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SETTLEMENT PATTERNS AND LANDSCAPE PERCEPTION IN NORWEGIAN HIGH MOUNTAINS IN THE STONE AGE

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Introduction

Norway has been seen as a last refuge for the reindeer hunters of the North European plain. The subsistence in the South Norwegian high mountains has been said to depend mainly on reindeer through the Mesolithic, Neolithic, Bronze Age and Early Iron Age, *i.e.* from around 8500 – 2000 BP (Hagen 1963, Indrelid 1975). It is however reasonable that the changes that took place in the lowlands influenced the activity in the high mountains, especially since the subsistence model for Norwegian hunter/gatherers supposes that the mountain areas are part of a seasonal cycle.

One important change on the Norwegian west coast has been a shift from a hunting economy in the Mesolithic to a pastoralist economy in the Neolithic. Hunter/gatherers would visit the high mountains in the autumn, while pastoralists would stay in the mountains during late spring, summer and early autumn. The subsistence activity decided the seasonal cycle, the experiences people had in the landscape and thereby the reading of the landscape.

In this article it will be argued that subsistence change is visible in the pattern of artefact distribution in the landscape, and that the landscape perception can be interpreted through the allocation of archaeological sites.

1 - The Lærdal Mountains sites

The area that will be presented here, The Lærdal Mountains in South Norway, (Fig.1) is situated between 1100 and 1500 m a.s.l. The landscape is dominated by lakes surrounded by mountains. There are steep mountains in the west and the distance down to the innermost part of the Sognefjord is only 50 km. From there the fjord stretches about 200 km westwards to the outer coast. In the east, there is more gentle sloping terrain for about 250 km to the Oslofjord.

The present tree line at around 900 m a.s.l. is a product of climate and human activity where especially the shieling in the 19th and early 20th century demanded a lot of firewood. In areas where shieling has stopped, the forest is growing higher than earlier, but the regrowth is slow because of the high altitude. It can be difficult to imagine that most of this area was covered by forest, but an outline of the early vegetation history in South Norway can give a better understanding of the allocation of the sites.

1.1 - Vegetational changes

A mainly non-arboreal pioneer vegetation with some birch, willow and juniper was established at 1150 m a.s.l. as early as 8900 BP in South Norway. By 8500 BP all glaciers had probably melted, and the forest development in the Preboreal and Boreal Period was rapid. A pine forest was established around 1200-1300 m a.s.l. as early as 8700-8500 BP, and probably reached its maximum in the early Atlantic Period. Finds of macrofossils show that there was a birch forest above the pine. The birch tree line reached 1400-1450 m a.s.l. and remained stable until 5000 BP. The pine forest line was also relatively stable through the Atlantic and the early Subboreal Period (Aas & Faarlund 1995). This implies that most of the sites were below the tree limit; a fact that necessitates a reconsideration of the traditional interpretation of the economy and the reading of the landscape in the Norwegian high mountains in the stone age.

Today the area is a typical reindeer habitat. There is no osteological material from the Lærdal Mountains sites, but remains from the Hardangervidda mountain plateau show the presence of reindeer in the mountains in South Norway as early as 8500 BP. However, the Hardangervidda osteological material also shows moose, possible deer and bird (Indrelid 1994:237-40). Like the Lærdal Mountain sites, the

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Hardangervidda sites are in the high mountains today, but below the prehistoric tree line. The osteological material from Hardangervidda thus supports the idea that the sites were in the forest, and that the subsistence was varied.

