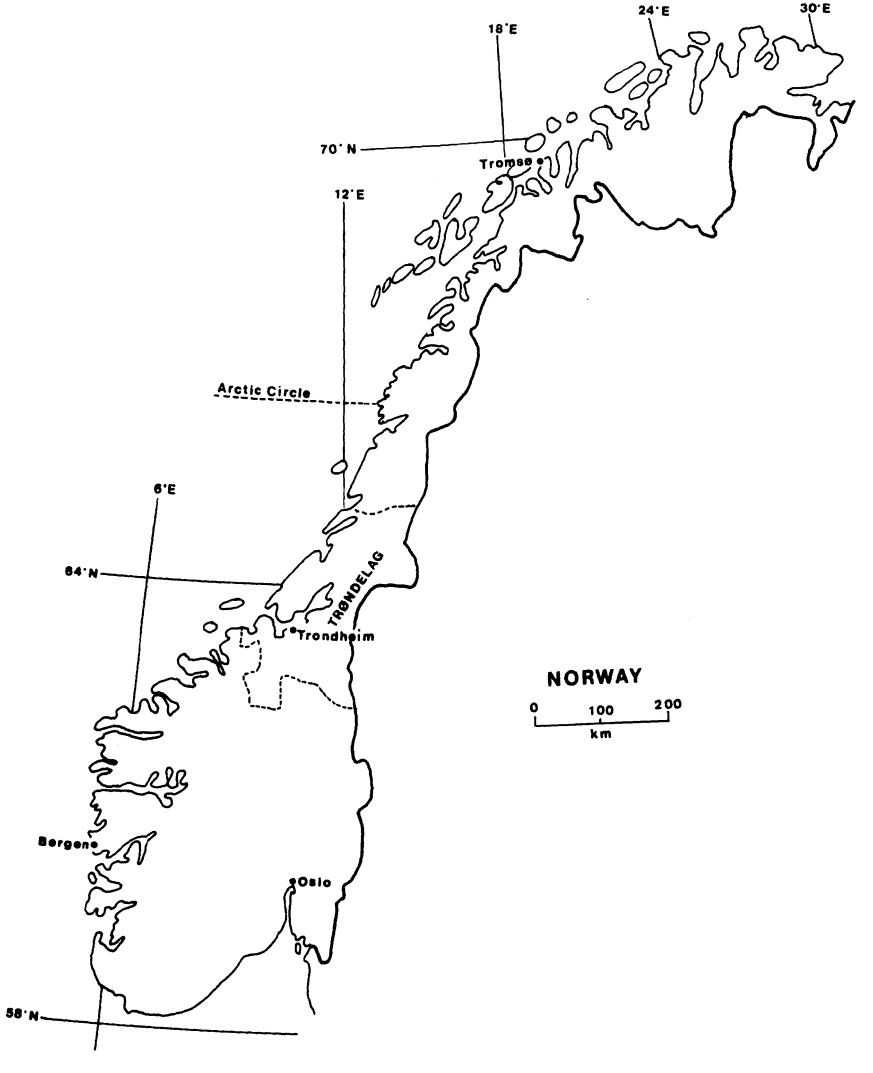

Figure 1. Location map.

CHANGE IN A NORWEGIAN RURAL LANDSCAPE

Concepts and case study

Michael Jones

Introduction

In Norway, as in many other parts of Europe, the rural landscape has undergone rapid change during the 20th century. Underlying this are structural changes in an economy increasingly dominated by the industrial and service sectors, integration of the rural economy in an urban-dominated market system, and the accompanying incorporation of rural societies in a culture dominated by urban norms and values. In the process, many of the traditional features of the rural landscape face obliteration or radical alteration.

The present paper* presents a study of recent change in the cultural landscape of a rural community in the Trøndelag area of Norway (Figure 1). The study was undertaken against the background of certain conceptual considerations regarding the cultural landscape, which are summarized first.

I

The cultural landscape

The cultural landscape has been defined in various ways in relation to the natural landascape. The definitions can be broadly placed into two groups:

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* Paper presented at the Permanent Conference for the Study of Rural Landscape, Rennes-Quimper, France, September 1977. The original paper is published in mimeographed form in the conference proceedings: **Paysages ruraux européens** (Rennes, 1979). The present article contains minor revisions and additional maps and photographs. Maps drawn by Kari Sandnes.

(i) "Horizontal" definitions, which treat natural and cultural landscapes as distinct areal categories existing side by side.

(ii) "Vertical" definitions, which regard the cultural landscape as superimposed on the natural landscape. In a given area, the human components of the landscape make up the cultural landscape and the natural components are regarded as the natural landscape.

Influenced by the German landscape school of geography, the American geographer Carl Sauer defined the natural landscape as the original landscape of an area prior to the introduction of human activity, and the cultural landscape as the landscape formed by man.[1] In many areas of the world, the natural landscape in this sense is largely a theoretical concept: most landscapes are influenced to some extent by human activity, although the extent of human interference is not known in all its details.

A threefold division of landscape, according to the degree of human influence, has been put forward by Magne Bruun and, slightly modified, by Egil Gabrielsen, both landscape architects at the Agricultural University of Norway: (i) primeval landscape, which has not been subject to man's influence; (ii) natural landscape, in which human encroachment is totally dominated by the natural components of the landscape; and (iii) cultural landscape, where human intervention is decisive for the landscape's development and has a dominant character.[2]

In Norway, only limited areas probably remain uninfluenced by human activity. Use of the landscape for activities such as hunting, fishing and collecting have, however, generally a limited cultural impact: a few shelters, boatplaces, paths and traps, some cutting of wood, otherwise leaving the landscape largely in its natural state. A cultural landscape in the process of reverting to its natural state, as can be found in marginal areas of settlement retreat, is also classified as natural landscape by Gabrielsen: man's active interference in natural processes may cease, for example, at depopulated farms in mountain areas, deserted fishing settlements on isolated islands, abandoned summer farms (Norwegian **setrer**), bog meadows and heather moors which have ceased to be

exploited for fodder collection.

As an areal classification, the threefold division is somewhat more useful than Sauer's simpler division into natural and cultural landscapes. There are, however, certain difficulties. Gabrielsen himself points out that it is difficult or impossible to place certain types of landscape unambiguously in one or other of the three groups. There are especially many transitional forms between natural and cultural landscapes, and the boundary between these two types of landscape will often be rather arbitrary. Furthermore, Gabrielsen's definitions do not take into account the scale factor. To make the classification work, it is necessary to specify which scale or geographical level one is referring to in each particular case. Mountain plateaus such as Hardangervidda and Finnmarksvidda would, for example, be regarded as natural landscapes seen as a whole, but roads crossing them and buildings along the roads would locally constitute cultural landscapes.

A simpler definition of cultural landscape is that of another landscape architect, Vidar Asheim, in which visible signs of human activity are the deciding factor:

"By cultural landscape is meant any landscape which is visibly influenced by human interference in the terrain, vegetation or both. The cultural landscape includes built-up environments, industrial and construction sites, parks, agricultural and forestry landscapes."[3]

In most inhabited regions, the natural landscape has been modified to a greater or lesser extent by human activity and become a cultural landscape; in this sense, the natural landscape has been replaced by the cultural landscape, which is thus the same as the total landscape. Recognizing this, geographers have tended in practice to use the concepts natural and cultural landscape in the "vertical" dimension, with the natural components underlying the human or cultural components. The concepts natural and cultural landscape cannot be separated completely; they are abstractions which serve to distinguish between man's and nature's roles in landscape formation.

Types of landscape change

While the landscape is often experienced unreflectingly as static or only altering gradually, most landscapes are continuously subject to various types of change, both long- and short-term, both natural and cultural. Types of change observable in the landscape include:

(a) Long-term natural changes, e.g. erosion and deposition, land uplift, changes in the ecosystem, vegetation growth.

(b) Short-term natural changes, related especially to seasonal and daily rhythms, e.g. biological processes (especially vegetation), hydrological processes (tides, river régime), climate and weather (light and dark, sunshine, rain and snow).

(c) Long-term human changes, involving comparatively permanent alteration of the landscape, e.g. settlement, cultivation, industry.

(d) Short-term human changes, involving movable elements, e.g. vehicles, and work operations, e.g. farming rhythms.

There exists an intricate interaction between these different types of change. Both long-term and short-term natural changes clearly influence patterns of human activity. Long-term changes induced by human activity, as well as short-term if sufficiently repetitive, influence in turn processes of natural change. Modern technology permits human interference in natural processes on a scale and at a speed unknown in earlier periods. The development of the cultural landscape is dependent on the interaction between natural forces and man's use of the landscape at different times.

