto Micmac and other groups would be primarily restricted to interior northeastern New Brunswick and, possibly, portions of the Gaspé Bay. With the exception of the latter, I would suggest that because of different adaptations, interior/riverine versus coastal/riverine, there may have been only limited and formalized interaction. In essence, there may not have been two populations competing for the same set of ecological resources but, instead, two side by side adaptations geared toward differing environmental regimes.

To summarize my views on the precontact Micmac adaptation, I have argued that contrary to the historic pattern, it can be characterized as one well suited to its environmental resource base. It was a generalized subsistence pattern which, because of the anadromous fish species, had a strong riverine focus. It is hypothesized that at least the major elements of this adaptation were in place by the terminal archaic period and only minor changes occurred up to the time of contact. These changes would be the result of variations in the localized resource base, fluctuations over time in the density of those resources and, perhaps, environmental stress caused by rising sea levels (see Grant 1970). Population expansion up to the regional carrying capacity limit is also taken to be a given.

GULF OF GEORGIA COAST SALISH ADAPTATION

The Coast Salish adaptation, as found within the Gulf of Georgia region, can be considered as one variation of the general Northwest Coast pattern. Based on an intensive use of the salmon resource and a semisedentary settlement pattern, the ethnographic population had many characteristics normally associated with a chiefdom level of cultural development yet remained on a hunting and gathering sphere in their economic structure. Ascribed ranking, surplus production beyond subsistence needs, wealth accumulation and highly developed artistic and ceremonial traditions are but a few of the seemingly aberrant traits. Although it is probable that considerable culture change had occurred with white contact (Burley 1980b; Collins 1974), the ethnographic model of a specialized economic adaptation can be considered appropriate for the late prehistoric period.

Because of variations in localized resource availability and differing fishing strategies (Mitchell 1971), a single subsistence-settlement pattern description for the Gulf of Georgia Coast Salish would be inappropriate. The specialized concentration on the salmon resource along with an efficient preservation and storage technology, nevertheless, is found throughout. This adaptation

generally allowed for a highly dense population (e.g., Sneed 1971; M. Kew 1976) and is considered to be a focal point for most other cultural developments (Suttles 1968; Schalk 1977). It is considered to be a good example of coarse grained exploitation where one resource has a disproportionate use *vis a vis* the total range of those which are potentially available. This is not to mean that there was a neglect of other available resources. Rather, it simply argues for a subsistence adaptation that is dominated by the procurement of a single resource which, in turn, is central to a settlement pattern strategy.

The Coast Salish variant, as I have argued elsewhere (Burley 1979b, 1980b), can be recognized in the archaeological record back to the Marpole culture type of circa 400 B.C. Prior to this time, including the Mayne and St. Mungo phases as well as the Locarno Beach culture type, notable differences are present. In particular, there is a distinct lack of evidence for an ascribed ranking system as illustrated in the mortuary system; there does not appear to have been a use of the large multifamilied plank house nor are large village aggregates apparent; and, finally, there appears to have been a slightly varied economic focus with, perhaps, a greater concentration on maritime resources (see Boucher 1976; Borden 1968b; Carlson 1970b; Burley 1979b). These factors have led me to hypothesize a more generalized adaptation lacking intensive specialization on the anadromous salmon (Burley 1979b, 1980b). Concomitant with this adaptation would be "... smaller, more frequently mobile bands of egalitarian hunters and gatherers" (Burley 1979b:135; also see Matson 1976:303). In essence, while salmon may have been important in the seasonal round it would neither dominate resource scheduling nor would a massive surplus have been procured for the maintenance of a sedentary winter village population. Because of this, the regional carrying capacity would have been lowered and we can expect a significantly lower population density.

In pondering the potential explanations behind the transition of this generalized adaptation to the more specialized form, I was unable to find any internal cultural mechanisms which could account for such a drastic modification or, as Matson (1981c) has argued, the beginnings of intensification. This, of course, is based upon the belief that population size in a hunting and gathering society will remain at an equilibrium point below the carrying capacity level as implied in the Micmac adaptation. Hence, population pressure stimulating technological change cannot be used as an independent causal agent. At this point, it was necessary to look at external factors in the environment. Because of what appeared to be evidence in the archaeological record for discontinuity between

Marpole and earlier manifestations (Burley and Beattie 1977; Burley 1980b), it was suggested that the critical balance between population size and resource carrying capacity was upset by an influx or infiltration of peoples from the Hope/Yale locality. It is of note that the culture historical sequence in the latter locale has an abrupt discontinuity from the Baldwin to the Skamel phase at exactly the same time as Marpole is recognized on the Fraser delta (Borden 1968b). Finally, the population involved in this movement was considered to have had an adaptation already geared toward intensified salmon procurement and storage (for an explanation of the rationale see Burley 1979b:138-139). At no point, however, was it suggested that the Northwest Coast cultural pattern nor even the total technological inventory, arrived fully intact. To the contrary, most of the cultural developments associated with the Marpole culture type were seen to be *in situ* coastal adaptations (Burley 1980b:74).