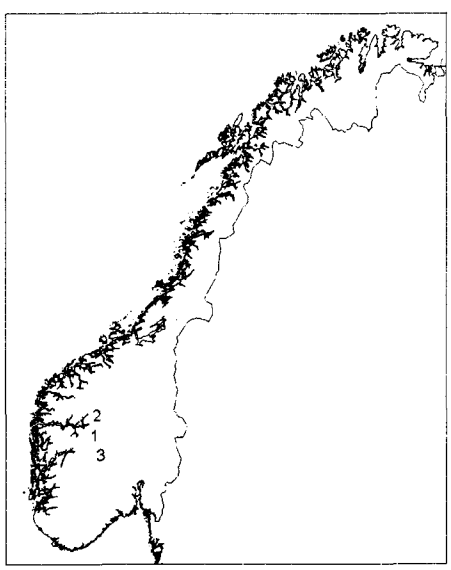
1.2 - Archaeological research

The surveys in the Lærdal Mountains was concentrated around six lakes (Fig. 1). Archaeological features and dateable artefacts were found around four of them. Only one lake, Kvevotni/Flævatn, has no sites in spite of a thorough survey. One factor that puts Kvevotni/Flævatn in a group of its own is the height above the sea. Four of the lakes are well below 1400 m a.s.l., which places them in the prehistoric pine forest. The fifth is at 1415 m a.s.l. which was closer to but still below a birch tree line at 1400-1450 m a.s.l. The series of Kvevotni/Flævatn lakes was above 1458 m a.s.l., and constantly above the tree line.

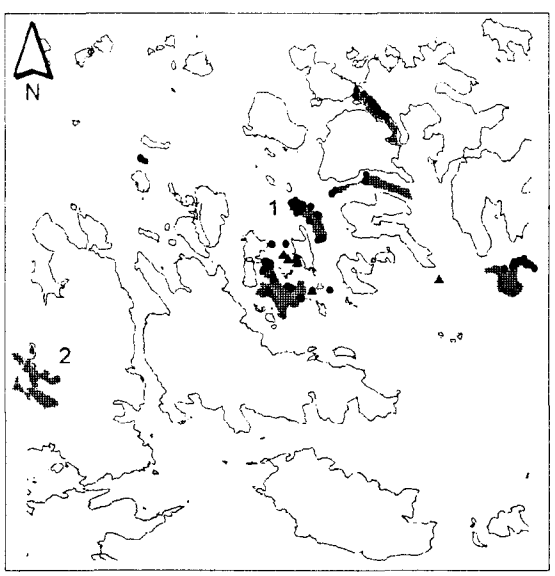
The lakes with the highest site density are Eldrevann/Tjørni (Fig. 2). They are treated as a unit, since the height difference between them was only 20 cm, and they where separated by just a few metres of a small, shallow river. Tjørni had two outlets, creating a small island called Glitreøyni. The terrain leads the trail up from the west coast to this lake, creating one of the main routes from eastern to western Norway. A reindeer trail passed here, and there has been modern shieling as well.

There were artefacts around all of Eldrevann/Tjørni except for a smaller part in the southwest. The dateable artefact concentrations were mainly in the northwest. Nine of the excavated sites had dateable material. These sites can be divided in six activity areas. One of them is dated to Late Neolithic/Bronze Age with a possible Mesolithic component. Three of them have Mesolithic, Early/Late Neolithic and Late Neolithic/Bronze Age components. The two remaining site groups, Eldrehaugen and Glitreøyni, have only Mesolithic components. Eldrehaugen is on the south shore, and Glitreøyni is the abovementioned small island in the north. The earliest C14-date from the area, 8510 ± 110 BP, is from this island. It is also worth noticing that neither of these two have any affinity to modern shieling buildings.

There is a possibility that the relationship between sites and lakes is mainly due to the surveying strategy. In Hardangervidda, sites are found at a certain



1. Lærdal Mountains
2. Nyset-Steggje
3. Hardangervidda



Lærdal Mountains
▲ Quarry
• Site
1460 m a.s.l.
Lake

1 Eldrevann/Tjørni
2 Kvævotni/Flævann

0 5 10 15 Km

Figure 1. The Lærdal Mountains with the larger lakes in the area. The highest possible tree line was 1450 m. There are no sites around the lakes Kvævotni/Flævann in the west which have always been above the tree line.

