

CHAPTER 7

Summary and Conclusions

When all of the faunal analyses and data manipulations are completed, and appropriate cautions taken into account, it can seem as if there is very little that can be concluded from faunal evidence with any degree of certainty. Variability in the recovery, analysis, and quantification of vertebrate faunal remains can be responsible for much of the apparent variation in faunal-class abundance over time. Some part of the debates concerning economic transitions on the Northwest Coast undoubtedly reflects the methodological problems of zooarchaeology. Nevertheless, general economic patterns have been established on the basis of robust faunal data from other Northwest Coast sites, and the Namu data offer further insight into the causes of economic change and intensification in the region. The patterns of change evident in the Namu economy also have implications for understanding similar economic transitions in other regions of the world.

Namu is a unique site because of its long and continuous occupational history (R. Carlson 1979). The economic prehistory of the last 7000 years, which is documented in the surviving faunal record, also provides a unique chronicle of long-term economic transition. The maritime orientation of the economy is evident from the beginning of the faunal record, and it is reasonable to project a fishing-based economy well into the earlier period of site occupation, possibly to as early as the 11,000 cal. B.P. date of initial human habitation. Based on the faunal data, a period of transition to a maritime economy is not in evidence. The fishing economy of 7000 cal. B.P. includes a well developed emphasis on the abundant and predictable salmon and herring fisheries, which were key elements of the later subsistence economy. The seasonal salmon and herring fisheries also indicate an early pattern of semi-sedentary settlement, though it is impossible to say whether this was a function of or the reason for the intensive fishing economy. Available evidence suggests that intensive salmon and herring fishing and winter settlement pre-date the post-glacial peak in salmon productivity (Fladmark 1975) and the beginning of major shell midden accumulation by as much as 1000 years.

The beginning of intensive shellfish exploitation ca. 6000 cal. B.P. is the clearest change in the site's economy. The correspondence with a major increase in the abundance of salmon in the site deposits provides support for Fladmark's contention that environmentally enhanced salmon productivity and shellfish utilization are inter-related. The association at Namu is clear, and it marks the most significant change in what is otherwise a consistent maritime economy. The peak productivity of the Namu salmon fishery lasts for a period of 2000 years. The only changes in the subsistence economy during this time are the apparent intensification of salmon and herring fishing and the major increase in seal hunting.

The peak in economic productivity between 5000 and 4000 cal. B.P. ends with the precipitous decline of the local salmon fishery. Environmental indicators point to estuary development and increasing sedimentation as the reason for the decline in local salmon productivity. With the decline in salmon, the overall scale of site settlement and economic activity is reduced. Although the occupation and maritime economy of the site continue for another 4000 years, it appears that Namu was never again a major winter village, though it was continuously used as a minor winter settlement. The decline in salmon fishing is associated with further reliance on shellfish and an increase in the use of certain minor fish resources.

The faunal record provides a clear overview of Namu's economic prehistory. A marine-based economy including intensive use of salmon and herring and the incipient use of shellfish was well established by 7000 cal. B.P. The seasonality of faunal resources indicates the establishment of winter village settlement by that date as well. Although not evident in the archaeological record, it is likely that salmon was being processed and stored for winter use, thereby sustaining the settlement until the time of the herring spawn in late winter/early spring. Salmon were caught in large quantities, and given the short spawning season it is probable that the catch exceeded the capacity for immediate consumption. Given the need to sustain winter settlement, and given the opportunity afforded by a surplus catch of salmon, it is reasonable to conclude that some part of the salmon catch was being stored, at least by the date of the earliest faunal record.

If there had been no further transition in the prehistoric Namu economy, the pattern of resource use would be essentially that of the ethnographic present. The one necessary additional element was the intensive exploitation of shellfish, which began at around 6000 cal. B.P. and continued throughout the rest of the site's history. Intensification in shellfishing is associated with clear evidence of intensification in local salmon fishing, and the reliable salmon and shellfish resources supported an increased scale of site settlement. Further economic intensification is evident after ca. 5000 cal. B.P., with the increasing use of the strategic seasonal abundance of salmon, herring, and harbour seal; all of which suggests further increase in the scale of site settlement.

The decline of the salmon fishery after 4000 B.P. is associated with an apparent reduction in the scale of site settlement and the intensity of most forms of economic activity. Only shellfishing continues to increase in intensity. The site economy does not appear to have undergone any further change in orientation or emphasis after 4000 B.P.

