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Keynote

Inhospitable Regions and Marginality – Settlement at the End of the World

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Introduction – Settlement in inhospitable regions

Coasts, high mountains, marshy and arid regions are mentioned in the introduction to the session *Settlement in inhospitable regions* as examples of unfavourable environments. These are areas which, viewed with present-day eyes, do not seem immediately attractive, but which at some time must have exhibited sufficient qualities to attract settlement for short or longer periods. To this description of inhospitable regions one can add relatively inaccessible areas. The incentive to settle in inhospitable regions may be the availability of special resources, or the location of the settlement along important trading routes. Neither the exploitation of special resources nor important trading routes are static phenomena, and the description of inhospitable regions coincides in several respects with the description of the concept 'marginal area', which I prefer to use in the following.

The concept 'marginal' is used in certain contexts of areas which are geographically distant from a defined centre; but this is not the sense I will be using in the following, where the concept will be related to human settlement, and the marginal area will be evaluated in relation to the life conditions present for the population. Marginal environments are described as 'peripheral', 'at the outer edge' or 'on the fringe' (e. g. Baillie 1998, 13). Life in marginal areas is first and foremost associated with economic and social situations which – at some point – lead to stress, crisis and perhaps annihilation. In fact it is precisely the crisis situation that gives the concept of marginality as used here its content; but the concept is not unambivalent. It involves several meanings depending on the context, and Geraint Coles and Coralie Mills (1998) have summed up three meanings or definitions of marginality which they see used in archaeology today.

a) Environmental marginality, where the natural conditions are assumed to be the limiting factor. The marginal situation arises when a critical natural resource is not present or is reduced, or if a variable like the climate changes.

b) Economic marginality is the result of the way in which the subsistence economy is structured. *Economic marginality* differs from *environmental marginality* in that the environment is not originally considered to be marginal. Instead there is a disproportion between the way the natural resources are utilized and the nature of those resources.

c) Social and political marginality, which must be sought in the social and/or political position a given group/community has in a larger social and political system.

The two ecologically based definitions or models stem from internal factors, while the third definition – of *social and political marginality* – views marginality in a geographical or cultural perspective and looks at the interaction between the geographically or culturally marginalized society and the region in which it naturally belongs. Socially and politically marginalized societies are those that are geographically isolated, or for other cultural or social reasons are not subject to outside influences.

Coles and Mills point out that the three situations overlap, and that crisis in marginal areas should be explained in terms of an assessment of the ecological, economic, social and political factors and their interdependence. The definitions of the concept of marginality apply

first and foremost to situations where settlement in an area fails, and the definitions can equally well be regarded as different models for explaining why societies fail.

In my paper I will take up the thread from Coles and Mills and concentrate on the concept of marginality, especially the question of when a community and a settlement area can be described as marginal. My specific starting-point is the Icelandic *landnam* – 'landtaking' – in Greenland at the end of the tenth century.

Greenland – the natural setting

The Icelandic *landnam* took place in South West Greenland, where two areas were settled: one – the Eastern Settlement – was in the southernmost part of West Greenland; the other – the Western Settlement – was in the area around Nuuk, the present-day capital of Greenland (Fig. 1).

Greenland is the world's largest island. It extends from a latitude of 60° N in the south to almost 83° N in the north.

The Icelandic settlement of Greenland took place at the end of the 980s, and lasted just under 500 years. In the latter half of the fifteenth century the two settled areas with the Norse farms and churches lay deserted, and a new population group, the Eskimo Thule Culture, settled the coastal areas. What happened to the Norse population in Greenland is a subject of much discussion, and the Icelandic *landnam* and subsequent permanent settlement is regarded by many people as the ultimate example of a marginal society where, in the end, culture could not keep up with nature.