In the past, I have placed considerable emphasis on the development and/or knowledge of a storage technology as the evolutionary threshold for Northwest Coast developments (also see Schalk 1977). While, obviously, such knowledge is important, it is the stimulus behind storage practises which must be given consideration. It must have some immediate and recognized adaptive advantage. The Hope/Yale locality is suggested to be better suited ecologically for storage intensification than adjacent coastal areas. For adapting populations, there are two primary resource groups which could serve as a focal point in subsistence strategies. [These are the anadromous salmon and the larger terrestrial mammals. Lacking the diversity of the coastal zone, and in particular the marine and foreshore fauna, the anadromous species would form a significant proportion of the potentially available resource base.] Moreover, changing forest regimes from a lodge pole pine dominated post-glacial to the coast-forest biome of 3000 years ago (Mathewes 1973) may have dramatically reduced the land mammal population density (Mitchell 1971:12) thus requiring even greater concentration on salmon procurement. The gains to be accrued in salmon storage are therefore considerable.]

To summarize this argument, I would first suggest that the technological knowledge for food preservation by drying is not considerable and, undoubtedly, was known and probably practised by both coastal and upriver groups in pre Marpole times. The stimuli for intensive storage, however, are more greatly pronounced in the latter and would select for salmon specialization.

Provided that the above hypothesis is true, in addition to the population movement suggested earlier, we must still explain the

evolutionary development of the Northwest Coast cultural pattern. Assuming that it is basically a coastal adaptation, I have previously presented a speculative model in which the principle mechanisms involved in this development are outlined (Fig. 3) (Burley 1980b:71-73; also see Schalk 1977; Langdon 1976). The following is a summary review of that model.

At circa 400 B.C. or slightly earlier, we find a population at the mouth of the Fraser River who, for better or worse, have a subsistence adaptation that includes intensified salmon storage for winter consumption. Because the technological requirements for catching and preserving a surplus of salmon in the area require a more cooperative effort than may have been necessary in the Hope/Yale locality, a greater complexity in labor organization is anticipated. The preceding argument is based on the individual dip net and drying strategy of ethnographic Fraser Canyon groups as opposed to a small stream weir or drag net exploitation required at the Fraser River mouth. Complexity in labor organization I hold to be the key principle in all further developments. First and foremost, it would select for the origins of a centralized head or big man. This leader could serve a number of group functions including regulation of labor expenditures, control over resource locales and redistribution of productivity. Second, and of equal importance, a greater cooperative effort requires an expansion in the size of the productive unit. In turn, we can anticipate a shift from a nuclear family based social organization to that focused on an extended family dependent upon ties in the male line. Extended families would also promote the acceptance of a larger multifamilied residence type.

Here it is important to consider the supportive nature of the ecological milieu in this development. Cyclical fluctuations in salmon escapement are a well documented occurrence in the Gulf of Georgia region (M. Kew 1976). In the Hope/Yale locale, to maintain a population equilibrium a group must keep its density at or below carrying capacity level in the lowest productive year in the anadromous cycle. The situation on the coast is somewhat different. [In low productivity years, it is possible to exploit other steady state coastal resources to offset insufficient surpluses. In particular, the abundant foreshore fauna are seen to be an important factor which would allow for a population rise beyond that supported by salmon alone. Moreover, foreshore resources are considered to be low risk and, possibly, would select for the maintenance of formerly unproductive population members (see Pearlman 1980; Yesner 1980a). In combination with the need for a single locale for preserved surpluses, the semisedentary winter settlement strategy would be a direct outgrowth.]