Human use of the landscape is reflected in the development of distinct patterns of land use, which are dependent on (i) the physical basis (e.g. natural resources; natural limitations on human activity), (ii) technology, and (iii) institutional factors (e.g. land tenure; administrative organization; social, economic and political system). A change in one or several of these factors will generally produce a change in land use and hence in the

landscape.

Values attached to the landscape

The landscape can be said to represent the following values[4]:

1. Economic value.

Landscape is an economic resource, the source of food, shelter and raw materials. The landscape can be subject to short-term exploitation, with the objective of obtaining maximum yield or greatest profitability in the shortest period of time, or it can be utilized according to long-term ecological principles, in which the landscape's capability for renewal is taken into consideration, waste and pollution are minimized, and long-term conservation of the resource basis is safeguarded.

2. Scientific and educational value.

Landscape is a source and archive of information for documentation and demonstration in research and teaching. Indiscriminate destruction of landscape features carry the danger of obliterating source material for both natural and cultural history, much as the loss of written sources represents a potential loss to history.

3. Esthetic and recreational value.

Landscape is a source of inspiration for art and recreation. The recreational value of landscape has importance for health and well-being. For many the discovery and exploration of nature and local history is a significant part of recreation. A varied landscape enhances the recreational and inspirational experience.

4. Identity value.

Landscape is an element in people's local identity and sense of place. Identification, orientation and variation are keywords in this context.

First, most people have a need to identify with their surroundings. Climate, the natural landscape, buildings and other elements in the cultural landscape together help to give a place

its identity. Traditional and historical environments which have developed gradually over time give a special or unique character to a place, in contrast to many modern built environments which are similar the world over.

Second, it is important for people to be able to orientate themselves in their surroundings. This is done with the help of various landscape forms. A varied environment facilitates orientation, unlike a uniform environment where orientation is difficult. Orientation also depends in part on recognition of familiar features. If the pace of change is too rapid, orientation is impeded.

Third, people are stimulated by varied visual sensations and impulses. A landscape which has developed over a long period of time tends to give varied visual sensations.

There is a close interaction between a varied physical (or material) environment and a varied social environment. An environment which is diversified in occupational and age structure, and in activities and possibilities, both produces and is often the result of a varied physical/material environment or landscape. Such an environment is more stimulating than a uniform environment.

A certain degree of stability is important for a landscape's identity value. A comparatively stable landscape, which is still recognizable after a long period of time, is reassuring. On the other hand, too rapid change can be emotionally and psychologically disturbing.

Changes in the landscape may produce greater diversity or they may reduce its diversity. Asheim has distinguished between increment and decay in the landscape. Increment implies enrichment, an increase in the landscape's diversity, while decay implies deterioration, a tendency towards conformity and a reduction in the landscape's diversity.[5] Changes leading to greater diversity in the landscape are likely to satisfy a broader spectrum of values than changes reducing diversity and leading to uniformity.

Many trends in modern society bring a danger of reduction

in the rural landscape's diversity and historical depth. Firm criteria for the selection of landscape elements worthy of conservation are necessary to combat a deterioration in the range of values represented by the landscape. This presupposes documentation of landscape development over time, identification of changes which reduce the landscape's diversity, and investigation of the forces producing landscape change.

II

The local study: problem and approach

The study was undertaken by students at the Department of Geography, Trondheim University, autumn 1976. The objects of the study were:

(i) Mapping and description of selected elements in the cultural landscape, and changes that have occurred in these elements.

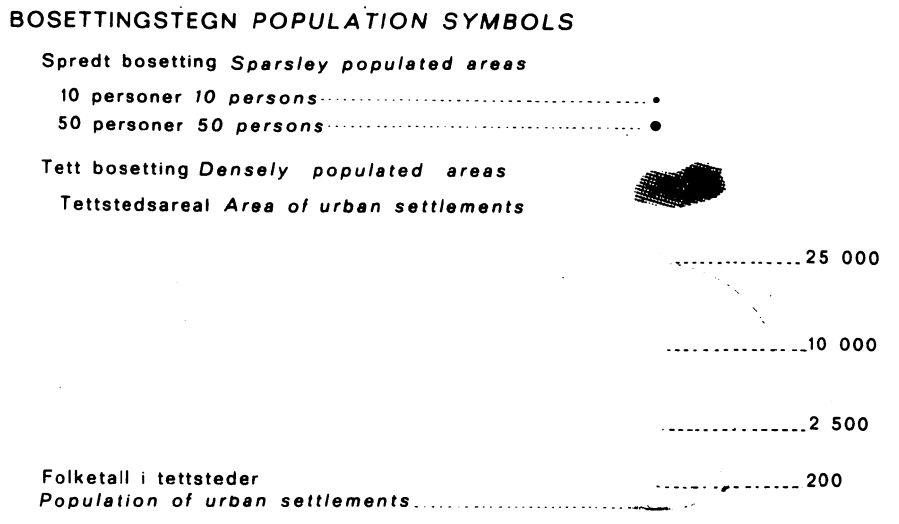
(ii) Identification of the influences which have formed the landscape at different periods, and local response to these influences.

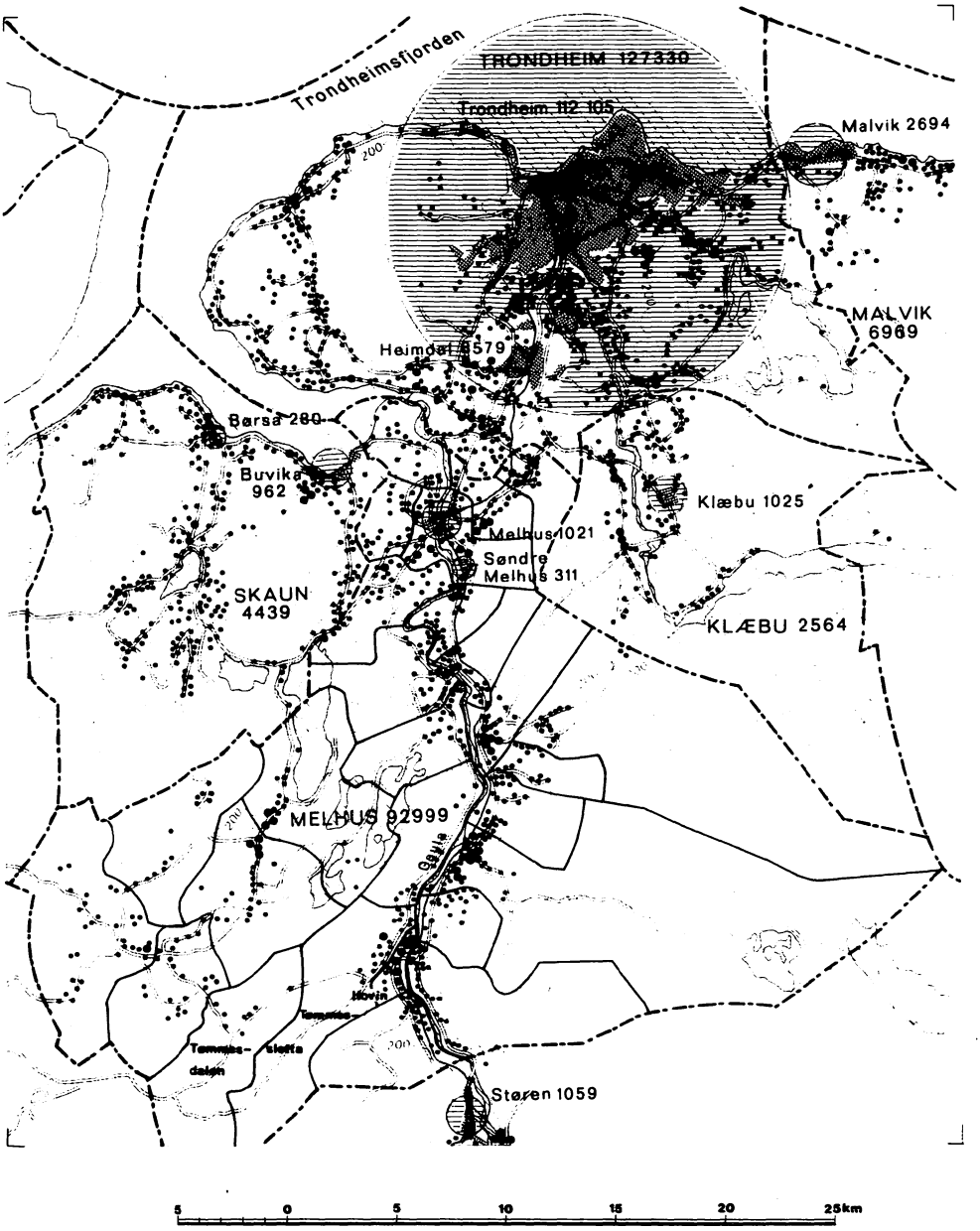
Four aspects of change were studied in the rural landscape of Hovin and Tømmessletta, neighbouring communities situated in Melhus commune (local authority district), south of Trondeim (Figure 2). The four aspects were: (i) land tenure, (ii) farming methods, (iii) building traditions, and (iv) urbanization of rural settlement.