The Norse settlements in Greenland formed part of the region that has been called the North Sea Realm (Meulengracht Sørensen 1977, 16 ff.). This area or region comprises the Norse settlements in northern Scotland, the Hebrides, the Orkneys, the Shetlands, the Faroes and Iceland. The populations were predominantly of Norse origin (for the Scandinavian expansion in the North Atlantic, see Müller-Wille 1994), with a not insignificant Celtic element on Iceland (Helgason et al. 2000; Helgason et al. 2001). The language was West Norse.

The settlement in Greenland was the last in the series of Norse settlements in the North Atlantic which followed in the wake of the Viking raids on the British islands at the end of the eighth century. The British islands seem to have been permanently settled from the beginning of the ninth century (Sawyer 2000, 39). The Faroe Islands were colonized in the same period (Arge 2000, 154), while the colonization of Iceland took place in the last quarter of the same century. The sea linked the settlements together. It took between two and three days to sail

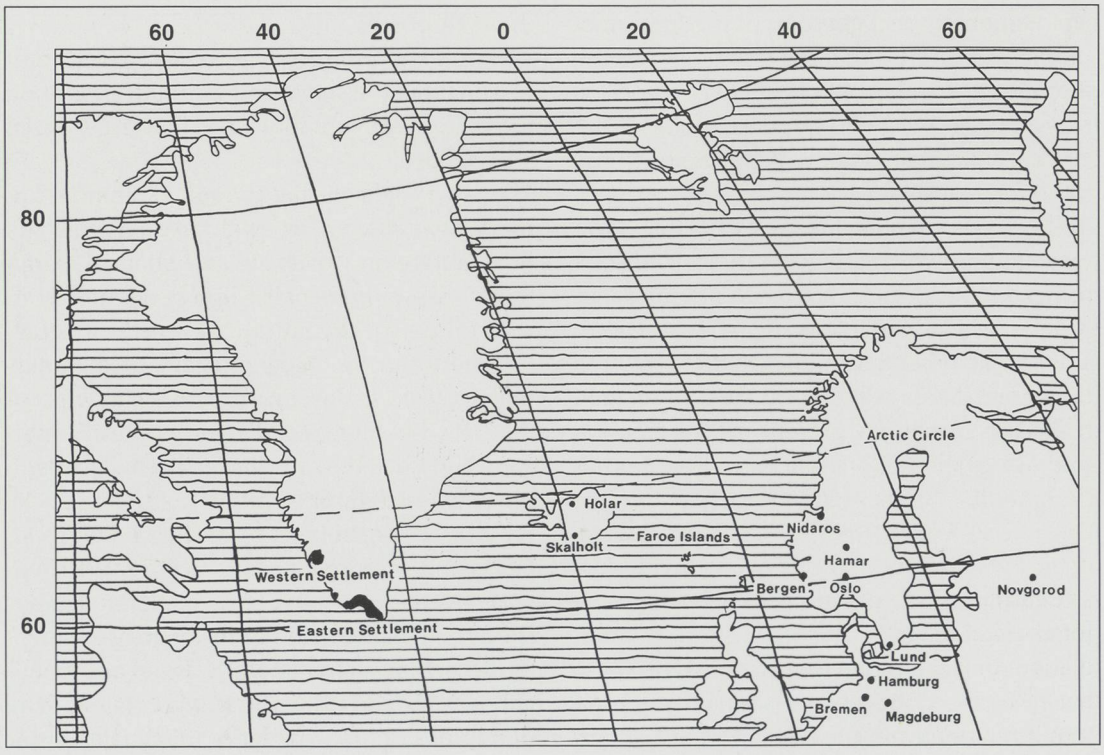

Fig. 1: Greenland. The Norse Eastern Settlement covered an area which is today part of three southern Greenlandic municipalities: mentioned from the south, Nanortalik, Qaqortoq and Narsaq. The Norse Western Settlement was in the present-day Nuuk municipality.

from eastern Norway to England, while it took from four to five days to sail from Norway to Iceland (Christensen 2000, 95 f.). If one wanted to go on to Greenland one had to spend a further two or three days at sea (Jónsson 1930, 17 ff.).

