

## CHAPTER V

### **Early Man in Arctic Ecosystems: Environmental Dynamics and Changeability of Subsistence Models**

Inasmuch as it is quite obvious that the history of mankind is a permanent sequence of adaptations (it could be applied especially to the history of human occupation of the Arctic), a look back at it would be a good thing to do in the concluding chapter.

Geological and geomorphological research undertaken in Fennoscandia within recent decades have shown that the Scandinavian ice sheet did not reach the easternmost area of Northern Fennoscandia during the last glacial. Some territories, such as a narrow corridor extending along the western Norwegian coast and a part of the Murmansk coastal area with Rybachy, Sredny, and Svyatoy Nos Peninsulas, were probably ice free (Holtedal 1957:21–23). As shown in Chapter II, the area covered by the Scandinavian glacier was almost completely deglaciated by 9000–8000 BP. At the same time the Ponoy Glacier, occupying the inner part of the Kola Peninsula, existed for a long time, slowly melting, and the territory was deglaciated only at the end of the Early Holocene. It is believed that the main part of the Ponoy depression remained unfit for both animal life and human occupation even much later (Armand and Nikonov 1963:55–60; Blazhchishin and Kvasov 1963:55–60; Vakorin and Kuptsova 1975:68–73). The existence of the Ponoy Glacier strongly affected natural conditions in Eastern Fennoscandia. Thus severe natural conditions occurred on the south coast of the Kola Peninsula.

The early Mesolithic population of Northern Europe survived under complex, fluctuating natural conditions that were characteristic of the late Pre-Boreal and Boreal periods. Consequently, the environmental features of the terminal glaciation and the Post-Glacial are of great importance for studying the history of human occupation in the area under consideration. Thus, it is supposed that both the Late Mesolithic and the Neolithic, coinciding in that territory during the Atlantic and Sub-Boreal periods, were the most favorable time for ancient Northern Europeans. The climatic optimum, suggested to have started in the second half of the Atlantic, was characterized by a warming trend. Thus, forest vegetation shifted far northward. Sub-Boreal conditions were also favorable on the whole for human habitation (Budyko 1977:107). The cold fluctuation, covering the end of the second and the third phases of the Sub-Boreal (the Early Metal Period in archaeological terms), slightly affected the population of the area. However, both the cold climatic trend, which predominated later—coming to the maximum in the middle of the first millennium BC, and the rising humidity contemporaneous with it (Khotinsky 1977:147)—appeared to be important and effected some changes in native economy.

Natural fluctuations caused the Post-Glacial crisis in reindeer hunting in Central Europe and the Pre-Boreal migrations of the Arensburg and Svider cultural groups respectively. But if the Arensburg population moved primarily northward, the Svider people migrated in an eastern or northeastern direction (Dolukhanov 1982:3; Kol'tsov 1979:15–25, 1984:74–85; Shumkin 1990:88). The cultural influence of the latter can be recognized as far as the Ural Range.

Archaeologically this process is reflected in the formation of the Komsa, Fosna, and Suomusjarvi cultures studied in Fennoscandia. Bearers of the first two, who were mainly descendants of the Arensburg population, reached Fennoscandia by moving across the land bridge that had appeared between western Scandinavia and the mainland in the Pre-Boreal due to isostatic movements. Both the Komsa and the Fosna people initially occupied the littoral zone of the southern, western, and southwestern coasts of the Peninsula, slowly moving northward along the coast and farther, to the eastern and southeastern coastal area. The inner part of the region remained uninhabited for a long time and became more or less populated in the Late Mesolithic. The region of Fennoscandia is considered to have been occupied completely only in the Late Neolithic (Shumkin 1984:3–18).

Archaeological research of Northern Fennoscandia has produced diverse and valuable material showing the flexibility of the aboriginal cultures, characterizing different adaptation strategies created under natural conditions. The balance of the food sources in use during the early stages of human occupation of Northern Fennoscandia were changed several times owing to changes in the faunal assemblage and the progress in development of hunting equipment and game strategy. Fishing is supposed to have been less important in the early stages, because sparse ichthyofauna were found in the periglacial lakes of the inner regions of Scandinavia. Most of the lakes totally lacked fish (Indrelid 1975:1–18). Moose and reindeer, which appeared in Fennoscandia no later than during the Allerode, can be considered the traditional game species hunted by the region's ancient natives. These two species, as well as sea-mammals—various seals and Atlantic walruses—were the main food sources over a long period. Undoubtedly, other mammals and birds were hunted too, and gathering was in practice. But the above-mentioned species were the most important sources, providing all the food and raw material necessary for subsistence.