The faunal record indicates four major transitions in Namu's economic prehistory. The first was the initial intensive use of the fall salmon spawning runs, which occurred sometime before the faunal record begins. The second was the intensification of salmon fishing and shellfish gathering. The third was the further intensification of salmon fishing, and the associated increase in late winter herring fishing and late spring seal hunting. The final transition was the economic contraction associated with the decline of the local salmon fishery. The reasons for the first of these transitions cannot be addressed on the basis of the Namu faunal data, but given 4000 years of site occupation prior to the beginning of the faunal record there was ample opportunity for the transition to intensive salmon fishing. The other economic transitions can be well documented and should be explicable in relation to changes in local environmental and cultural conditions.

CAUSES OF ECONOMIC TRANSITION

The process of economic intensification is one of the major areas of archaeological inquiry, and there are several major causal factors that are commonly cited to explain the economic transitions evident in the course of world prehistory. These include changes in the availability of resources, local culture change and technological development, population growth, and social demand. Each of these factors has some potential bearing on the economic developments at Namu, and the Namu evidence can contribute to a general understanding of the causes of economic change on the Northwest Coast and elsewhere. Given the initial need for resources capable of supporting economic intensification it is appropriate to begin by examining the role of environmental availability on the changing pattern of resource use.

Environmental Change

The global environmental changes associated with the end of the Pleistocene are commonly cited as the preconditions for an increasing economic emphasis on marine resources (Binford 1968, Pfeiffer 1978).

Stabilization of the marine/shore interface is linked to the enhanced productivity of shellfish and anadromous fish resources and the establishment of permanent settlement to take advantage of local maritime abundance.

Fladmark (1975) combined archaeological evidence for the onset of shell midden formation with evidence of sea level changes to argue that stabilization of the marine shore environment was the key factor in development of Northwest Coast economic and settlement patterns. The critical variable in Fladmark's palaeo-ecological model is the enhanced productivity of salmon at around 6000 cal. B.P. The increased availability of salmon encouraged its utilization and allowed for larger and more permanent settlements. The increased use of shellfish was due to the greater demands of larger population aggregates. According to the available archaeological evidence, the shellfish resource had been little used prior to establishment of these conditions.

The enhanced production of salmon at Namu at 6000 B.P., which coincides with the build-up of shell midden deposits, provides substantial support for Fladmark's model. The apparent decline in economic activity and site settlement associated with estuary development and its negative effect on salmon productivity is further evidence of the economic significance of environmental availability.

The Namu evidence supports a central role for salmon in the local site economy, but the overall importance of salmon on the Northwest Coast has been questioned recently (Croes 1988, Mitchell 1988). Detailed faunal analysis from sites on the south (Croes and Hackenberger 1988) and south-central (Mitchell 1988) coasts have indicated long-term site settlement and extensive shell midden formation without any indication of intensive salmon fishing. As suggested in Chapter 4, the evidence from these sites does not necessarily contradict an early Northwest Coast pattern of economic dependence on salmon. Local environmental changes could adversely affect the salmon productivity of a particular site, and site economies could be expected to take advantage of whatever resources were in greatest local abundance. The economic focus of an individual site would have been based on its local micro-environment, which might not have been representative of a broader regional pattern in which salmon was a priority resource.

The intensive exploitation of resources other than salmon at some sites could indicate a broadening intensification of regional economies as a result of population expansion initially predicated on the regional intensification of salmon fishing. However, the later transition to salmon fishing at some sites suggests that local environmental adjustment also occurred. It could be argued that salmon had been consistently available but ignored in favour of resources that required less intensive methods of capture and processing. However, it is difficult to sustain this argument for the early period at Mitchell's (1988) Queen Charlotte Strait sites where early salmon would have to have been ignored in favour of more intensive exploitation of ratfish. Until the potential for local environmental change and potential changes in the seasonality of site use are taken into account, it is premature to suggest that the early economic importance of salmon has been overemphasized.

The local as well as the regional availability of salmon undoubtedly played a major role in determining its economic value. Local salmon productivity fluctuates over the short term and can exhibit dramatic changes over the long term in response to local environmental conditions. It is impossible to rate the salmon productivity of specific site locations either in the present or at a specific point in the past and expect that level of productivity to have remained constant throughout prehistory. Changes in resource use over time and a lack of correlation between site location and the present distribution of salmon productivity (Hobler 1983:155) are insufficient to discount the importance of availability in promoting cultural dependence on salmon.

At the same time, the availability of a resource, even one as rich and predictable as the Northwest Coast salmon fishery, does not ensure its intensive utilization. Peak post-glacial productivity was not the sole determinant of salmon utilization at Namu or anywhere else. The Namu subsistence economy was heavily dependent on salmon fishing before the presumed peak in environmental conditions. Enhanced salmon

productivity at around 6000 B.P. also did not demand the increased utilization evident at that time. Although the evidence for further intensification between 5000 and 4000 B.P. is problematic, there is a strong indication of such a transition, which was not dependent on any increase in availability. Salmon availability is a necessary but not a sufficient precondition for its intensive exploitation. To explain the trend toward its increasing use it is necessary to examine cultural explanations.