The study involved mapping and interviews undertaken by twelve students during six days field work. As a map basis was used the Norwegian Economic Map Series (**Økonomisk kartverk**) on the scale of 1:5000, compiled from aerial photographs taken in 1963 and published in 1971. Interviews were made with local inhabitants – farmers, smallholders and the non-agricultural population – and with professional people concerned in some way with the area – local administrators, planners, land-reallocation officials and academics. Other sources used included old landscape photographs borrowed from the local inhabitants, old

Figure 2. Hovin and Tømmessletta in relation to Melhus commune, Støren and Trondheim.

Figures refer to the population of communes and urban settlements according to the population census of 1970.

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Melhus 1021
Søndre Melhus 311
SKAUN 4439
KLÆBU 2564
MELHUS 92999
Gaula
Støren 1059
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maps, aerial photographs, orthophoto maps, official statistics, the cadastral register (**matrikkel**) and available literature. The students worked in four groups, each of which prepared a report at the end of six weeks. The reports were subsequently edited and reproduced as a single report, on which much of the following is based.[6]

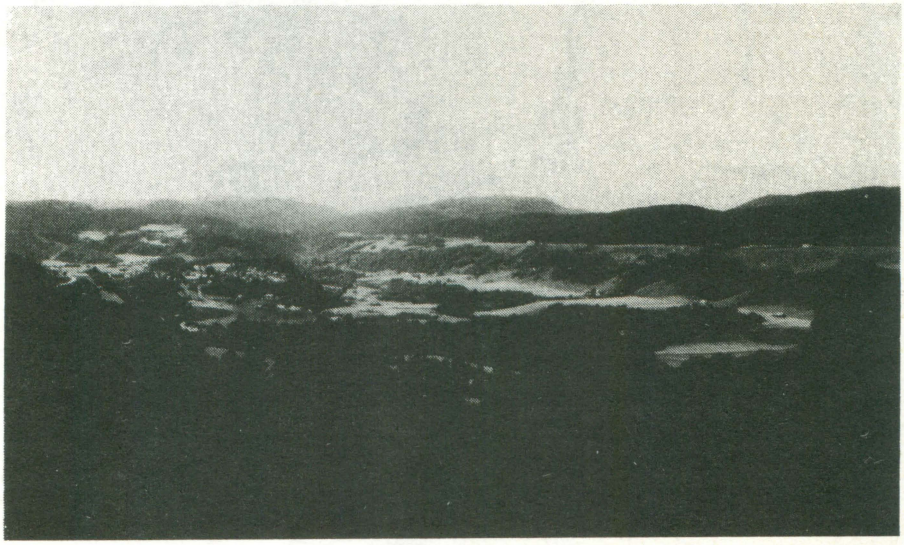


Plate 1 Hovin and Tømmessletta from the north. Hovin to left with new housing estate on Hovinsåsen. Tømmessletta to right with fluvial-glacial raised beach terrace and more recent river terraces below.
Photo: Asbjorn Aase.

Presentation of the study area

Hovin is situated 45 km south of Trondheim in the Gaula valley on the main railway to Oslo. The main road from Trondheim to Oslo passes nearby on the opposite side of the valley from Hovin. The nearest small urban settlement is Støren, with a population of 1059 in 1970. The study area comprised two census enumeration districts, Hovin and Tømmessletta, which together had 629 inhabitants in 1970. The traditional

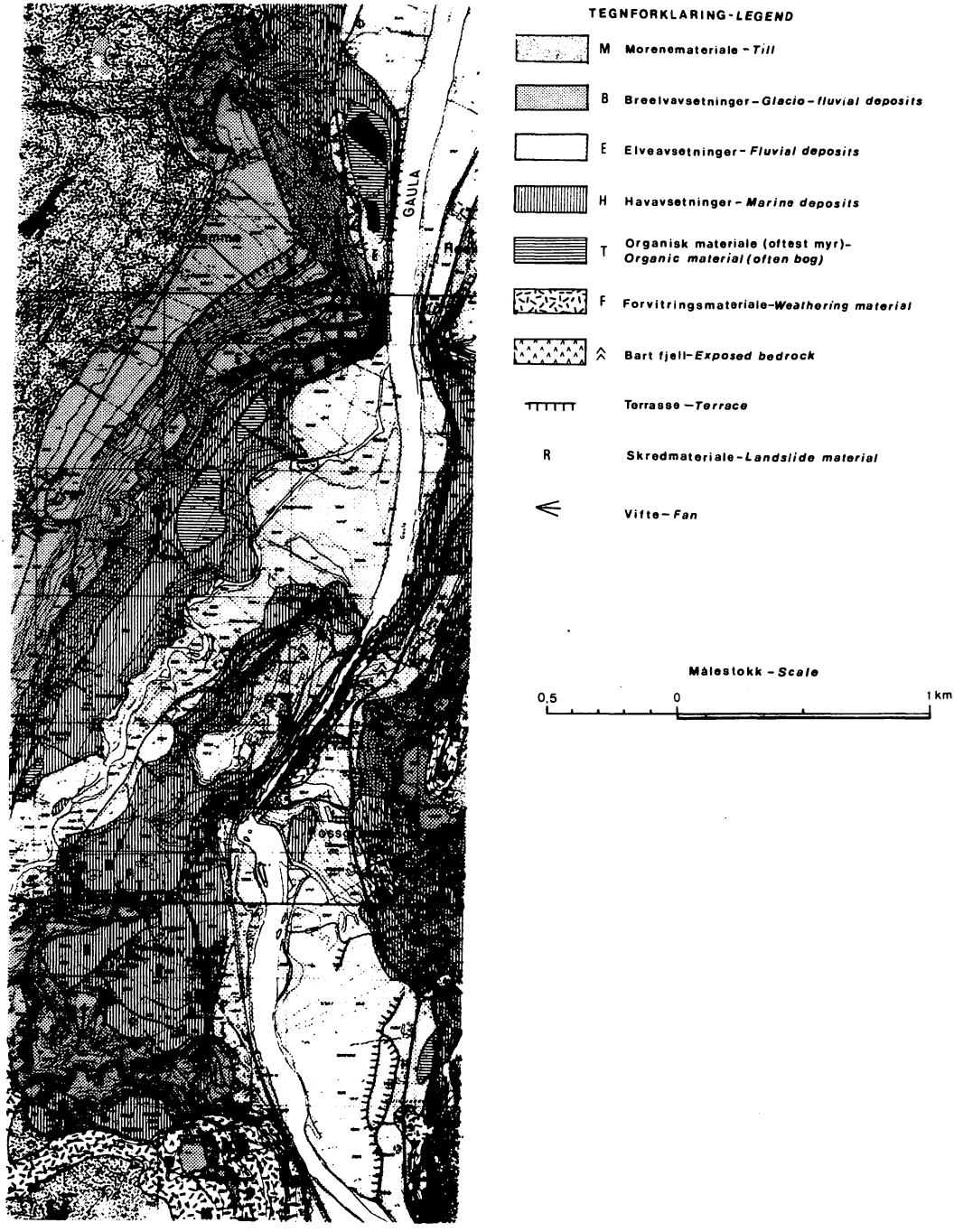


Figure 3 Tømmessletta and Hovin – Quaternary geology.