Observations made in considering the composition of the Mesolithic tool assemblages, the thickness of the cultural layers discovered at sites, and the planigraphy and topography of the latter enable discussion of the Mesolithic peoples of Northern Fennoscandia as nomadic marine gatherers. Keeping in mind that the region under consideration is one of the areas that is richest in marine resources, we can suppose the above-mentioned subsistence pattern to have been rather stable. It is most likely that the early inhabitants of the area primarily exploited the productive resources of the littoral zone, supplementing the results by gathering and bird and reindeer hunting during some seasons, but there is no evidence of clear seasonality in the early Mesolithic economy. All the early Mesolithic sites are located in coastal areas, and none have ever been found in the interior regions. Vladimir Shumkin suggests that the population that entered Northern Fennoscandia in the early Mesolithic can be described as “specialized marine gatherers” (Shumkin 1988).

It should be noted that specialization indicates the main focus of the subsistence pattern; it does not mean that hunting, fishing, or gathering was the sole activity. It is very doubtful that such an economy has ever existed since the economy of every group of northern peoples was multi-faceted, and the latter was the only way to survive in the Arctic (Krupnik 1989:6; Chernov 1980:219).

The peopling of interior Northern Fennoscandia began in the late Mesolithic, after complete deglaciation of the area, which became occupied by natives in search of new food sources. The subsistence strategy of this population was focused on the exploitation of large mammal fauna of the forest supplemented by gathering and probably by primitive fishing practiced by chance and based on hunting methods. The sites of this period, discovered both in the interior regions and on the coast, appeared to be very close to each other when compared according to the main parameters such as thickness of cultural deposits, square of the area covered by the latter, and implements and technology. These common features can be recognized as evidence of seasonality in a native economy based on marine resources in summer and continental ones in winter. Perhaps some groups were of this kind, but adaptation based on seasonal migrations is thought to have been more characteristic for Southern Scandinavia (Mikkelsen 1978:78–119), while Northern Fennoscandia remained an area of bilinear evolution of subsistence strategies practiced by a population that occupied the interior and coastal regions up to Neolithic times (Shumkin 1984:3–18).

Further differentiation among native adaptations is recognized in the Late Neolithic, when these two tendencies were distinctly realized in the appearance of subsistence patterns based on continental and marine resources. Site locations, faunal remains discovered in the cultural layers of the sites, and tool assemblages show that the population of the interior regions of Northern Fennoscandia became proper forest hunters and fishermen in contrast to the sea-mammal hunters populating the coast, though the latter hunted other animals by chance and practiced fishing and gathering. This proper Arctic sea-mammal hunting adaptation flourished later, during the Early Metal period. The material culture of this period, known from excavations of coastal sites, demonstrates a specific adaptation model chosen in former times. There is great diversity in hunting equipment, which is represented by arrow and spear points and harpoons of both the regular and toggle types. Greenland and ringed seals, Atlantic walruses, and cetaceans (rarely) were the main hunted prey, as shown by the faunal remains discovered during excavations. But it is obvious that even during this period terrestrial mammals such as moose, reindeer, beaver, Arctic fox, and polar bear—whose bones have been found—were a part of the hunted prey, and fishing also played a role.

The living sites of sea-mammal hunters known along the Arctic coast of Northern Fennoscandia are thought to have been of long-term occupation, rather large, with thick cultural layers containing a great number of faunal remains. The locations chosen for the sites are still of extremely high biological productivity, which was determined by the necessity to use diverse resources (Krupnik 1989:40–46). According to ethnographic observations, the coastal Saami used a practice well known by the Eskimos, that of exploiting food sources found in a narrow strip along the coast line and a water area 5 to 10 km wide. The most intensively used areas surrounded the site locations but did not exceed an area of more than 3 to 10 km<sup>2</sup>. The high density of occupation discovered in some regions, such as Varanger Fiord and Drozdovka Inlet, can thus be explained. It is estimated that the effectiveness of the sea-mammal hunting exceeded 10 to 15 times the regular productivity of subsistence patterns practiced by groups populating the forest

zone and twice that of farming cultures (Broadbent 1979:250–259). These observations make it possible to agree with the opinion that communities of sea-mammal hunters can be compared in some sense with tribes using a production economy (Renouf 1984:18–28).

The flourishing of native sea-mammal hunting in the early phase of the local Iron Age suddenly collapsed, supposedly because of environmental changes. In all probability, a drop in temperature took place in the first millennium BC that affected the migrations of sea mammals, forcing them to choose other routes and rookeries farther northward along the Arctic coast of Scandinavia. The disappearance of native sea-mammal hunting on the coast of the Kola Peninsula is dated to this period, while that of Northern Fennoscandia disappeared sometime later. The unfavorable natural trend, which was of catastrophic character for the coast people, forced them to once again adapt to interior tundra regions.