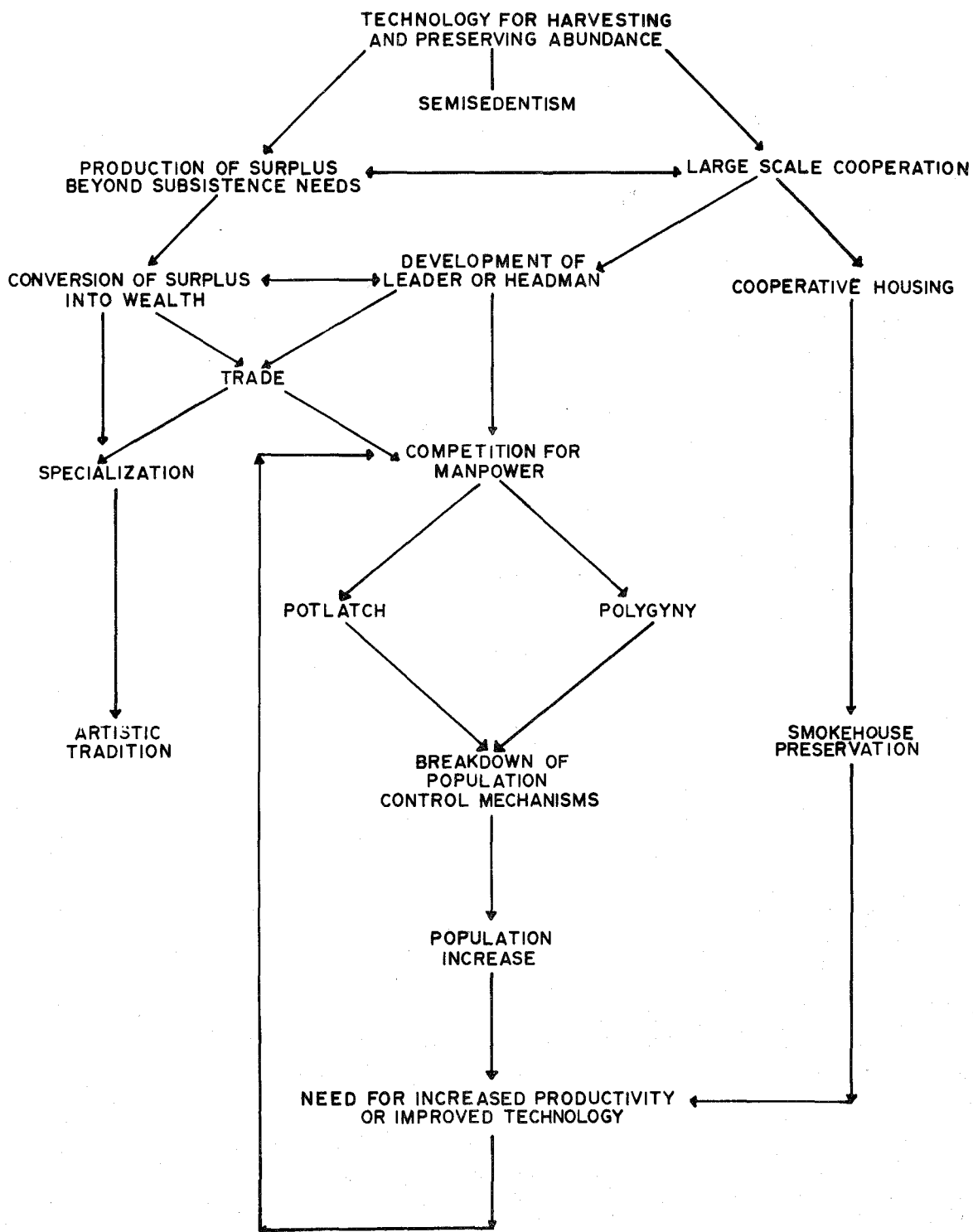


Figure 3. Schematic illustration for the development of a Gulf of Georgia variant of the Northwest Coast cultural pattern.

Each of the preceding developments allows for some increase in population density. In a high year in the quadrennial cycle, however, there would be a salmon surplus well beyond that needed for subsistence. When this happens, it is possible to project the expansion of intraregional exchange networks particularly in nonutilitarian wealth items. Because the group leader controls the surplus production, the accumulation of nonsubsistence wealth would also be a consequence. In turn, this provides at least a visual basis for social stratification and provides greater incentives for surplus production. As Matson (1981c) postulates, it is at this time that we should anticipate a positive feedback loop which selects for increased technological capacity, greater population density and eventually, the full development of the Northwest Coast pattern. Populations grow not because it is their nature to grow. Instead, I would argue that growth, in this particular case, was being selected for by several traits intricately tied into the development of a stratified social organization.