It has been estimated that the population of Greenland at its peak reached 2000–2500 (for a discussion, see Lynnerup 2000, 290 f.). As a comparison it is assumed that around 50,000 people lived on Iceland at the end of the 1300s (Thorsteinsson 1985, 117).

Subsistence economy of Norse settlements in Greenland

Central to the discussion of Icelandic settlement in Greenland and the further fate of the Norse community is the way in which the population sustained life in a country where the average summer temperature only reaches +10 °C in very few places – the very places where the Norse immigrants settled; where the mean temperature only reaches +10 °C for a couple of months in the year; and where the winter temperature in the most exposed places can sink to below –30 °C (see for example Ogilvie/McGovern 2000).

When they arrived in Greenland, the pioneers had cows, sheep, goats, pigs, dogs and cats with them in their ships, and in Greenland they found large stocks of seals in the fjords as well as caribou inland. The settlement took place in the inner fjord areas, and the settlement pattern with scattered farm complexes reflects the pastoral farming the settlers brought with them to the new country (Fig. 2). Pastoral farming characteristically has two forms (cf. Christiansen 1991). Extensive farming – rough grazing – where the animals graze freely and the work effort is limited to catching the animals when they are to be used. In intensive farming the grazing of the animals is controlled by herdsmen, enclosures and stalling. The last of these requires among other things stall buildings, barns for the storage of winter fodder, hay harvesting, the regulation of pastures and tools for mowing the hay. In intensive farming it is possible to make allowances for the state of the vegetation resources, but this is not the case with rough grazing, where the animals are allowed to wander around freely.

Our knowledge of the earliest types of farming in Greenland is extremely limited, since we only have a very small body of archaeological material to shed light on the earliest settlement. But indications of animal feeding – and thus of intensive farming – have been found in the very first settlement period at the magnate's farm Sandnes in the Western Settlement (Fredskild/Humle 1991, 77), and the same is true of the inland farm known as the *Farm Beneath the Sand*, c. 25 km from Sandnes (Ross 1998, 36). Later in the settlement period there is no doubt that the intensive type of farming prevailed. All the Norse farms that have been investigated archaeologically (all of which must be assigned to later periods in the history of the settlements) have animal sheds and barns. However, stone walls around fertilized home-fields – especially in the Eastern Settlement – suggest that there may have been a mixed type of farming where intensive farming belonged to the area close to the farm, while the remoter areas – the outlying fields – were used for rough grazing. *Sæter* or shieling units in the Eastern Settlement (Albrethsen/Keller 1986) may be an argument against rough grazing, but unfortunately none of the farms that are described as shielings have been archaeologically investigated, so we do not know when they were in use. The determinations of the age at death of the farm animals suggest that the animals were kept both as meat producers and for secondary production (McGovern 1985, 102; McGovern 1992, 101). Estimates of the number of farm animals indicate that the livestock population at the individual farm was not large (McGovern 1992,