There are evidently some grounds for something like the idea advanced by C. Carpelan (1979:141–151), who suggests that the hunting groups who populated the area in the Iron Age were involved in trade connections with the population of the southwestern regions of Scandinavia, whose social development and productive economy were much higher than those of hunters peopling the North. Depending on the import of various iron products (both tools and others), they were forced to become more active in fur hunting. The latter was conducive to modifications in and disappearance from the traditional culture of the natives of Northern Fennoscandia. It is supposed that reindeer breeding was introduced to the local culture in the middle of the first millennium AD and later (beginning in the Middle Ages). The subsistence pattern was modified to that of some kind of “late hunters” (in Krupnik’s words) based on seasonal cyclic movements, when reindeer were used mainly for transportation.

The second area comprising the western Arctic—territories of the extreme Northeastern European and adjacent Northwestern Siberian regions (the Yamal Peninsula), which could be called the polar Trans-Ural zone—was characterized by another kind of cultural and economic development. The initial occupation of extreme Northeastern Europe, which began in the Palaeolithic, is thought to have been interrupted by the Valdai Glacial. Concerning the polar territories, it can be said that they became populated in 7000–8000 BP (Vereschagina 1989; Kanivets 1976). Climatic and geographic reconstructions covering this period show that rising temperatures (the summer average is believed to have exceeded the current one by 1.5 to 2°C) and humidity occurred in the region’s polar areas beginning approximately 8200 BP. Favorable climatic trends that are recognized as conditions of the Holocene climatic optimum caused large scale environmental changes, with forest vegetation shifting far northward, reaching the Arctic coast in some places. Meanwhile the tundra zone was less represented (Avenarius and Muratova 1978:47; Pyavchenko 1952:127; Khotinsky 1977:149–164). The landscape changes undoubtedly affected the dispersion of the primary game species important for human subsistence. Some areas, especially the reindeer area, shifted northward. Evidently the population that occupied the tundra and forest-tundra zone of extreme Northeastern Europe in the Mesolithic was not very large and survived by exploiting traditional food sources such as reindeer, birds (especially molting geese), and fish. The topography of the sites located here and there along small riv-

ers and creeks, and near open lakes where primitive fish traps similar to that discovered in the Mesolithic First Vis Peatbog site (Burov 1966) might have been constructed, show that fishing was in all probability being practiced but did not play a significant role in the native economy. Stone implements represented mainly in surface contexts include stone points of the Post-Svidler type, flint insets made of blades and microblades, burins, etc., which are somewhat similar to artifacts known from the Volga-Oka and Kama River regions (Vereschagina 1989:11; Volokitin 1988:19–23). Correspondingly, the Mesolithic population of extreme Northeastern Europe is believed to have been descendants of tribes who occupied the above-mentioned regions near the Pleistocene-Holocene boundary.

Further climatic and environmental changes that took place during the Sub-Boreal and Sub-Atlantic periods were of less importance for subsistence patterns employed by the groups populating the area, or at least they did not cause sharp changes that can be archeologically recognized. At the same time the mid-Sub-Boreal rise in temperature, resulting in the deciduous forest vegetation repeatedly shifting northward, could have caused new intensive migrations northward from neighboring southern territories (Khotinsky 1978). It is possible that evidence of this process can be found in the relics of the Chuzhyayol culture, some of which are undoubtedly of southern origin. In the view of V.S. Stokolos (1987), they can be traced back to the Late Neolithic of the Kama River area, but in my opinion they are instead evidence of the Sub-Boreal cultural connections or interactions that took place in the region.

As for the Siberian Northwest, it is most likely that this area remained unpopulated for a long time, though the natural conditions that appeared near the Pleistocene-Holocene boundary were favorable (see Chapter II). The territory is lacking in early archaeological material, and one can suggest that there were some periods when Mesolithic hunters penetrated far northward, at least up to the Arctic Circle. The only Early Holocene site—Korchagi—is in the polar Siberian Northwest (Khlobystin 1982). It is supposed that the region became permanently populated in 3000–4000 BP through the migrations of bearers of the Taz, Sortynya, and Ortino cultures (Khlobystin 1982; Khlobystin and Lashuk 1986). The latter (spread from west to east from the Pechora River to Ob' Bay), the most significant phenomenon in the history of the region, strongly affected further cultural evolution in the polar Trans-Ural zone. Judging by the topography of the sites and tool assemblages, one can suggest that the subsistence strategy of the region under consideration was of the standard, conservative kind well known in Polar Regions. The groups populating the area were mobile reindeer hunters who supplemented their main activity with fishing, gathering, and bird hunting. The locations chosen for Neolithic sites and those of the Early Metal period are on small rivers, lakes, and oxbow lakes, which remain the most popular places for fishing and for hunting molting geese.