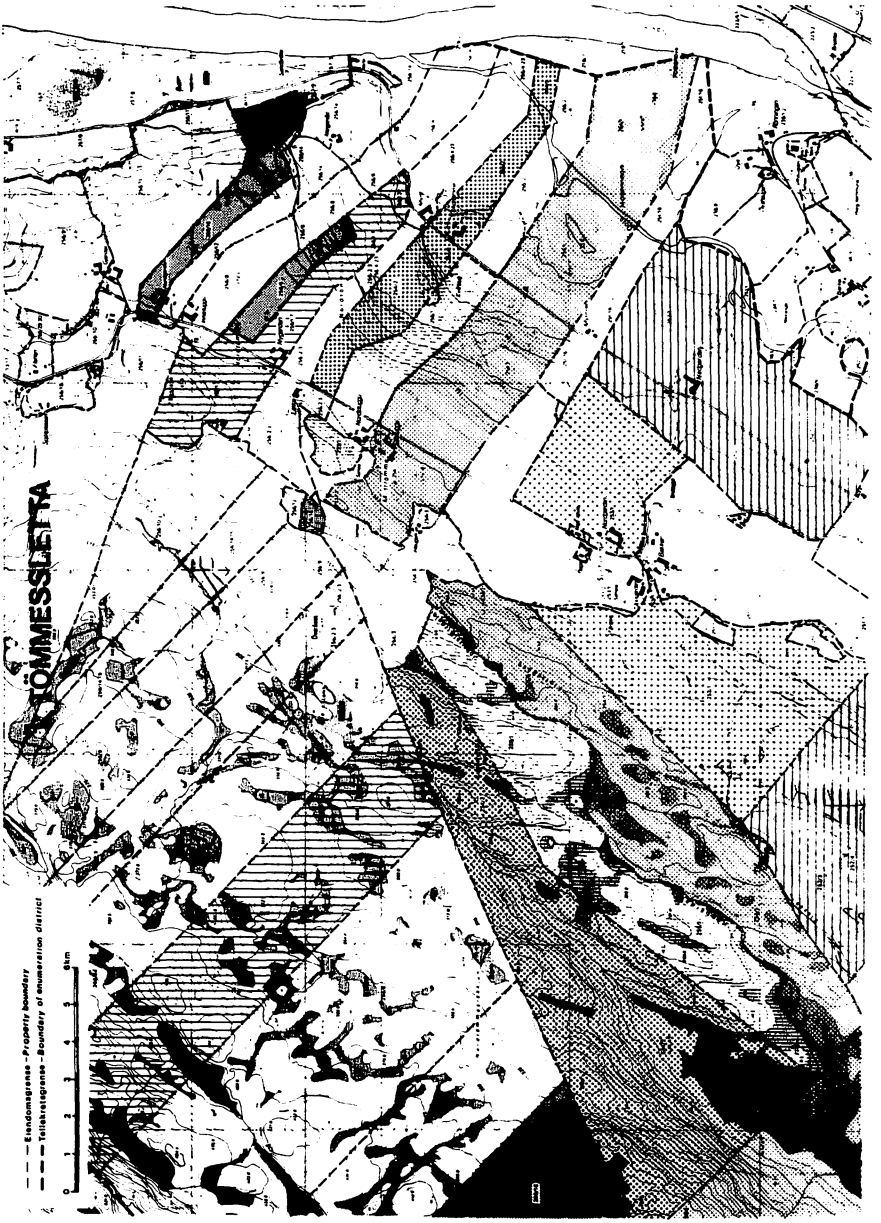
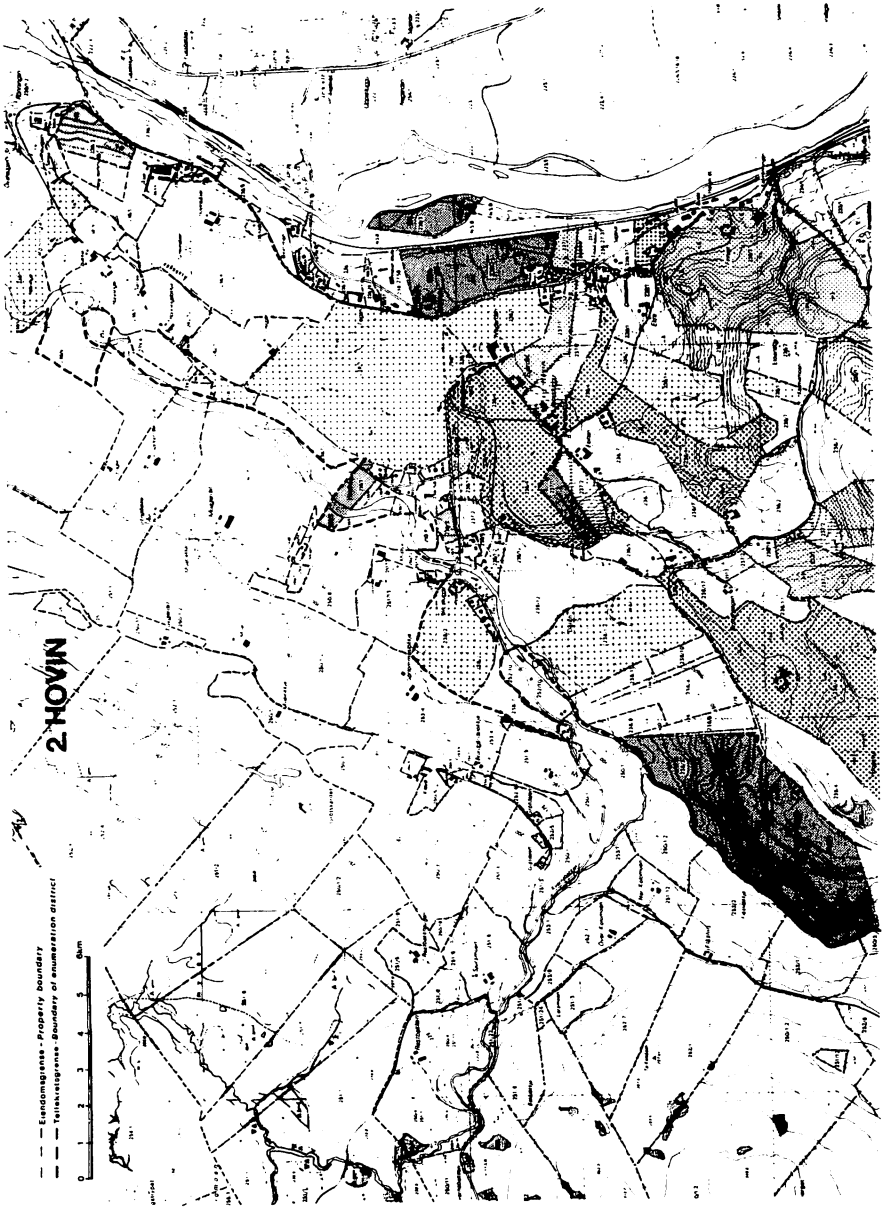


Figure 4. Tømmessletta and Hovin — land tenure and settlement.

Tømmessletta (sheet 1) lies immediately to the north of Hovin (sheet 2)

Buildings are blacked in. Note the typical rectangular farmyards (**firkanttun**) of the larger farms. The older station settlement is



shown, but not the new housing estate at Hovinsåsen and other changes since 1963.

Land-ownership boundaries are marked with broken lines. Individual holdings are identified by cadastral register numbers, e.g. 236/1. Parcels belonging to four selected farms on each sheet are shaded.

Contour interval 5m.

local economy has been based on agriculture and forestry with related small industries. In recent years, an increasing proportion of the inhabitants have taken employment in secondary and tertiary occupations outside the area, particularly in Trondheim, necessitating commuting. The area is characterized by traditional rural settlement with an intermixture of urbanized settlement. There are today some 30 farms and smallholdings, which lie dispersed or in smaller groups of two or three. Settlement of more urban character is found especially within 1½ km of the railway station. Hovin does not qualify as an urban settlement (**tettsted**) according to the Norwegian three-criteria definition[7], since only two of the criteria are satisfied: while over three-quarters of the population are employed in secondary or tertiary occupations, and the population is over 200, the third criterion of a maximum of 50 m between houses is not fulfilled. Many older rural buildings are found in Hovin and Tømmessletta, providing a primary source material for studying the development of the cultural landscape.

Hovin and Tømmessletta are both fairly clearly delimited as communities by the natural landscape. Hovin lies on the western side of a valley basin, narrowing to the south and almost closed to the north by an imposing ice-marginal formation composed of glacio-fluvial deposits dating from the Ra period of ice retreat. Tømmessletta lies on the ice-marginal formation, the top of which coincides with the highest late-glacial marine limit, forming here a marked terrace 170—180 m above sea level and reaching a maximum width of almost half a kilometre. The limits of the cultivated area locally coincide largely with the marine limit, above which there is forested land belonging to owners in Hovin and Tømmessletta. Where the Gaula river has cut through the ice-marginal formation, an impressive series of seven river terraces have been formed (Figure 3). A valuable economic resource, this remarkable geological formation is partially marred by gravel diggings.

The area has a dramatic history of quick-clay landslides, floods and changes of river course. The largest clayslide recorded in Norwegian history occurred 5 km upstream from Hovin in 1345, damming the Gaula river and creating a lake

Plate II Flood at Hovin, 24.8.1940, reaching second-floor windows. Caused by blockage of a river gorge downstream. Photo borrowed from Ashild Midttømme, Hovin.

upstream; when the blockage gave way, a major flood occurred downstream. The catastrophe destroyed 48 farms in the Gaula valley and an estimated 250 people lost their lives. More recent floods caused by the blocking of the river at Hovin occurred in 1918, 1934, 1940 and 1944. The flood of 1940 reached second-storey windows in the vicinity of the station.