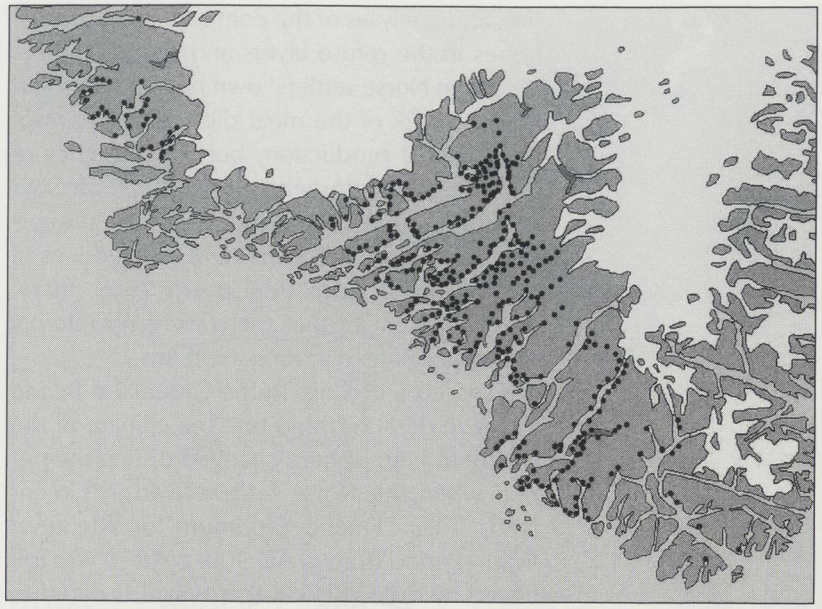

Fig. 2: The Norse farms lay scattered along the fjord, in the deep valleys and inland. Each symbol on the map indicates a farm with a large or small number of buildings.

98), and analyses of the composition of animal bones in the refuse layers and isotopic analyses of the Norse settlers' own bones both show that the bulk of the meat diet came not from farm animal production, but from catches of seal in particular (Arneborg et al. 1999; McGovern 1985; 1992; 1993). All bones from the various animals are represented in the middens of the individual farms (McGovern 1985, 90 f.), which may mean that there were no internal exchanges of feed among the farms.

The ice-core drillings in the Greenland Inland Ice have demonstrated that the climate of the Northern Hemisphere changed during the period when the Norse settlers lived in Greenland. The Climatic Optimum or Medieval Warm Period from *c.* AD 900–*c.* 1350 was followed by the Little Ice Age, which is dated to the period *c.* 1350–1850. The transition between the two climate types, according to sediment cores drilled in the fjords of the Eastern Settlement, was characterized by strong wind activity, and with the Little Ice Age drier, windier weather came (cf. Kuijpers et al. 1999, 62). Sediment cores from the fjords (Kuijpers et al. 1999), and from bogs and lakes in the central part of the Eastern Settlement (Fredskild 1992), soil analyses from the vicinity of the Norse farms (Jakobsen 1991) and traces of wear from sheep and goat teeth (Mainland 2000, 87) all concur in showing that soil erosion in the settled areas became severe a couple of centuries after settlement. On the other hand there is no agreement on the causes of this. Some researchers attribute the destruction of the vegetation cover to the Norse farmers' scorching away of the natural bush vegetation and subsequently their grazing animals (Jakobsen 1991; Fredskild 1992). Others stress the powerful wind activity, especially in the transitional period between the Climatic Optimum and the Little Ice Age (Kuijpers et al. 1999). Whatever the explanation, one or the other or perhaps rather a combination of both, we must assume that erosion constituted a serious problem for the Norse Greenlandic pastoral farming.

The use of shielings, with active exploitation of the more remote pastures, and artificial irrigation, where lakes in the mountains were dammed up and the water was diverted down to the homefields through turf-built irrigation channels (Krogh 1974) and intensive fertilization to optimize grass production on the enclosed homefields were the Norse settlers' responses to the deterioration of the grass resources. At one of the farms in the Western Settlement anthropogenic or plaggen soils have been identified at a distance of almost half a kilometre from the farm buildings, and it appears that the soil was in fact better there when the farm was abandoned in the latter half of the 1300s than when the Norse settlers arrived there around the year 1000 (Schweger 1998, 16).

The composition of the animal bones in the middens at the farms suggests that in time the percentage of farm animals decreased in favour of hunted animals such as caribou and – not least – seal (McGovern 1985, 86, Table 6) and ^{13}C analyses of the Norse bones point in the same direction. In the isotopic analyses one sees a tendency towards increased dependence on the marine resources, but it is worth noting that there was a considerable marine fraction in the early settlement period too (Arneborg et al. 1999) (Fig. 3). Thus at the subsistence level we see suggestions of greater dependence on the marine resources, either from necessity because the pastoral farming was in crisis, or because the Norse Greenlanders could benefit from the larger seal stocks in the fjords as a result of the increased wind activity and thus faster turnover in the fjords (Kuijpers et al. 1999).