The question of the development of native sea-mammal hunting in the coastal and island territories of the Polar Trans-Ural zone appears to be very important inasmuch as the area has an abundance of marine resources. Until recent years archaeological evidence of indigenous maritime cultures was limited to material from Yamal, investigated by V.N. Chernetsov (1935), and from relics of the Ust-Poluy culture (Moshinskaya 1965). I.I. Krupnik (1989:179–182)



supposed that the local type of maritime adaptation has existed there for some time. The above-mentioned finds have long been compared with Eskimo materials, although the emergence of various elements of maritime subsistence systems in the Far Northeast of Europe in Russia and the northern parts of Western Siberia resulted from convergent courses of cultural evolution.

Concerning the western Arctic regions under review, the main questions can be formulated as follows: (1) the age of initial assimilation of the elements of maritime adaptation; (2) the role of these elements in traditional survival systems and the way they were controlled; (3) ethnic processes and their role in the variability of subsistence systems.

Within certain limits of reliability, recent data indicate the emergence of elements of a maritime subsistence system in the second half of the second millennium BC, i.e., approximately 3500 BP. Specifically referred to in this connection are the Maly Bolvansky Nos sites I and II in the northeastern part of Vaygach Island; their topographic locations can only be explained by the utilization of maritime resources (Pitul'ko 1988). Maly Bolvansky Nos I and II are linked to the spread of the Ortino culture in the Polar Trans-Ural zone, which in its final stage was influenced by the Garin-Bor culture of the Kama region (Khlobystin 1973).

Systematic research of the area directed by L.P. Khlobystin in the 1980s resulted in the discovery of sites dating to the first millennium AD, where maritime hunting was a prominent feature of the economy (Khlobystin 1985, 1986; Khlobystin et al. 1986). According to Krupnik, this material constitutes definitive evidence of the wide distribution of maritime subsistence systems in the region as well as the prehistoric existence of an original center of maritime adaptation (Krupnik 1989:179–182). Together with A.M. Murygin, he places in the same broad context the materials of the sacrificial site of Heibidya-Peddar; the present author strongly disagrees. Murygin claimed that the site belonged to a people involved in maritime hunting, citing as evidence pictures of sea animals scratched on a bronze mirror and a flat cast zoomorphic figure (Krupnik 1989:181). Unfortunately, I cannot share Murygin's optimism concerning these pictures (Murygin 1984); it is obvious that the images are of fish and the zoomorphic figure depicts a small furry animal, probably a lemming. The latter feature incorporates ancient indigenous beliefs.

Archaeological materials important for the discussion come from a shrine at Sirtya-Sale cape in the western coast of Vaigach Island (Khlobystin 1985) and another famous shrine at Diakonov (Bolvansky Nos) cape, which is the southernmost point of the same island deep protruding into Yugorsky Shar sound that separates Vaigach from the mainland (Khlobystin 1986). Rich archaeological collections obtained from these two sites do not in any way confirm the notion that maritime hunting had a central role in the indigenous economy—Samodic or Pre-Samodic—at least in the last millennium.

Discovered in 1985, Sirtya-Sale sanctuary was fully excavated same year (Khlobystin 1985). Although it is small, this site yielded a number of interesting bronze artifacts including masks, human and animal figurines, decorations with a popular motif of fantastic creatures, personal ornaments, iron tools and animal bones. These all served as offerings. Judging by known age for some of the artifacts, it can be concluded that the shrine was started in XI–XII century

AD—i.e., roughly about 1,000 years ago or a little bit earlier, and did not last long. None of the artifacts can be attributed to sea-mammal hunting. Unearthed fauna remains are not numerous and clearly dominated by reindeer bones.

A huge shrine at Bolvansky Nos was probably started even earlier, at around 1,500 years ago, and existed to the middle of the XIXs century when it was destroyed because of spread of the Christianity. A big portion of the site was excavated by Khlobystin in 1985–1987. Site yielded a number of artifacts (bronze, iron, and bone) and a numerous faunistic collection. These materials as well as that of Sirtya-Sale site show multi-directional cultural/trade connections between the people inhabited the area. Thus, a number of artifacts find the closest match in analogies known in Western Siberia (Low Ob River), Northern Urals, Kama River, and even in Early Medieval NW Russia (Novgorod, Ladoga). However, there are no depictions of sea animals, or any finds of maritime hunting equipment. Of the faunal remains, at least 60–70% represent reindeer, although bones of sea animals have also been found. In any case, these sacrificial complexes belonged mainly to reindeer hunters, who later turned to reindeer breeding.