Land tenure

As elsewhere in Norway, Hovin and Tømmessletta are characterized by owner-occupied farms and smallholdings. The subdivision of farms was unrestricted before the Land Act (**Jordlova**) of 1955. Three phases of farm sub-division can be distinguished. The first, occurring primarily before 1900, was the division of larger farms to create new medium-sized farms,

generally through inheritance. The second phase, beginning at the end of the 19th century and continuing in the inter-war period, saw predominantly the creation of independent smallholdings, many of which were earlier crofter holdings (**husmannsplasser**). The third phase has been the sale and separation of owner-occupied dwelling plots, particularly since the last war. Land tenure and settlement are shown in Figure 4.

Plate III Farmsteads at Hovin with rectangular farmyards typical for the Trøndelag area. Flat-roofed building in background is modern co-operative store.
Photo: Michael Jones.

Historically, Hovin consisted of two farms, Hovin ovre (Ekra) and Hovin nedre (Negarden). A third farm, Rydningen (Rønningen), was separated from the latter before 1640, according to tradition as compensation for a dog bite. A series of sub-divisions began on Ekra at the end of the 18th century, while Hovin nedre was divided into three in 1822, followed by further sub-divisions later in the 19th century (Figure 5). A number of smallholdings were estab-

lished at the end of the century, including several former **husmannsplasser,** but most of these have subsequently given up agriculture. Hovin has been more affected by the sale of residential plots than Tømmessletta. Here there are three main farm groups, Sørtømme, Midttomme and Nordttomme, all lying on the main terrace. Two farms were established through sub-divison in the first half of the 19th century on the widest of the lower terraces, and others have followed later. **Husmannsplasser** existed primarily on the rougher, steeper land above the marine limit, and many became independent smallholdings after the beginning of this century.

Plate IV Haugen, a former crofter holding (**husmannsplass**) at Tømmessletta, which became an independent smallholding in 1904. Dwelling with three-room plan to left, small outhouse to right. The holding comprises steep, rough land (grazed by sheep) above the marine limit. Photo: Alf-Ivar Oterholm.

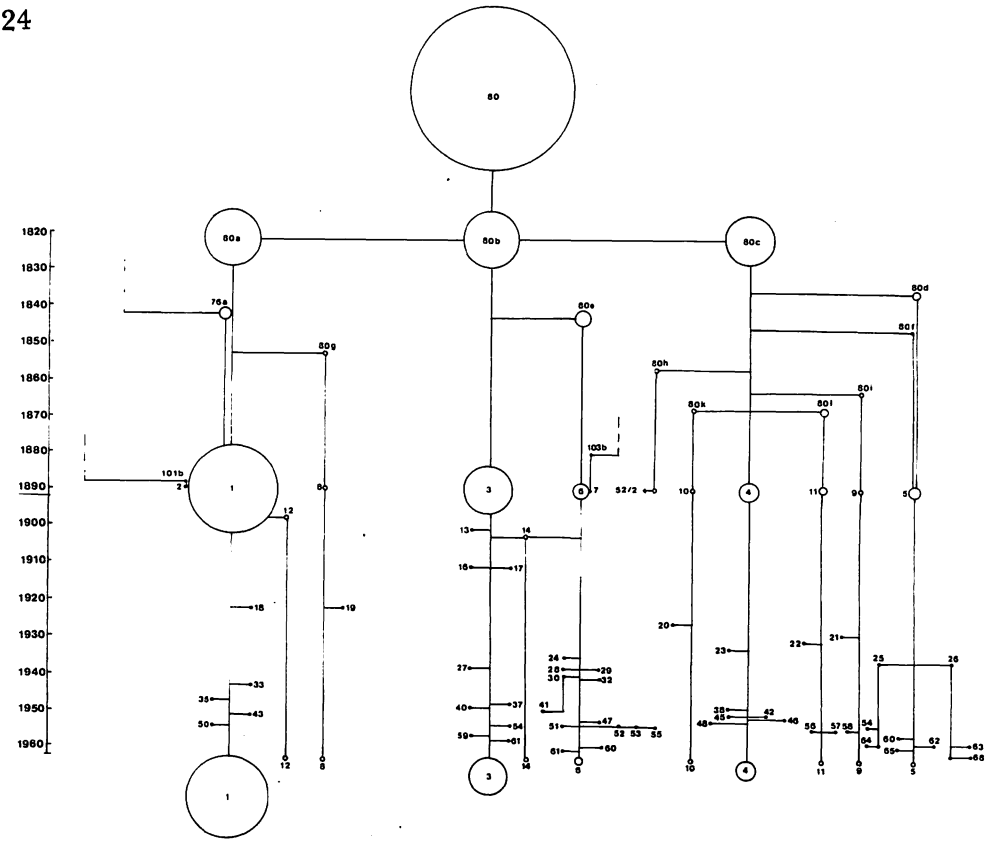


Figure 5. An example of farm sub-division: Hovin nedre (Negarden), 1822 – 1962.

The size of the circles gives some indication of the approximate size and value of farms and smallholdings in relation to one another (based on the now outdated cadastral units of measurement, **skyld-mark**). Dwelling-plots and other small lots are shown with dots.

Medium-sized farms were formed earlier in the 19th century, smallholdings later in the 19th century and earlier in the 20th century, and dwelling-plots in the inter-war and post-war periods.

The numbers are those in the cadastral register (**matrikkel**), revised in 1890. Each of the following groups of registered properties had the same owner in 1963: 1, 2 and 35; 6 and 7; 14 and 20; 19 and 35; 27.59 and 66; 49 and 58.

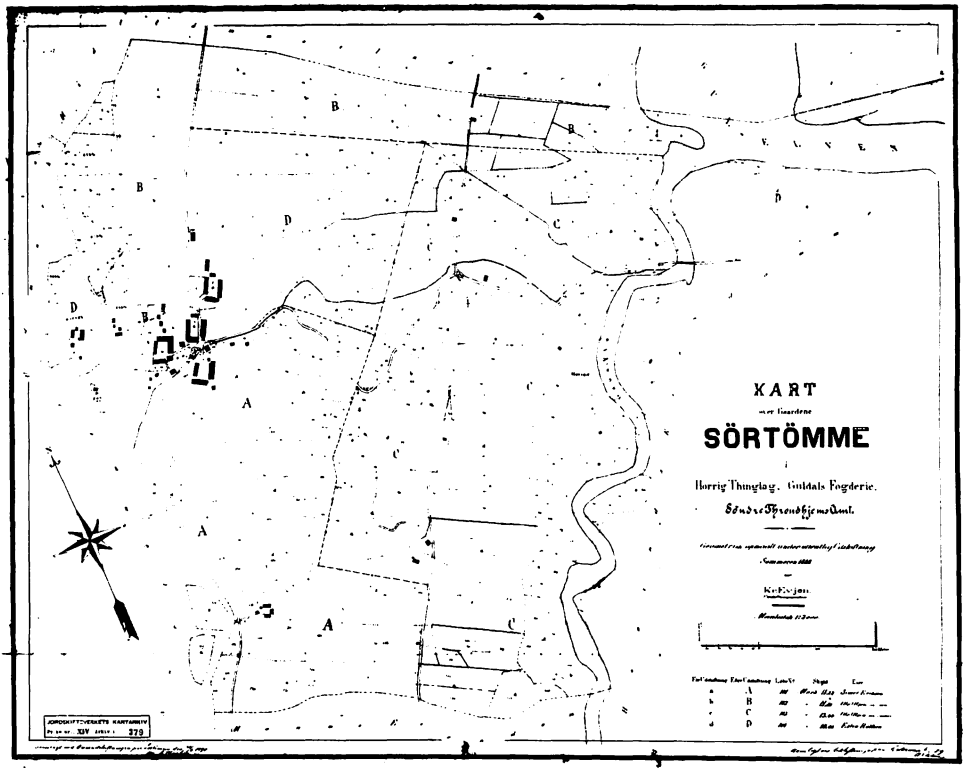


Figure 6. Photo-copy of the land-reallocation map for Sørtømme, 1888.

The map shows parcels before and after consolidation (respectively with small and large letters). Of the four main farmsteads, the one in the middle was moved to a new position further east (cf. Figure 4).