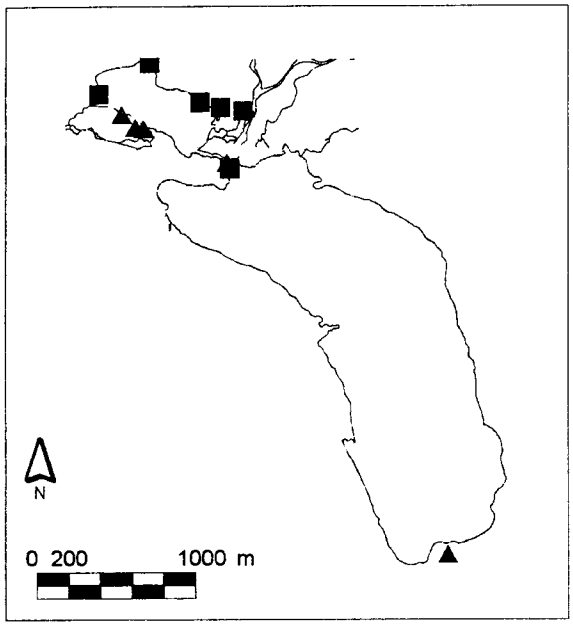


Figure 2. Lake The lake Eldrevann/Tjørni . Artefacts were found around most of the lake. Only the dateable sites are marked on the map. ▲ Mesolithic; ■ Mesolithic and later.

distance from the water both around regulated and unregulated lakes (Indrelid 1994:218-21). This suggests that the relation is spurious. Results from surveys in the Nyset–Steggje mountain area also indicates that the concentration around lakes is not so strong (Bjørgo 1988). Later work has, however, shown that the relation between lakes and sites is stronger in the Mesolithic and Early Neolithic periods and weaker in the Late Neolithic and Bronze Age (Prescott 1995).

1.3 - C14-datings and artefacts

C14-samples and dateable artefacts can give a possibility of placing the sites on the time scale. Generally there is thin topsoils covering the sites, and accordingly a chronological sequence could hardly be observed. Moreover it must be expected that frost perturbation has changed any existing sequences. There are no organic remains apart from charcoal, and artefacts were found on the surface and just under the turf. There are few diagnostic pieces among the artefacts, and most of the flakes are expedient tools, simply flakes used as cutting edges.

C14-samples and dateable artefacts show that some places has been chosen several times through the 6000 years of occupation from around 8500 BP till 2000 BP. At the same time the C14-samples also indicates longer periods without any activity at all, especially between 5800 and 3500 BP; an interval of ca 2300 years. In Norway this covers the Mesolithic/Neolithic transition, which is at around 5000 BP. On the other hand, dateable artefacts indicate activity in this period. For instance, slate points dated to Early or Middle Neolithic and bifacially retouched quartzite points dated to the Late Neolithic and Early Bronze Age, imply a certain activity in the period not covered by C14-samples.

The plant species was not determined in the C14-samples done in the 1960's. That rises an important methodological problem; especially in this area where it even today is possible to gather firewood that is several thousand years old. The occupation hiatus shown by the C14-results is however corroborated by results from other high mountain regions where the species in the C14-samples have been determined to willow and birch (Bang-Andersen 1986). The results from these other sites together with the fact that the sites were below the tree line suggest that they were not using fossil firewood. The conclusion must be that the area is used extensively and not continuously. The hiatus and the fact that the dateable artefacts are slate and quartzite points, *i.e.* tools for hunting, may suggest that this is a period when the only activity is sporadic hunting.

2 - Landscape perception and Stone Age economy

The areas around the lakes seem to have a lot of identical locations, yet there is a concentration of activity in certain areas. The reason why one location was preferred over another could be mere chance, since there are probably a great number of adequate places to choose among. On the other hand, the fact that exactly the same place is chosen several times suggests that there was other reasons for the choice.
A certain location was evidently a good place to settle for people with a certain reading of the landscape. People with different subsistence economy, will see and look for different elements in the landscape. The landscape belongs to those who belong to it, with their experiences within the landscape. It is therefore hardly possible for us to understand why one specific location should be preferable to another, because we do not share the same experiences and the same way of looking at the landscape (Meløe 1989). The experiences made are dependent on the subsistence pattern. Hence, the subsistence pattern can be visible in the allocation pattern, and a shift in allocation pattern should reveal a shift from one type of economy to another. A hunter is looking for good places for the hunt, and needs an understanding of the animal's movement in the landscape and will position himself according to this. As

well as the hunter, the pastoralist needs an understanding of the animal's movement in the landscape, but the pastoralist is also looking for favourable grazing grounds and places where it is possible to control and guard the animals.