At the same time, of major importance for the subject at hand are the materials excavated from the Karpova Bay site on Vaygach Island and the Cape Vkhodnoy site on the shore of Yugorsky Shar Sound (Khlobystin and Pitul'ko 1996; Pitul'ko 1991h). The latter demonstrate the same ratio between sea and land hunting activity. The sites were undoubtedly linked to sea mammal hunting, which is confirmed both by the faunal remains and by the finds of items of maritime hunting equipment (ice shoes, harpoons). Still, other animals are well represented: reindeer, polar bear, and arctic fox bones were found as well as those of various birds (Pitul'ko 1991h).

Finds from Cape Vhodnoy demonstrate that in one form or another maritime hunting played a definitive role in the indigenous economy of the first millennium AD. This activity maintained its importance even after the arrival of new settlers, as indicated by the results from the Karpova Bay site. But we do not know just how important this role was or the actual success or efficiency of local maritime hunting. Did it provide a permanently settled way of life in the coastal areas of Northwestern Siberia and in the Far Northeast of the European part of Russia? Some authors give affirmative answers to this question (Krupnik 1981, 1989). Thus Krupnik distinguishes two variants of maritime hunting in the western Arctic, namely, a culture of settled hunters and the seasonal sea hunting of nomadic tribes of the tundra (Krupnik 1989:181). Archaeological results, however, show that the Far Northeast of Russia in Europe and the northern parts of Western Siberia never attained a level permitting the formation of settled maritime cultures. It is more likely that throughout the history of the area maritime hunting was mainly seasonal, and correspondingly more or less successful. It appears that where maritime hunting was consistently effective, permanent seasonal hunting camps were established, such as those discovered by V.N. Chernetsov and the settlements of maritime hunters mentioned by various travellers of the 16<sup>th</sup> and 17<sup>th</sup> centuries (Van Linskhotten 1915; Lamartinier 1912; Chernetsov 1935). Settlements of this kind existed in the Arctic regions from prehistoric times (Khlobystin 1972; Pitul'ko and Makeyev 1991). Recent results offer precise evidence of the seasonality of maritime

hunting. As for the Ust-Polui site, it is more likely that its long-term occupation was due to successful fishing activities supplemented by the hunting of sea animals at the mouth of the Ob' River.

M.F. Kosarev takes much the same approach in his evaluation of the role of indigenous maritime hunting in the northern part of Western Siberia. Citing P.S. Pallas and V.F. Zuev, Kosarev (1984:79–80) refers to the incidental nature of maritime hunting activities. With reference to the so-called followers of maritime hunting among individual Nenets families (mainly the Yaptick family) mentioned by Krupnik, it is evident that we are dealing with nomadism along the coast where maritime hunting was developing naturally.

It is clear that the dying out of maritime hunting was not due to any changes in ethnic tradition between the first and second millennia AD, for this activity played a definite role in the Samodic culture (and was significant for trade in the 10<sup>th</sup> to 13<sup>th</sup> centuries), as shown by ethnographic sources and the results of research. Krupnik is correct in attributing the end of sea hunting to unfavorable ecological change in the middle of the second millennium AD, and to the large-scale utilization of sea animals by the Scandinavian countries and Russia. And it is obvious that indigenous maritime hunting never resulted in the formation of settled cultures, similar to those of the Eskimos, for example.

Climatic changes in the eastern Arctic around the Pleistocene-Holocene boundary were rather important for indigenous subsistence systems and the cultural evolution of the area.

As mentioned above (see Chapters II and III), a regressive phase of the Arctic Ocean (100–120 m water drop), when the major part of the Arctic shelf zone was drained, is supposed to be the main factor affecting the natural development of this area. Thus rigorous climatic conditions of an arid, continental type appeared in the eastern Arctic. Extensive glaciation never existed in the area (Are 1982; Danilov 1989), although the permafrost was very well developed. The original open tundra-steppe landscape—populated by animals of the mammoth fauna assemblage—was the most distinct feature of the eastern Arctic natural environment up to the beginning of the Holocene (Verkulich et al. 1989; Makeyev et al. 1988; Tomirdiaro 1972).

The initial occupation of these periglacial landscapes evidently took place in the Terminal Pleistocene and can be supposed to be linked with migrations of mammoth hunters of the Dyuktai culture, whose sites are known at least to 71°N at the Berelekh site, located near the Berelekh “Mammoth Graveyard” (Vereschagin and Mochanov 1972; Mochanov 1977). However, the natural environment, which remained stable for a very long time, had changed owing to the global Late Dryas rise in temperature. The changes had the character of an ecological catastrophe since the climate became more humid, thus causing an increase in the thickness of the snow cover in winter and the development of lakes and swampy landscapes, which appeared to be critical for the animals of mammoth faunal assemblage and consequently to the subsistence strategy of indigenous cultures that were based on mammoth hunting. Therefore the terminal Pleistocene occupation of the eastern Arctic was characterized by a sharp crisis in the subsistence economy.