The sub-division of farms was earlier often accompanied by internal fragmentation of holdings. Scattered, often inconventiently shaped parcels, and widespread common ownership of certain types of land, were regarded as a hindrance to the introduction of new farming methods and expansion of the cultivated area in the 19th century. Land reallocation, involving the consolidation of parcels and in some cases the removal of farm buildings, began in accordance with the Land Reallocation Act of 1857 on Ekra in 1861. Sørtømme underwent reallocation between 1888 and 1891 (Figure 6), one of the four farms being removed from its location among the others on the upper terrace to the widest of the lower terraces. The last reallocation of arable land (**innmark**) took place in the 1920s on Nordttømme. The arable land of Hovin nedre and Midttømme has not been reallocated. Reallocations of forest and outlying land (**utmark**) have continued until the present, the latest taking place on Nordttømme in 1972.

The most recent trend in land tenure has been the abandonment of farming by many smallholdings, with their land being leased in most cases by the remaining larger farms. This change has occurred in response to new farming methods favouring larger holdings.

Farming methods

In the post-war period, farming methods have been characterized by increasing mechanization, increasing application of artificial fertilizers and increasing use of fodder concentrate. These changes mean that the energy output in farming is now supplied largely from outside sources instead of from the farm itself.

In the traditional farming system over much of Norway, the farm's outlying land (**utmark**) was essential to maintain the productivity of the fenced, cultivated land (**innmark**). The **utmark** had the following uses:

(a) Grazing and fodder collection. The **utmark** was grazed in the summer, and provided winter fodder in the form of hay, leaves, twigs, etc.

(b) Fishing, hunting and berry-picking.

(c) Wood-cutting.

The relationship between **utmark** and **innmark** can be regarded as a system for transferring energy from the outlying land to the farm. The farm animals grazed the **utmark** in the summer, and it was common for milk to be made into cheese and butter on small summer farms (**setrer**) for later transport to the main farm. Winter fodder was harvested from small haylands and natural meadows, supplemented often by leaves and twigs. The animals were housed during the winter on the main farm, and the manure was collected and spread on the cultivated land in the spring. Draught animals also provided energy for traction in the farm's working operations. The **utmark** also provided food in the form of fish, game and berries, wood for fuel, and timber for building, fencing and making tools.

Animals have been replaced as draught animals by the tractor, which like other agricultural machines are purchased from outside the farm and dependent on partly imported oil. Animal manure has been supplemented heavily by mineral fertilizer, purchased from outside the farm and dependent on oil as the basic raw material. A significant proportion of animal feed now consists of fodder concentrate, which is again purchased from outside, about half Norway's consumption being imported. Rough grazing in the **utmark** has been largely replaced by improved pasture, and natural meadows by cultivated hay land; higher productivity on these areas is obtained through the application of artificial fertilizer. The farm has become dependent on external, partly imported resource inputs instead of its own, local resources.

Farming has become capital-intensive instead of labour-intensive, and many smaller holdings are being abandoned as independent agricultural units. Terrain unsuited for mechanized farming is going out of arable production.

For Melhus commune as a whole, the number of tractors and combine harvesters almost doubled between 1959 and 1969. The outlay per decare on fodder concentrate and artificial fertilizer

more than doubled in the same period. The number engaged in agriculture as their main source of livelihood decreased by 40% from 1960 to 1970.

These changes have a marked influence on the rural landscape. There are fewer farms, while those that remain are larger. Smallholdings which cannot afford to invest in a tractor are the first to be abandoned. In Hovin and Tømmessletta, the number of operational farm units decreased from 62 in 1955 to 34 in 1976. Many of the owners of the abandoned farms still live in their old farmhouses, but commute to Trondheim or Støren, working in industry, construction or services. The land of the abandoned farms has largely been taken over by the remaining farms, generally through leasing; short-term informal leases are common. Those who lease land are generally farmers with agriculture as their sole occupation. Twenty-two landowners let their land, while nine lease land from others. Through leasing, the average operational farm unit increased from c. 50 da arable land in 1955 to c. 90 da in 1976.

Due to the favourable location of Hovin and Tømmessletta in relation to main communication routes, which allow for commuting, they have been able to effect the transition to modern agriculture without loss of population. Less favourably placed areas, such as nearby Tømmesdalen, which lies off the main routes, are suffering on the other hand depopulation. Abandonment of farms here means that land remains unused and houses fall into decay.

A feature of modern agriculture which is beginning to make its effect felt in Hovin and Tømmessletta is specialization. The general tendency is that flat areas suitable for mechanization, such as the Gaula valley in Melhus, have specialized increasingly in grain production, while animal husbandry is typical of more marginal, less easily worked areas, such as Tømmesdalen and Hølonda in the higher, south-western part of Melhus commune. Hovin and Tømmessletta lie on the border between the two types of production, and are still characterized by mixed farming. One farm has gone over to specialized grain farming. Three farms have

drawn up approved plans for specialized animal husbandry, two of them concentrating on dairy cattle and the third on sheep. Hovin and Tømmessletta lie below the national average in degree of mechanization.

Farm production is nonetheless becoming increasingly concentrated on the flat glacio-fluvial and river terraces. The former area-extensive exploitation of the **utmark** has largely disappeared. The summer farms (**setrer**) belonging to Hovin and Tømmessletta were mostly abandoned by the late 1940s. Natural pasture and meadow are vanishing. Modern foddering methods are less labour-intensive: besides fodder concentrate, the use of silage has become general while the proportion of dry hay has decreased. Areas which are unsuited for mechanization, such as steep slopes and the numerous small meadow plots are becoming overgrown by trees. On the other hand flatter bogland areas in the **utmark** are being drained and brought into cultivation. In other areas, irregular terrain is being evened out through cut-and-fill operations (**bakkeplanering**), for example along the edge of the lowest river terrace.

Forestry has been traditionally combined with farming, and the forest land belonging to Hovin and Tømmessletta is divided among a large number of privately-owned holdings. There are indications of a reduction of interest in forestry among the owners of smaller holdings who have taken up employment outside agriculture. Small-scale forestry using horses came to an end in the 1960s. Modern mechanized forestry is dependent on the construction of access roads for forest vehicles. The requires co-operation among owners, which is not always easy to obtain. The Hovin area is characterized by under-cutting in relation to the growing stock and natural increment. To a limited extent, forest holdings are leased for working by the Forest Owners' Organization. There has been relatively little clear-cutting, although there is a developing tendency for clear-cutting and new planting instead of selective felling.

Changes in farming methods are reflected in the landscape not only through changes in land-use patterns, but also through changes in the function and form of buildings.

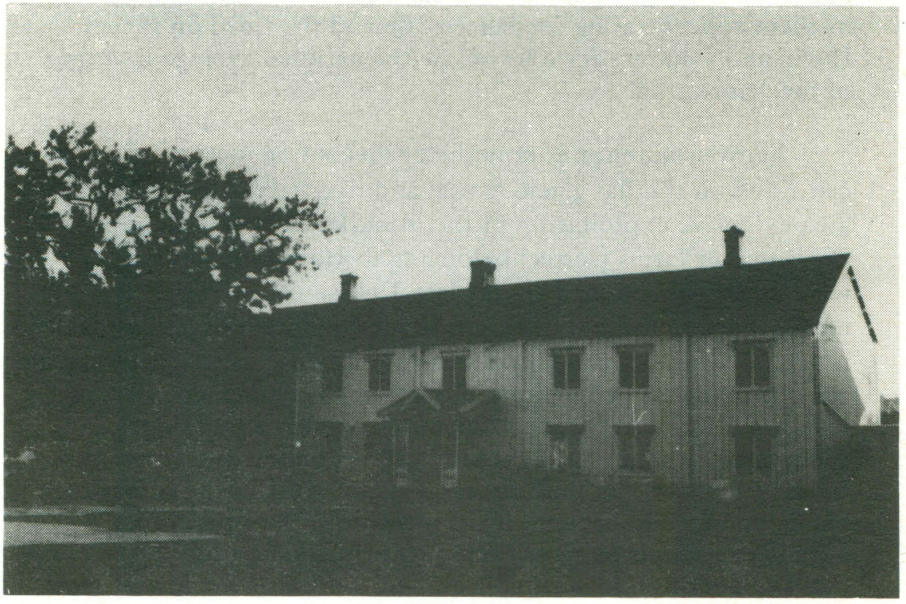


Plate V Traditional Trøndelag farmhouse (**trønderlån**) on farm of Hovin nedre (Negarden).
Photo: Michael Jones.

Building traditions

The house types and building styles found in Hovin and Tømmessletta are typical of the distinctive building traditions of the Trøndelag area of Norway. Distinguishing features are the long, narrow, two-storey Trøndelag farmhouse (**trønderlån**), arranged with the main outbuildings around a rectangular farmyard (**firkanttun**). The development of the **trønderlån** from the simple three-room farmhouse (**treromsstue**), which was formerly common over a wide area of Norway, is shown in Figure 7, which illustrates floor plans of house types characteristic of the farming districts of Trøndelag. The figure also shows typical single-room buildings used as outhouses. All these building types are represented in the present-day cultural landscape of Hovin and Tømmessletta.