Culture Change

Cultural explanations for Northwest Coast economic transitions generally are set against a backdrop of constant resource availability. Although culture change can seem a spurious explanation for economic transition, since the economy cannot stand apart from culture, two forms of cultural explanation have been used to account for the changing emphasis on salmon fishing on the Northwest Coast. One cites the need for cultural innovation and technological development to enable the catching, processing, and storage of large quantities of salmon (Burley 1980, Matson 1983, Schalk 1977). A more normative view ascribes resource selection and emphasis to cultural tradition (Borden 1975, Mitchell 1988), and subsistence change to cultural migration and interaction.

The cultural selection of salmon has been described as a matter of taste. Even the emphasis that archaeologists place on salmon has been attributed to their own cultural preferences (Croes 1988). From this perspective it could seem that the intensive exploitation of salmon was unrelated to its food value, volume, predictability, and capacity for storage. This almost certainly exaggerates the role of "purely" cultural factors, but proponents of cultural explanations have tended to minimize the attraction of salmon in favour of cultural disposition toward its use.

Borden (1975) proposed that early south coast populations were preadapted toward the use of terrestrial resources, and therefore were unable or unwilling to take full advantage of available marine resources. Borden acknowledged a potential lack of salmon fishing expertise and necessary technology, but in explaining the apparent contrasts in the early north and south coast subsistence economies he also stressed the influence of enduring cultural tradition. Mitchell (1988) arrives at a stronger position in favour of a cultural explanation for subsistence change in the Queen Charlotte Strait region. According to Mitchell, the late shift to intensive salmon fishing is not attributable to any obvious technological improvements, which leaves a difference in preference or desire for salmon between early and late populations in the region. The change in subsistence is attributed to cultural intrusion from the north.

The problem with explanations based on cultural preference is that they do not acknowledge any positive incentive for ever having made the transition to intensive salmon fishing. Most other cultural explanations take the subsistence value of salmon as a given, but they stress the technological and organizational requirements of intensive salmon fishing (Matson 1983, Schalk 1977). Technological development is seen as a gradual process, which culminated in full dependence on the available salmon resource.

At Namu the early dependence on salmon is not associated with any apparent innovation in harvest or storage technology. The use and intensification of salmon fishing follows in accord with resource availability. Early establishment of winter settlement at the site also implies a capacity for salmon storage. It remains possible that the processes of cultural development on the south and south-central coast were different from those on the central and northern coasts. However, the Namu evidence precludes a general model of technological innovation and cultural selection as the explanation for intensive salmon fishing on the Northwest Coast.

If a pattern of gradual technological development cannot explain the economic focus on salmon at Namu, then other underlying factors must be responsible for the choice to invest in the intensive harvest and

preservation of salmon. Few supporters of technological innovation models would deny the need for underlying positive incentives for the adoption or development of productive capacity. The key underlying variable in most explanations is population pressure, either through a tendency for population growth or through resource stress brought about by natural fluctuations in productivity. These Boserupian models stand in contrast to Malthusian models (e.g. Fladmark 1975), which see economic intensification as the basis for population growth. However, the Namu evidence suggests a much more subtle interplay between population and economic production.

Population Pressure

The Namu data do not provide any direct measure of population size or growth, which makes it difficult to determine if population pressure was either the cause or effect of economic change. A possible indirect measure is the intensive exploitation of shellfish. Advocates of population growth and those that stress the desire to achieve resource security seem to agree that shellfish exploitation represents an effort to support larger numbers of people in a given territory, even at the expense of greater labour investment (Cohen 1977:79, Croes and Hackenberger 1988, Fladmark 1975, Osborn 1977). Their differences relate to the sequence of causal relationships. One view would suggest that areal circumscription led to increased use of shellfish, which subsequently allowed population growth, which in turn forced intensification of salmon fishing (Croes and Hackenberger 1988, Matson 1983). The alternative view is that increased salmon production promoted sedentary settlement and population growth, which forced increased reliance on shellfish (Fladmark 1975). In both views population growth is treated as a constant independent variable, which responds to a combination of increased food supply and decreased mobility.