The major paleogeographic changes in the region during the Holocene were determined by trends in temperature and humidity, the development of thermokarsts, and oceanic transgres-



sion that gradually submerged and eroded the Great Pleistocene Arctic plain. Tundra-steppe landscapes were completely replaced by tundra formations (Giterman et al. 1968; Makeyev et al. 1988). At the same time, the Boreal shifting northward of forest vegetation (to somewhere near the position of the modern coastline and the southern Arctic islands) is believed to have been favorable for new migrations to the polar areas. The subsistence economy of the Mesolithic population that occupied Northeast Asia from 10,500 to 6000 BP was based on two major game species, namely, moose in the taiga zone and reindeer in the tundra. Faunal remains excavated from the Sumnagin sites, which have been discovered from the Taimyr to Chukotka, show that other animals such as bear and sheep (*Ovis canadensis*) also constituted part of the hunted prey. Fishing and bird hunting as supplements to the main activities also played a role in the indigenous subsistence economies (Egorov 1969; Mochanov 1977). The latter can be recognized as two main variants of continental adaptation that were standard in the taiga and tundra zones respectively. Due to the high mobility of the Mesolithic population, the region was completely occupied as early as 8000 BP when they reached Zhokhov Island (76°N)—the easternmost extremity of the New Siberian Peninsula, which existed during the Early Holocene (Degtyarenko et al. 1982). Though the hunting groups that visited the island represented a distinct continental type of adaptation—evident from the analysis of the assemblage—the excavated faunal remains show a particular hunting specialization: polar bears and reindeer appear to have been taken in equal numbers (see detailed discussion above, Chapter III). This can be explained from the point of view of seasonality, but perhaps this unexpected specialization was determined by unstable reindeer hunting effected by the ecological crisis that took place near the Holocene boundary.

As shown by L.P. Khlobystin, the Taimyr region became occupied permanently due to environmental changes in the Early Holocene. Groups of Sumnagin reindeer hunters penetrated into the area about 7000 BP. Excavations of the most ancient site of Tagenar VI have revealed that the Taimyr natives survived through a general subsistence strategy that focused on reindeer hunting supplemented by fishing, gathering, and bird hunting. The Taimyr population appeared to be the most conservative in terms of a subsistence economy, which remained stable up to the most recent times. Thus the Taimyr is a unique archaeological region where the aboriginal culture can be traced back in great detail (Khlobystin 1982). The new populations that arrived several times, mainly from the Yakut area, were not influenced significantly by the subsistence strategy practiced in the Taimyr, although the cultural influence of the Neolithic Syalakh, Bel'kachi, and Ymyyakhtakh cultures are definitely among Taimyr archaeological materials. Yet the Samodic migratory wave, which took place much later and introduced to the indigenous population ideas of reindeer breeding, caused modifications in the local subsistence patterns.

In general, the Holocene climatic and environmental fluctuations that occurred in the Taimyr and Yakutiya were gradual in comparison with those of the European Northeast (Boyarskaya 1989), and affected the indigenous economies only slightly. It can be said that the region was occupied by mobile continental hunters who exploited reindeer populations in the tundra and moose in the taiga zone and supplemented this by hunting other animals, birds, and fishing, and

gradually improving on these activities. Thus, primitive fishing based on using traps, supposedly known from Mesolithic times, was replaced by the more advanced net in the Late Neolithic. According to Fedoseyeva, the latter improved significantly the adaptation capabilities of Neolithic people, making their economy more flexible (Fedoseyeva 1980). Most likely that part of the population, including the Taimyr people (confirmed by folklore data collected by B. O. Dolgikh (1952), hunted sea animals while visiting the coastal tundra during seasonal migrations.

Northeast Asia takes a special place among the polar regions of the Eurasian continent due to its consistent Holocene environment. Tundra landscapes predominated in the region during the entire Holocene, and sparse forest vegetation was concentrated in river valleys even during the most favorable periods. Many others believe that the area adjacent to the Bering Land Bridge was initially occupied by Late Palaeolithic mammoth hunters who later penetrated into the North American continent (West 1976; Dikov 1979:10–30; Mochanov 1977:223–241, etc). However, the area still lacks any real evidence of Palaeolithic occupation (see Chapter IV). Much later, beginning in approximately 8000 BP, the region was the eastern part of the Mesolithic area—and later, Neolithic cultures that originated in the Yakutian cultural core. Some inland cultures, however, underwent a continental kind of adaptation. At the same time, the region is famous for the huge diversity of maritime resources representing the main ecological feature of the latter. Favorable ecology seems to be the most important aspect of the situation. In this connection the question of the origin of traditional maritime cultures, which existed in Northeast Asia approximately from the first century AD, has been discussed several times. Though there is no direct evidence of a genuine maritime adaptation going back to remote times, N. N. Dikov (1979:96–78, 161–165) has advanced the idea that the initial assimilation of maritime activities could have taken place as far back as Mesolithic times. In all probability this thesis is correct. However, a late formation of the maritime subsistence system is to be more realistic; the sea hunting could have been a supplemental element comprising a complex adaptation model of an early indigenous population that replaced the former focus with the latter. In general, we can find in this way definitions to help us recognize local variants in widespread cultural phenomena such as Sumnagin, Ymyyakhtakh, etc., even if they were mono-ethnic.