The **trønderlån** became common during the period of agricultural improvement and population growth in the 19th century.

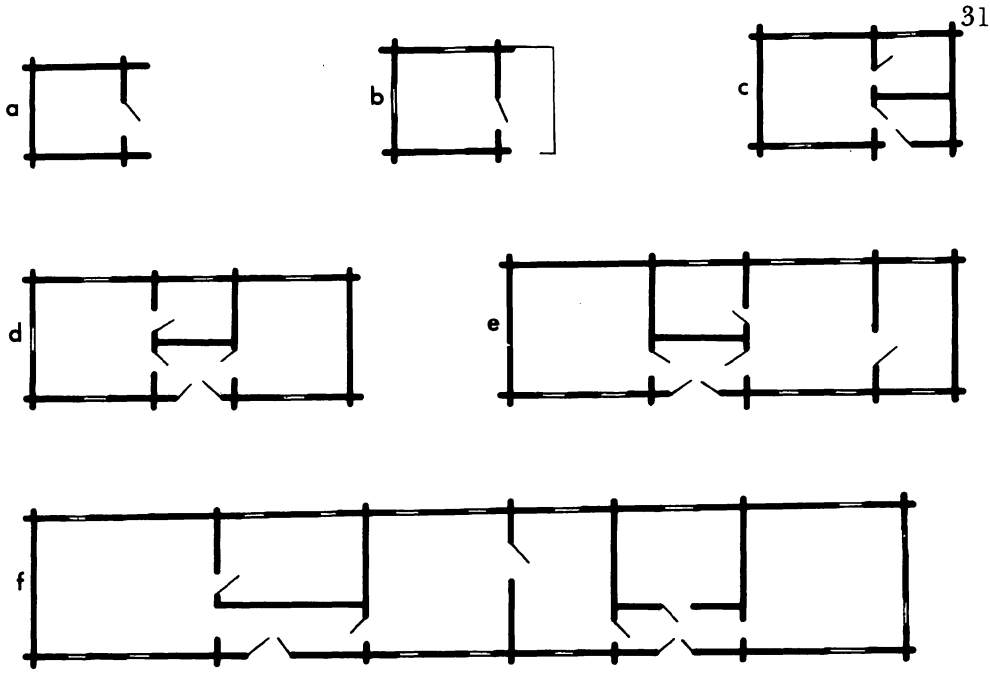


Figure 7. Traditional rural house plan in Trøndelag.

a Single-room plan. Occurs as cookhouse (**eldhus**), smithy (**smie**), grain kiln (**badstu**) and other small outhouses.

b Single-room plan with panelled timber-frame entrance room (**sval**), most often used as cookhouse.

c Three-room plan. The three-room farmhouse (**treromsstue**) generally has an upper storey after the early 19th century. Common on crofter holdings (**husmannsplasser**). Basic element of the distinctive Trøndelag farmhouse (**trønderlån**).

d Symmetrical floor plan based on three-room plan with addition of an extra room (**midtkammerstue**). The small room behind the entrance hall was used as a bedroom and later as a kitchen. Living-room (**dagligstue**) on one side, parlour (**nystue**) on the other.

e Symmetrical floor plan with additional room. The additional room was an extra bedroom (**langkammers**).

f Trøndelag farmhouse with attached dwelling for the retired farming generation. This attached dwelling (**karstue**) generally had a three-room plan and its own entrance.

The figure illustrates the main features, although differences of detail occurred. Types e and f are typical **trønderlån**.

Farmhouses were lengthened by the addition of extra rooms. The style was influenced by the town houses of the more well-to-do in Trondheim. Log-built houses were clad with exterior panelling, earlier painted red, later generally white. The size of the houses undoubtedly in part expressed status, although there were also practical aspects: family members, servants and farm-workers could sleep under one roof instead of in the out-houses, while the upper storey also provided storage place. On larger farms, it was not uncommon for the older generation to be provided with their own dwelling (**kårstue**) after retirement. This was often attached to the **trønderlån**, but could also be a separate house around the farmyard.

Parallel with the development of the **trønderlån** was a gradual reduction in the number of outbuildings. Until the 19th century, the common practice was to have a separate building for each function and each type of animal. Combined animal-houses, with hay-lofts above reached by a ramp, then gradually became the norm. The common outbuildings found around the farmyard (**tun**) by the last quarter of the century included the animal-house (**fjøs**), barn (**låve**) and stable (**stall**). Towards the end of the century, state agricultural officers wer active in encouraging farmers to build combined outbuildings (**driftsbygninger**), in which as many functions as possible were combined under one roof. The out-building was often built in an L-shape, with the barn in one arm and the animals in the other. Panelled, timber-frame hay-lofts were built above the stone or brick animal-house, with a special room or cellar for storing the manure. Such combined outbuildings, dating especially from around the turn of the century, are typical for Hovin and Tømmessletta, forming one or two sides of the rectangular farmyard and almost universally painted red in contrast to the white dwelling house. Older individual outbuildings are often incorporated in them. Also commonly found around the farmyard, often filling in the fourth side are one or two food storehouses raised on pillars (**stabbur**).

Other buildings were generally found outside the farmyard. For reasons of safety, it was common to place outbuildings containing fires away from the other farm buildings. These included

the cookhouse (**eldhus** or **masstu**) used for rougher cooking, brewing, baking and washing; the grain kiln (**tørkehus** or **badstu**); and the smithy (**smie**). While the smithy and grain kiln are invariably found outside the farmyard, the cookhouse is sometimes one of the buildings around it, and could also be used as a summer dwelling (**sommerstue**).

Use of the farm's resources required a variety of other smaller buildings spread around the farm area. Haybarns (**utløer**) were used to store the hay until it was driven to the farmstead in winter. In the spring and autumn, animals grazed the **utmark** nearest the **innmark**, and smaller milking-sheds (**sommerfjøs**) saved having to bring them back to the main farmstead each night. In summer, the animals were formerly taken to the **seter**, which had its own complex of buildings: a small dwelling for the milkmaid, sheds for the animals, a stable and haybarn. Also in the **utmark** were cabins used as temporary accommodation while harvesting hay (**slåttebuer**), hunting (**jaktbuer**) and felling timber (**skogskoier**). Larger farms could also have their own sawmill (**sag**) and earlier a water-mill (**bekkekvern**) for grinding corn.

The full range of buildings was found on the larger farms. The number and size of buildings reflected social standing. During the 19th century, there was a rapid increase in the number of crofters (**husmenn**), who had the use of a house and a small plot of land with a few animals of their own, in return for providing labour for the main farm. Their dwellings were comparatively simple: often a three-room house, perhaps with an extra room (**midtkammerstue**), a small cowhouse and a storehouse. The number of **husmenn** began to decline later in the century, many emigrating to America, while others became independent smallholders.

Changes in the form and function of outbuildings have followed changes in farming methods, especially mechanization and the specialization of farm operations. Grain barns and kilns have become superfluous through the advent of the combine-harvester and the sale of grain to the State grain monopoly (**Statens kornforretning**, founded 1929), which has its own grain-elevators. Grain barns were often converted to hay barns, but

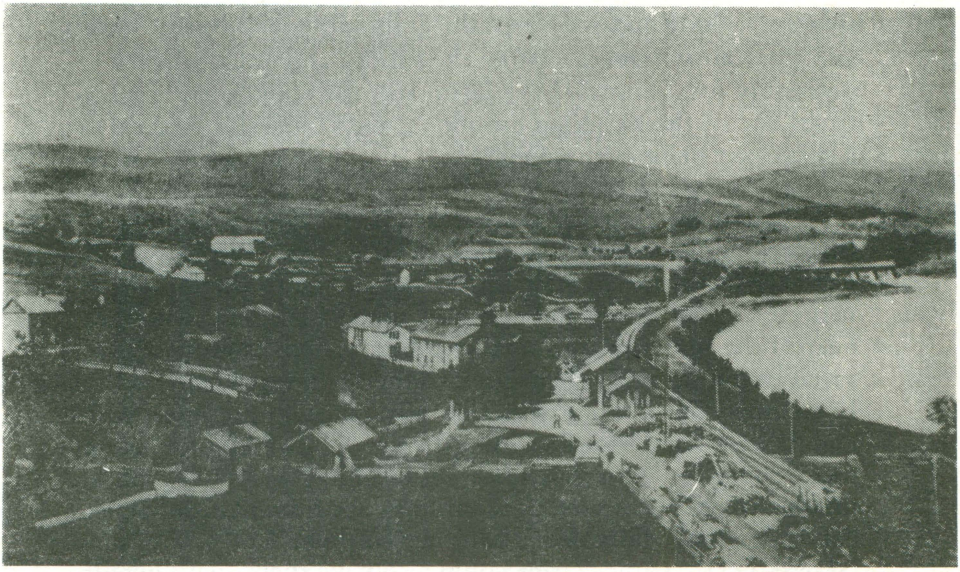


Plate VI Hovin, c. 1910, from the south. A centre for timber transport by rail, with shops growing up around the station. The station was probably the first "Swiss-style" building in the area. Tømmessletta in background. Photo borrowed from Lars Westby, Hovin.