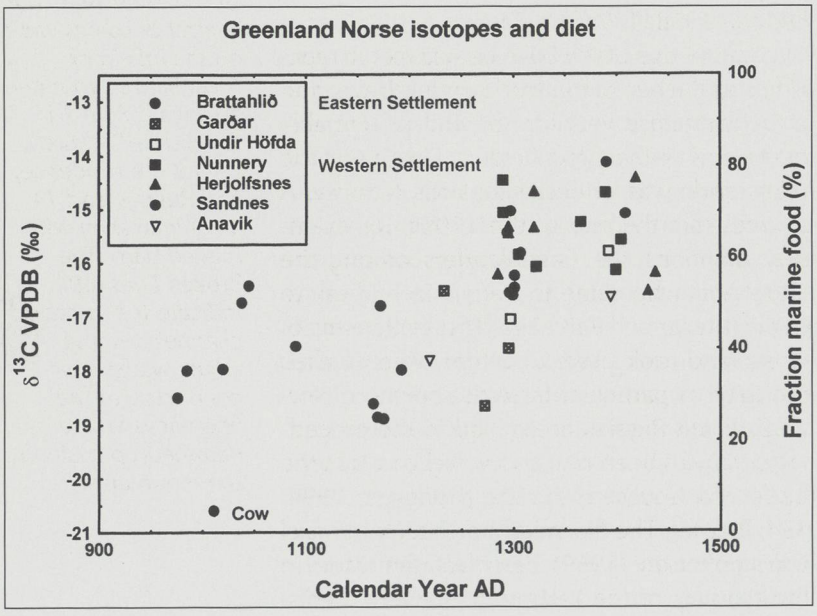

Fig. 3: The ^{13}C values of Greenland Norse skeletons as a function of time of death determined by ^{14}C dating. On the right y-axis, the ^{13}C has been translated into percentage marine content in the person's diet.

Social structure

Besides domestic animals and the various types of household articles necessary to sustain life, the first colonists in Greenland took with them

a world-view and not least a social system that became normative for the new society they built up in the new country. The social system in the countries from which the colonists came was kinship-based and hierarchically structured, and this societal form was transferred to the new country. The placing of the farms in the landscape, the architecture and the economic basis of the individual farm, assessed in the light of the distribution of animal bones, reflect the social reality that prevailed in the Norse-Greenlandic society. The farms of the great farmers lay on the wide moraine plains with good pastures, and – as a particularly important factor – with good hay-harvesting possibilities in the autumn. The large, prosperous farms consisted of many buildings with different functions scattered over the enclosed area, while the smaller farms consisted of a smaller number of buildings, often built so close together that they appeared from the outside as one large building complex. The churches were adjacent to the farms of the elite or magnate farmers (Fig. 4; 5).

The cow, the sheep and the goat were the Norse Greenlanders' most important farm animals. The cow was the most demanding of the three, and the distribution of bones in the farm middens shows that it was the bigger farms with wide pasture areas and the possibility of gathering large quantities of grass for winter fodder that had cows. At all the smaller farms sheep and goats were predominant.

Fig. 4: Gardar in the Eastern Settlement – the large farm where the Bishop of Greenland had his seat. The central buildings were on the infield or homefield surrounded by a wall. Ruin 1 is the Bishop's church, Ruin 8 the residence, and Ruins 9 and 14 an animal shed with related barn. The broken lines (49) indicate the irrigation channels through which water was conducted to the homefield from a dammed-up basin in the mountains.