It is most likely that subsistence strategies of the indigenous groups populating the Chukotka region were based for a long time on general principles common to mobile reindeer hunters of the circumpolar zone: following the seasonal migrations of reindeer (Druri 1949; Syroyechkovsky 1986), spending part of summer in coastal lowlands. Evidently, initial assimilation of sea-hunting activities was connected with a forced temporal stay in the coastal tundra, where reindeer hunting was less productive due to dispersion of the reindeer herds. Though the waters surrounding the Chukchi Peninsula are extremely abundant in sea-mammal fauna (Ivashin et al. 1972:49), the formation of a maritime economy appeared to be a long-term process. The latter can be traced back by a few definite facts. There are petroglyphs known on the Pegtymel River that depict scenes of sea-animal hunting with the use of large boats. Dikov generally dates them to the first millennium BC. Sea-mammal hunting, known by artifacts from the Chertov Ovrage site on Wrangel Island, is much older—carbon dated to 3500 BP. Researchers suggest

that implements found during excavation of the site are very similar to those of Independence Fjord in Greenland. However, numerous analogies in Chukotka are not too distant (Dikov 1979:157–159, 165–168; Tein 1979). Supposedly the island, located approximately 180 km north of the mainland, was discovered by hunting groups following migrating walrus that congregated in huge numbers at Cape Blossom (the southern extremity of Wrangel Island). At a distance of 15 km, the site is not far from a rookery. It is probable that the site was a summer hunting camp, confirmed in my mind by the nature of the faunal remains. The latter are represented exclusively by walrus and bird (duck) bones. The species of year-round habitation, such as seals (especially ringed seals) and polar bear, is represented by only two fragments (Tein 1979:54), though these animals are numerous on the island.

In all probability, Wrangel Island was visited by hunting groups from the Asian coast. Similarities between the Chertov Ovrage context and inland sites of the Chukchi Peninsula make it impossible to consider Chertov Ovrage site as evidence of a specialized maritime culture. The same can be said about the economic features of the Late Neolithic culture found in the Anadyr River valley, where a toggling harpoon head of archaic construction was excavated from a grave in the Ust-Belaya burial ground and dated to approximately 3000 BP (Dikov 1979). Concerning the Anadyr find, significantly effective walrus hunting was possible even in the most recent times at the Rudder Bank rookery, near the mouth of the Anadyr River. It is possible, too, that pieces of baleen discovered recently by M.A. Kiryak (1989) while excavating the Late Neolithic site of Rauchuagytgyn I in the western part of Chukotka (a distance of 120 km from the coast), indicate similar features of an indigenous subsistence economy. All of the data make it possible to assume that the population permanently inhabiting the inland tundra area was of a general continental hunting type. While a specific cultural type characterizing the groups that occupied the coastal tundra can be recognized as a modified continental adaptation, widely represented in the circumpolar zone and in the North Pacific (Vasilyevsky and Golubev 1976; Shumkin 1988; Fitzhugh 1973).

Late Neolithic sites in the eastern part of Chukotka have been identified by Dikov as the North Chukot and Ust-Belaya cultures, which he suggests are rather similar. At the same time, the contexts of both the former and the latter are similar (or familiar) to those of the Ymyyakhtakh culture. Owing to these observations, the major investigator of the Ymyyakhtakh relics, S.A. Fedoseyeva (1980), has concluded that formations defined as cultures in Chukotka can be considered provinces of the Late Neolithic Ymyyakhtakh cultural phenomenon. But Fedoseyeva does not define any local variants comprising the latter, though the Ymyyakhtakh sites were discovered in both the taiga and the tundra zones. To my mind, the sites represent a cultural unity only when being compared in the most general sense. Still they have distinct features that are helpful in forming cultural definitions. Thus A.P. Okladnikov (1970), who was a principal investigator of the Yakutian Neolithic, was for a long time of the opinion that there was a specific Late Neolithic Lower Lena culture. N.N. Dikov shares this view, comparing Chukchi Neolithic relics with those of the lower reaches of the Lena River. In my view, it is possible to identify at least the major local variants of the Ymyyakhtakh culture owing to

the specific adaptation of the people who exploited different sources of taiga, forest tundra, and tundra zone respectively. It is significant, that precisely the sites located in the tundra and forest tundra were defined by Okladnikov as the Lower Lena culture. In this way, the difference between the late Neolithic of Chukotka and other Ymyyakhtakh sites can be explained by the specific character of the subsistence strategy, supplemented in Chukotka by seasonal maritime hunting (Pitul'ko 1988a, 1990).