Because the Northwest Coast culture pattern is not simply restricted to the Gulf of Georgia area, one has to question the validity of this model *vis a vis* adjacent cultural developments. Beyond the [incentives for salmon procurement and storage,] I would hold that the general principles involved in the evolutionary development would be highly analogous (see also Schalk 1977; Langdon 1976). In the Gulf of Georgia, it has been argued that the generalized hunting and gathering pattern was superceded by a population with an intact specialized salmon adaptation as selected for in an upriver setting. The reasons behind such a transition in other coastal locations remain to be determined.

CONCLUSIONS

Implicitly, I have attempted to emphasize throughout the preceding discussions that in both the case of the Micmac and the Gulf of Georgia Coast Salish we are dealing with independent adaptations that must be viewed as such. Each can be characterized as an ecological population which, as defined by Kirch (1980:111), constitutes a "... group of interacting individuals that (1) are confronted by the same set of environmental challenges or selection pressures; (2) regularly transmit and share adaptive information among themselves; and (3) share the same patterns of behavioral response to environment." Environment in the ecological sense refers to the total set of physical and social factors within a regional milieu. Environmental stress, therefore, may result from not only perturbations in the physical environment but also consists of external pressures from competing ecological populations.

The Micmac adaptive strategy has been characterized as a generalized or fine grained exploitative pattern. It takes into account a great diversity in resource availability at variable periods throughout the year. The Micmac environment could be characterized as having several productive subsistence surges which are cross cut by a number of steady state resources. A settlement pattern strategy attuned to the interception of these surges but also geared toward conjunctive exploitation of the total resource base appears to have been the result. Some storage to supplement short periods of low productivity was part of this adaptation. Finally, I have argued that the basis for this adaptation was present in the terminal Archaic and, with minor shifts to accommodate environmental stress, persisted up to a precontact period.

In a pre-Marpole period in the Gulf of Georgia, I would also argue for a generalized adaptation. While obviously differing from that of the Micmac, the basic character would be analogous. A frequently mobile settlement pattern could take advantage of several potential subsistence resources at differing temporal intervals throughout the yearly cycle. Again a storage technology may have been present to offset periodic shortages but, without an intensive procurement of salmon, it too would appear to have been operative along the lines of the Micmac preservation strategy. In the Hope/Yale locality, however, a less diverse resource base would select for a specialized adaptation on salmon. A population movement sometime prior to 400 B.C. is argued to have brought this adaptation to the mouth of the Fraser River and subsequently underwent a series of revolutionary changes leading towards the Northwest Coast cultural pattern.

Comparing the developments of the Micmac and Coast Salish certainly brings into focus the entire question of unchecked population growth as a stimulant behind culture change. For example, if one simply views the development of complex technologies and, ultimately, complex social organization on the Northwest Coast as the result of independent population growth over time, then an explanation as to why such developments did not occur in the Maritime provinces must be forthcoming. In this view, I would argue that a Northwest Coast like specialized adaptation is viable in the Maritimes. However, rather than an intensive concentration on a single resource, it would have to be developed on the total range of anadromous, partially anadromous and catadromous species. I have argued that the Micmac maintained a hunting and gathering adaptation which, presumably, was kept at or below carrying capacity level within a given set of technological parameters. While population growth undoubtedly occurred, it is argued that densities within any localized milieu are kept in an equilibrium balance with the

environment. Although the specifics for the Micmac have yet to be researched, any number of culturally induced population control mechanisms operative on the group level could maintain this context (see Kirch 1980; Hayden 1975; Birdsell 1968). In the Gulf of Georgia region, such population control mechanisms appear to have been severely relaxed or dropped from the cultural system altogether. (The result, of course, is a high population density to resource ratio.) The reasons behind this transition I would suggest to be intricately involved in the origins of a stratified social organization and its outward visibility, wealth accumulation. In essence, the conversion of surplus production to wealth selects for greater surplus production and, thus, greater population size. Increased technological complexity to maintain greater population densities would be an outgrowth.

In conclusion, it is apparent that a great deal of problem oriented archaeological research is needed in both the Micmac and Gulf of Georgia regions to support the preceding statements. Even if this research were to prove either or both of the hypothesized developments totally invalid, I firmly believe that future comparative papers must take into account the various independent ecological factors influencing regional adaptations. Only through such an approach will it be possible to gain a full understanding of the mechanisms behind the cultural evolution of coastal peoples.

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