Exchanges and communications

Subsistence economy strategies were crucial in a period when long-distance trading in staples or subsistence goods – in this case imports of food – was not common in the North Atlantic area (cf. Barrett et al. 2000), but although the Norse inhabitants were apparently self-sufficient at the subsistence level, the economic system was still in the final analysis dependent on imports. Ironworking technology was fundamental to the society the Greenlandic pioneers established in the new country. For example, the grass for the winter fodder was mowed with iron sickles. And iron could not be extracted in Greenland. The Greenlanders imported iron from Europe, primarily from Norway (Buchwald 2001, 82 f.). Besides iron, according to written sources from the High Middle Ages (*Konungs skuggsiá* from 1240–63: Holtsmark 1981, 62; Brøgger 1947), the Greenlanders also imported timber, while the same source mentions skins, rope made of walrus hide, and walrus ivory among the Greenlanders' exports (Halldórsson 1978, 117 ff.).

Our knowledge of the contacts between Greenland and the rest of the world in the first period after *landnam* is very limited, but presumably the trading of the Greenlanders, like that of the Icelanders, was oriented towards Norway. A source from the end of the 1100s, for example, mentions the Greenlanders among the merchants who came to Bergen in Norway to trade (Magerøy 1993, 34). The settlement of Greenland took place at a time when walrus products in particular from the northern Norwegian and Russian areas, had in the preceding centuries been much-coveted goods in the trade with southern Europe (Hedeager 1994, 134; 142 ff.). The Norwegian archaeologist Axel Christophersen (1989) describes the trade in the Norway of the Early Iron Age as a "redis-

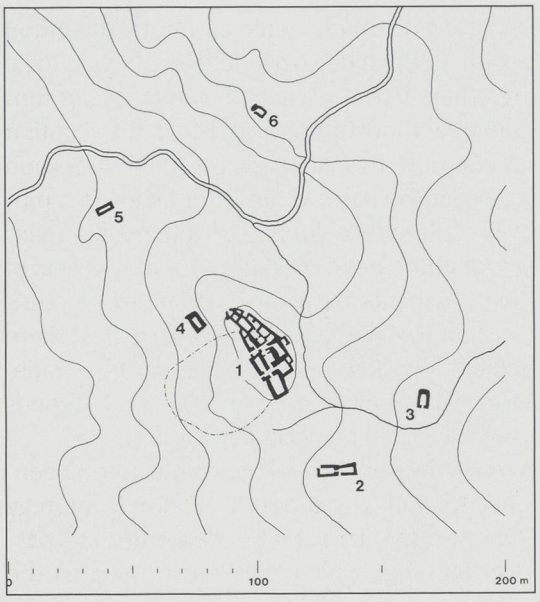

Fig. 5: Centralized farm in the Western Settlement. Ruin 1 is the composite main complex of the farm, where there were both dwellings and utility buildings. The surrounding ruins are a single animal shed/barn building (Ruin 2) and outhouses with undetermined functions.

tributive trading system with a continental base". The point of departure was the iron production in central Norway. The iron was exchanged for furs, walrus tusks and other valuable products from northern Norway, and the Arctic products then formed part of exchanges with valuable goods from the European continent. The exchanges of goods between north and south were mediated by central Norwegian magnates from the Trondheim area who controlled the iron deposits in their home regions, and the trading was conducted in small networks with many intermediate stages linked together by personal relations. Later, in the course of the 800s, the northern Norwegian magnates themselves seem to have taken an active part in the trading. Thus at the end of the 800s the northern Norwegian magnate Ottar (Old English Ohthere), according the personal account he gave to the English King Alfred (reigned 871–899 AD), had himself sailed with his sought-after Arctic trading goods from his home area in the high north to Skiringssal in southern Norway and to Haithabu in Denmark (Lund 1983, 23 f.). Besides the journeys south, Ottar speaks of voyages north along the northern coast of Norway, voyages made first and foremost for the sake of the walruses, for as the source says, "...they have much precious bone in their tusks ... and their skin is excellent for rope" (Lund 1983, 21 f.). In Axel Christophersen's words, one can call the Greenlandic trade a redistributive system with a Scandinavian and continental base, and the primary foundation of the trade was the coveted walrus products: walrus tusks and walrus hide worked into rope, which in the late 800s helped to make northern Norwegian Ottar a very rich man. The colonists in Greenland, with their Greenlandic walrus products, were part of an already well-established trading network which also included the Greenlanders' most important import, iron (Christophersen 1989, 127).