Archaeological data, as mentioned above, show that the main components necessary for maritime hunting (such as specific hunting equipment and social organization of a high level) were acquired at least by the end of the second millennium BC. But the classic cultures of maritime adaptation, based on specific principles, appeared much later, about 2000 BP. Keeping in mind the flexibility of both the subsistence economies and the material cultures of the indigenous Arctic population (Arutyunov 1982; Fainberg 1971), it is impossible to assume that the formation of maritime adaptations took 1,500 years. Most likely, the major factor that caused the appearance of maritime adaptations can be found as the long-term effect of the regional climatic trend that occurred during Sub-Boreal and Sub-Atlantic periods—unfavorable for the survival of reindeer, the main game species. We can find indirect confirmation of this assumption by referring to Krupnik's analysis of environmental fluctuations in the present millennium. It was revealed that even small-range changes caused a critical decrease in reindeer populations due to such things as epizootics, decrease in fodder, etc. (Krupnik 1989:119–132).

Further cultural evolution of Northeast Asia was determined by the co-existence (and forced co-operation, as shown by Krupnik) of mobile continental hunters, who occupied inland areas, and settled maritime cultures exploiting resources in coastal ecological niches. Some stages of the latter are definitely recognized through sharp differences in hunting specializations:

1. Old Bering Sea (or Old Bering Sea–Okvik)—approximately from 2200 to 1500 BP; walrus hunting is of great importance;
2. Birnirk—mid-first millennium AD; sealing and reindeer hunting play the most important role;
3. Punuk—the second half of the first millennium AD to the first centuries of the present millennium; whaling (*Balaena mysticetus*) is most important;
4. Thule—the middle of the present millennium; sealing became more important, though whaling also played a role.

As shown by Krupnik (1989:165–174), the succession of changes in the subsistence strategies in Northeast Asia has a precise correlation with the detailed climatic stratigraphy covering the last millennium.

In summary, one can note that in both western and eastern Polar Regions of Eurasia, the formation of cultures with maritime subsistence systems took place. At the same time, there is an obvious difference between the areas mentioned: thus, if the maritime cultures of Northeast Asia appear to be relatively young—traced back to 3500 or 4000 BP—those of the Far European North have a history going back to more remote times. It seems to be probable, too, that a favorable ecology or abundance of marine resources did not ensure success in the formation

of maritime adaptations, as with the indigenous maritime culture in the Polar Trans-Ural zone. The early assimilation of maritime subsistence activities in Northern Fennoscandia was evidently caused by peculiarities in the initial occupation of the area during the terminal glaciation, when pioneer migrants were forced to move along the narrow coastal strip—an ice-free corridor—between glacial margins and the shore line. In my view, this is a good illustration of the thesis that Arctic people became maritime hunters only when forced to.

The rest of the Polar zone of Eurasia was populated by reindeer hunters, whose subsistence systems were different in few details, representing in general a simple way of life. Some kinds of supplemental activities could have been more or less important. Thus it is supposed that semi- (seasonally) settled groups appeared during the Neolithic in regions characterized by high productivity in fishing. As suggested by Yu. B. Simchenko (1976), the most common feature of tundra-forest tundra subsistence strategies, practiced by reindeer hunters of the Polar Region for a very long time, at least from the beginning of the Holocene, was the seasonal-migration type within the limits of some definite area. It is most likely that some groups created a network of temporal or long-term camps, solving in this way such problems as transportation, housing etc. Systems of this kind are known both from ethnography and archaeology, at least for the Taimyr region (Khlobystin 1972). Undoubtedly, this strongly improved the adaptation capabilities of the indigenous population. Various hunting methods were in use, both of an individual and a collective character. Diverse methods of individual and group hunting at river crossings, especially characteristic in East Siberia—described in detail by travellers of 18<sup>th</sup> and 19<sup>th</sup> centuries—were extremely popular (Syroyechkovsky 1986:170–204). Further evolution of the general subsistence strategy that formed in the tundra zone of Eurasia resulted in the appearance of more stable, complex subsistence systems of “late hunters” (Krupnik 1989:148), who used reindeer for transportation and acquired ideas of reindeer breeding.

In that way, the cultural development of the Arctic region as well as the major stages of its occupation was strongly affected by environmental changes from the very beginning. Supposedly, as shown above, the starting point of human occupation in the Arctic is dated to some period in the Late Pleistocene. But ...