If the common assumption that shellfish gathering is closely associated with population growth is correct, then the early absence of intensive shellfishing at Namu suggests that population growth was not the consequence of either reduced mobility or access to a reliable food supply. The faunal data show that intensive salmon fishing and semi-sedentary settlement were in place for ca. 1000 years before the significant accumulation of shell midden deposits began. Based on 1000 years of fall through late spring occupation of the site with only minimal gathering of shellfish, it has to be concluded either that low residential mobility did not promote population growth or that any population increase was insufficient to force the increased use of shellfish. The conclusion that semi-permanent settlement is not a factor in population growth agrees with the results of cross-cultural analysis of contemporary foraging societies (Hayden 1981, Keeley 1988), though it runs counter to widespread assumptions (Binford 1968, Paludan-MÅller 1979:153). Preservation and storage of salmon was probably a major factor in promoting and allowing the early establishment of permanent winter villages, especially given the lack of equally viable alternative winter subsistence strategies. The implication is that access to a reliable food supply also was insufficient to promote major population growth.

The major shell midden accumulation, which begins with the increase in salmon production at 6000 B.P., suggests that population growth at that time was an indirect consequence of economic intensification. However if permanent settlement and a reliable food supply were already long established, then some other factor must intervene in the relationships among resource availability, production, and population growth. In seeking to eliminate explanations based on cultural tradition, technological innovation, and population, the preceding discussion was contrived to leave social demand and deliberate human agency as the only remaining explanation for transitions in the Namu economy.

Social Demand

Recent disaffection with simple determinist models of population growth or technological progress has led to increasing stress on social explanations of economic change and demographic adjustment (Bender 1978, Chapman 1988). However, social complexity is still regarded as more the consequence than the cause of economic transitions on the Northwest Coast (Ames 1983, Burley 1980, Matson 1983).

It is impossible to determine if the early Namu social organization was completely egalitarian or if it included positions of incipient status and authority. What is more important is the assumption of relative social stability during the period 7000-6000 B.P., when the local population could maintain itself through the exploitation of predictable, abundant, and stable food resources without increasing labour investment to include intensive gathering of shellfish. If conditions had remained unchanged, this envisioned social and economic pattern also could have remained stable and virtually unchanged. However, if the productivity of salmon was later enhanced, as Fladmark (1975) suggests, then subsistence production could have been increased with only moderate increase in labour investment. Whatever the resulting level of economic disparity, the potential would exist for greater individual accumulation with little extra effort.

Whether individuals were motivated toward extra accumulation to minimize risk of shortage, to support a wider network of kin, or to entertain and develop trade alliances is of little consequence. Any change in relative accumulation would disrupt existing social relations and set in motion a competitive cycle of social comparison and increasing economic disparity. Grave goods are an inadequate measure of the absolute degree of social distinction, but the goods from the Namu burials dating to between 6000 and 4000 B.P. do indicate disparate levels of investment in the symbols of social display.

Ownership of resources and recruitment to domestic units of production would follow efforts to establish and maintain social position under conditions of greater affluence. Competition between production units combined with a more abundant food supply also could have actively encouraged changes in reproductive strategies, leading to population growth. Increasing economic disparity and larger settlements would finally force greater reliance on shellfish as an economic mainstay. The intensification of salmon and herring fishing and seal hunting between 5000 and 4000 B.P. may indicate further increase in demand and an enhanced organizational capacity for harvesting seasonally abundant resources. However, it was impossible to maintain the same scale of economic production and social demand following the later decline in salmon productivity.

Although the social demand scenario is entirely speculative, affluence-engendered social disruption and competition would have created a context in which there was some positive incentive for the economic transitions that environmental conditions simply allowed. None of the alternatives of population pressure or culture change are consistent with the Namu evidence and all suffer from a general neglect of the role of human agency in effecting economic change.

CONCLUSION

This chapter opened with the caveat that the methodology of zooarchaeology allows for many different readings of faunal data. Having proceeded from that point to draw inferences that go well beyond the safe bounds of the available data it is appropriate to repeat the caveat and return the data interpretation to the more modest realm of Namu's economic prehistory.

Every site embodies its own pattern of economic transition over time, and each archaeologist depending on their methods and perspective will tell a different story of that transition. The story told here could have been very different had it been based on small samples of material from selective parts of the site. Conversion of faunal abundance to measures of minimum numbers or useable meat weight might have altered the results still further. Fortunately the interpretation of Namu's economic prehistory is greatly constrained by the quantity and quality of the available data. The full implications of the Namu study will depend on the complete analyses of data of similar quality from many other sites, but the story of even one site has an interest and a value all its own.

Seven thousand years of faunal data provide a fascinating testament to the ways in which the people of Namu have defined and made a living in the shifting contexts of resource availability and their own social and economic needs. The duration of site features attractive for settlement and economic activity has provided an 11,000 year backdrop for an ever-changing pattern of economic activity, which has continued into the site's recent historic past and present. Economic prehistory may have few practical lessons to offer the present or the future, but the Namu story is an impressive heritage for the people whose ancestors first settled the site, and it deserves humble appreciation by those who so recently came after to define their own needs and opportunities in the resources of the region.