The walrus can be found in the waters north of the Norse settlements in South West Greenland – from Disko Bay northward; and according to written information (*Hauksbók*, written by the lawman Haukr Erlendsson [d. 1334]; the source is preserved in its original form), the hunting was organized by the great Greenlandic farmers, who not only owned the ships in which the hunters sailed north – they also owned the hunting implements the hunters took with them. The source adds that the magnates sometimes themselves took part in the hunting. The hunters apparently only brought back the front part of the large animal's skull, where the valuable tusks are, and concentrations of skull fragments found in the middens at the large farms back in the settlements indicate that the great farmers, besides organizing the hunting, were also responsible for the further distribution of the hunting products to the markets in Scandinavia. In exchange they received among other things iron, which they redistributed in the local area. The control of both external and internal trade was part of the magnate farmers' power base in Greenlandic society.

In the first decades after the *landnam* in Greenland the Greenlandic magnates – like the northern Norwegian magnates – probably themselves took an active part in the trade, but as early as the 1100s it seems that the Greenland trade fell into Norwegian hands, presumably because the Greenlanders no longer possessed the big seagoing ships that were necessary to cross the North Atlantic (Magerøy 1993, 57 ff.). In 1261 the Greenlanders signed an agreement with the Norwegian King to pay taxes and fines to the Crown (GHM II, 777 ff.). What they got in return the source does not say, but it seems reasonable to consider this in the light of a similar agreement that the Icelanders signed with the Norwegian King in 1262–64. The Icelandic treaty is preserved in copies, and it is evident from these that the Icelandic magnate farmers, in return for their subjection, demanded among other things that the King would safeguard the supply of goods to Iceland (Thorsteinsson 1985,

94 f.). Given that the trading of the Greenland farmers and thus their position in society was at this time dependent on the foreign merchants coming to them, it is reasonable to assume that the Greenlanders laid down similar conditions. Treaty or not – there is much to indicate that the Norwegian trade to Greenland waned in the course of the Late Middle Ages and died out completely at the beginning of the 1400s; nor did the German merchants who appeared on the Norwegian trading scene from the mid-1300s (Magerøy 1993, 147) show much interest in Greenland. The explanation should presumably be sought in the fact that the change in the climate brought different current conditions and more ice in the sea around Greenland (Jensen et al., forthcoming), which made the voyages more risky than before, along with a declining market for the Greenlanders' main product: walrus ivory. As early as the end of the 1200s northern Europe gained access to its competitor, African ivory, and in the course of the 1300s the quantity of the African ivory on the European market rose while its value fell. Around 1400 the use of ivory in European crafts almost ceased (Roesdahl 1998, 40 f.).

Discussion

Environmental marginality and economic marginality arise when there is an imbalance in the interplay between man and nature. In the specific discussion of the Norse settlement and the later depopulation in Greenland, it is difficult to separate the two concepts. Environmental marginality refers to the situation where the appropriate natural environment or resource basis is either not present or is depleted/changed, while economic marginality refers to a situation where there is a disproportion between the utilization of the natural resources and the nature of those resources. The question is when and subsequently why this disproportion between resources and resource consumption arises – in addition the one situation may be generated by the other. The two definitions or explanatory models both have an internal perspective, and I therefore prefer to consider the two descriptions or explanatory models together.

One could claim that Greenland was environmentally, economically, socially and politically marginal from the outset – partly because it lay so far geographically from the other societies in the region that it would almost by definition be isolated, and partly because in the local area there was no access to something as fundamental to society as iron; but in the situation in question this approach to the discussion would be too narrow. We do not know the motives of the first colonists for settling in Greenland, but the basic conditions for the success of the settlements are evident: it had to be possible to survive at the subsistence level, and there had to be opportunities for long-distance trade, so that the population could obtain the goods to which it had no access in the local area.