2.1 - Subsistence in the high mountains

Hunting and shieling have been the two subsistence patterns in the high mountains. The Stone Age sites are traditionally seen in relation to the reindeer hunt. This idea must however be reconsidered, since the sites were not in the barren high mountains, but in the forest. The fact that they were situated in the forest contradicts the exclusive dependence on reindeer hunting, and indicates that the area has been more of an extension of the lower-lying forest regions than a totally different environment.

In western Norway the transition to the Neolithic is dated to 5200 BP with the introduction of slate points (Bakka 1976, Nærøy 1992). Domesticated animals are introduced in the Early Neolithic, and the economy becomes based on pastoralism. In the Late Neolithic, western Norway is probably connected to a European economic system, where southwest Norway seems to be in contact with Jutland in Denmark (Prescott 1995b). Pastoralism is an expansive economy. The goal is to enlarge the herd, and hence to expand the grazing grounds. This could lead to an expansion into the high mountains with its rich summer pastures.

There are no finds to support Neolithic pastoralism in the Lærdal material. However, results from Nyset-Steggje, a mountain area to the north, support the idea of transhumance in the Late Neolithic and Bronze Age (Prescott 1995b). Also in Hardangervidda, in the south, the results from pollen analysis indicate grazing in the Neolithic period (Moe *et al.* 1978). Both Nyset-Steggje and the Lærdal Mountains were probably used by people living most of the year on the west coast. It is therefore reasonable to understand the finds in the Lærdal Mountains in relation to Nyset-Steggje and the west coast.

One would then expect a hunting economy in the Mesolithic period and a pastoralist economy from the Late Neolithic period onwards. Since this shift is not visible in the artefact material, one must look for a possible change in the allocation pattern. Such a change might be visible on two levels. As a large scale change, visible in the Lærdal Mountains as such, or as a change in the settlement pattern around a lake.

2.2 - Strange Attractors

Landscape perception is connected to bodily experience in continuous space. The events that took place in the Lærdal Mountains can only to a limited degree be separated on the time scale. The model describing the prehistoric situation should therefore be able to incorporate finds from all periods. It is events taking place in continuous space and time. The concept of Strange Attractors can make us think of these sites in a way that transgresses the idea of time limited point allocations (Uleberg 2003). Thinking in this way makes it possible to see the traditional sites as areas with activity concentrations, where other kinds of activity leave fewer traces around the sites and along the paths leading to and from them. Separate activity concentrations that can be placed in time can give indications of changes in landscape perception and subsistence.

2.3 - Landscape perception

The dateable artefacts range from the Mesolithic to the Late Neolithic/Bronze Age, and the C14-results from 8500 – 2000 BP. The results indicate that a lake with archaeological material has sites from all periods. When the area is studied as a whole, it is hardly possible to distinguish a shift in the perception of the landscape through time. The only observable pattern is that the relation to the tree limit has been important in all periods.

Another pattern becomes visible when looking at only one lake, Eldrevann. In this case, the material indicates that the first people in the area settled around most of the lake, all sites have a Mesolithic component. The island in the northwest and one activity area in the south were used extensively only in the Mesolithic period. People in later periods have not seen these areas as well suited for habitation. Instead, they have chosen other areas some of which correlates with modern shieling. This indicates that there has been a shift in landscape perception, which again indicates a shift in subsistence activity.

Conclusion

Landscape perception is related to scale. In this material, it is not possible to see any changes on the large scale. When the area is seen as a whole, there seems to be two major conditions for site allocations valid through for the whole period; that a site should be close to a lake and below the tree line. A change becomes visible then the study is concentrated to a smaller part of the landscape, the sites around one lake. Some activity areas were only used in the Mesolithic, other activity areas were also used in later periods and even today. It seems possible to use the allocation patterns as an indication of a change in landscape perception. It can therefore be argued that the change from Mesolithic hunting to Late Neolithic pastoralism is visible in the material from the Lærdal Mountains.

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