At the subsistence level the colonists in Greenland applied a two-tiered economic strategy from the start. The point of departure was pastoral farming, which must be viewed as the fundamental socio-economic element in society, supplemented by hunting. From the 1100s on the increasing erosion of the soil and thus the destruction of the natural grass resources may have initiated a development towards an ecological and economic crisis situation for the pastoral farming, which means that the settlement area can be characterized as both environmentally marginal and economically marginal. The social system was based on the ownership of land, but apart from the fact that the group of magnate farmers can be identified, we know hardly anything about the social organization of Greenland. There was probably, as in Iceland, some kind of interdependence between the magnates and the other farmers (see for example Hastrup 1985, 107 ff.). Access to seal hunting was probably regulated by laws which in the last analysis depended on the ownership of land (Hastrup 1985, 111), and as long as these laws were observed an increase in sealing was not a threat to the social structure. Changes in the subsistence economy, for example a change from pastoral farming to sealing, would only become a threat if people broke out of the established social system, abandoned their farms and settled as hunters on the outer coast, where sealing is best – and this does not seem to have happened.

In the first period of settlement, it was the Greenlandic magnates themselves who maintained contacts with Scandinavia, while the distance between Greenland and Scandinavia grew greater – not measured geographically, but the climatically determined amount of sea ice around Greenland and the more frequent storms made voyaging to the Norse settlements

more difficult. The Greenlanders lost control of the trade at the same time as their most important trading goods dropped in value on the European market. The internal exchange of subsistence goods appears to have been minimal, and on the basis of Brumfiel's and Earle's (1987) exchange model the walrus products and the imported iron can be regarded as the Greenlanders' wealth goods. The production of the walrus products (i. e. the organization of the hunting trips in the north) and the trading contacts with Scandinavia were of crucial of importance to the social position of the magnate farmers in society and thus to the social structure as a whole.

According to Coles and Mills people tend to try to counter environmental crises by introducing new technology or new forms of production, or by adopting different subsistence strategies (Coles/Mills 1998, xi). In Greenland there seem to have been no radical changes in the basic features of the intensive type of farming that the Greenlanders used for the almost 500 year the settlements lasted; but mountain pasturing, intensive fertilization of the homefields and artificial irrigation may have been attempts to avert the consequences of an ecological crisis. Other subsistence strategies could have included increased hunting, and there is much to indicate that the Norse Greenlanders did exploit this option. A few ^{13}C isotopic analyses show that there were people whose diet was up to 80% marine. It would have been more difficult to combat the problems that arose as a result of the failure of long-distance trade. The only possible way of maintaining the long-distance trade and thus the cultural contacts with Europe was to replace the now less attractive walrus products with other trading goods, and this does not seem to have been done.

The overall evaluation of the Icelandic *landnam* in Greenland is that the settlement did not originally take place in a marginal area. The Norse settlers' pastoral farming supplemented by hunting met the society's subsistence needs, and the magnate farmers themselves had control of the long-distance trade, but in time the Norse settlements and the Norse society were marginalized – internally because of new ecological conditions, and externally because of new economic conditions; and the changes created an imbalance between the natural conditions and the culturally determined social order.

Conclusion

Environmental, economic, social and political marginality is a condition that presupposes a preceding development from balance to imbalance. The analysis of the development of the Norse society in Greenland suggests that marginality as applied to human settlement is not only a matter of the environmental qualities of an area. Cultural and socio-economic factors, internal and external, play an important role for the understanding of the imbalance that arises in a society. The marginalization process must be assessed in a historical perspective, and in order to understand this process we must include in our deliberations the environmental factors and the developments in cultural contacts and long-distance trade.

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