the introduction of the grass-silo has reduced the need for hay storage. The replacement of the horse by the tractor has led to the replacement of the stable and smithy by the machine shed. The garage is a new feature of the cultural landscape. As the farm becomes less self-sufficient, the food storehouse becomes less essential, although the **stabbur** is frequently retained for general storage. Smaller buildings outside the farmyard are losing their function and disappearing. The decline in the traditional uses of the **utmark**, together with modern transport and investment in machinery, have led to a centralization of work operations, such as milking and ensilaging, at the farmstead. At the same time, processing formerly undertaken on the farm, such as dairying and slaughtering, is now centralized outside the farm. Many of the

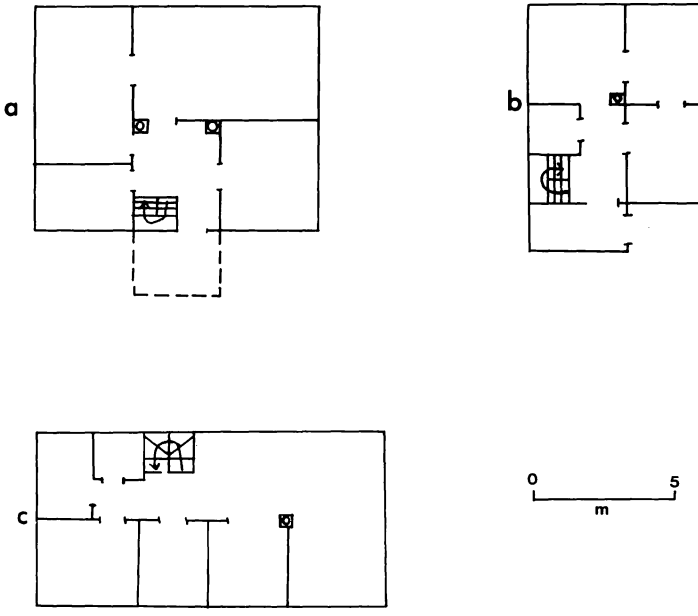


Figure 8. Typical ground-floor plans of 20th-century dwelling-houses in rural areas of Norway.

a Floor plan common in "Swiss style" house, early 20th century. Panelled, timber-frame construction in two storeys, with rooms arranged around one or two central chimneys. Dwelling for one, two or three families.

b Four-room plan around a central chimney, common in inter-war and early post-war periods. In essence, a simplified successor of the "Swiss style" house. Two-storeyed, single-family house.

c Typical standard plan for house financed by State House Bank in 1960s and 1970s. Panelled, timber-frame bungalow, built on concrete base with cellar rooms. Entrance through cellar. Especially suited for sloping terrain.

small outhouses in Hovin and Tømmessletta today stand unused and in decay. The best preserved are at Nørdtomme, where among the last examples of the smithy and farm sawmill still in use can be found.

Some modernization of farm buildings has occurred in the area. This has generally taken the form of adapting and extending existing buildings. In one case, at Sørtømme, a modern single-storey cowhouse with built-in silo has replaced an old outbuilding. Modernization of dwelling houses can take the form of internal modification, retaining the traditional facade of the **trønderlån**. In other cases, modern bungalows, based on standardized patterns, have been built adjacent to the old farmhouse. There appears to be a general desire to maintain the traditional rectangular farm-yard, although it is often enlarged. New dwelling houses are often placed at a greater distance from the outbuilding to avoid silo smells and because of fire regulations.

The most significant changes in the building style of the Hovin area have occurred in response to developments outside agriculture. The growth of rural trade from the mid-19th century and of rural handicraft industries from the beginning of the 20th brought new occupations. Hovin developed in particular a reputation for carpentry, and several small sawmills were established. Until the 1950s, such occupations were frequently combined with a form for smallholding, based on garden produce and animal husbandry, with perhaps a couple of cattle, some pigs and a few sheep, subsisting on purchased fodder. Residential plots were typically furnished with a small outhouse. At the same time, urban impulses made their influence more strongly felt, bringing new architectural forms (Figure 8). In particular, the so-called "Swiss-style", actually of German origin, made its appearance from the early 20th century. The style was characterized by panelled timber-frame dwelling houses in two storeys, often with ornately carved decorations around windows, doors and gables; the house commonly had a square floor plan, with four rooms placed around a central chimney, breaking sharply with the traditional Trondelag rural building style. The style continued in a simpler, less ornamental form until after the last war. After 1960, a new style of dwelling began to be common, a wooden bungalow

Plate VII "Swiss-style" house in Hovin, built 1913.
Photo: Michael Jones.

built on a concrete base with cellar rooms. These houses are generally based on standardized plans drawn up according to specifications laid down by the State House Bank as a condition of mortage, and they are often prefabricated. The outhouse has been replaced by the garage. Similar all over Norway, this comparatively reasonable and practical housetype confirms the disappearance already heralded by the 'Swiss-style' and its successor, of local traditions and styles in new buildings.

New dwelling houses built on farms in the inter-war and post-war periods have been subject to the same influences, and are often indistinguishable from non-agricultural dwellings. The process is one product of the urbanization of the countryside.

Urbanization of rural settlement

Urbanization of rural settlement can refer both to economic changes and to physical changes. Economic urbanization is repre-

sented roughly speaking by the transition from primary to secondary or tertiary occupations. While economic urbanization is a pre-condition for the formation of urban settlements, this form of physical urbanization is not an inevitable consequence of economic urbanization. Modern transport and communications, in particular the private car, permit an economically urbanized population to live in the countryside and commute to workplaces in urban centres. This process can be termed dispersed urbanization. In Norway, where the transition from rural to urban occupations has occurred for the greater part of the population relatively late, it is not uncommon for people to continue living in their former farmhouses after they have given up agriculture. This is a hidden urbanization, an economic urbanization that is not immediately visible in the landscape. Urban occupations may also be combined with agriculture, although this is often (but not universally) a transitional stage. Dispersed urbanization otherwise takes the form of individual houses or small groups of urban dwellings growing up in otherwise rural surroundings. Since 1965, uncontrolled urban sprawl has been hindered by the Building Act, which required local plans to be drawn up and provided for the compulsory purchase of land to enable new housing to be concentrated in planned estates.

For Melhus commune as a whole, the 1970 population census showed that 79% of the economically active population were employed in secondary or tertiary occupations, yet only 14% of the population lived in defined urban settlements. The importance of commuting is indicated by the fact that 30% of the economically active population work in Trondheim.

The increasing influence of secondary and tertiary occupations has led to a series of landscape changes in Hovin. A local service centre for small industries began to develop after the construction of a railway in the 1860s, but since the last war the community has developed into a commuter settlement, while local workplaces have disappeared as a result of the general trend of economic and administrative centralization. The historical development of Hovin during the last century and a half can be divided into four main periods: before 1864, from 1864 to 1900, from 1900 to 1945, and after 1945.

Before the 1860s Hovin was a farming community lacking workplaces outside agriculture and forestry. In 1864, the railway from Trondheim to Støren was opened, passing through Hovin. Railway construction provided a supplementary source of employment during this period and also in the 1870s when the railway was extended southwards to Oslo. With the advent of the railway, Hovin became a local traffic centre, not only for the immediate surroundings but also serving the neighbouring district of Hølonda. Of particular importance was the transport of timber. The 1860s also saw the easing of restrictions on general trade in rural areas as the trade privileges of the towns were gradually abolished. General stores appeared in rural areas, the first shops in Hovin growing up close to the station. Among them was a co-operative store, founded in 1881, in connection with which a bakery was started three years later. A co-operative dairy started up in 1920.

Other small industries, based partly on local resources, also made their appearance from around the turn of the century. The first motorized sawmill was established in 1904, followed by others in 1926, 1933 and 1945. Besides carpentry, handicraft industries included several smiths making agricultural equipment, a tinsmith, a tanner, tailors and a watchmaker. In 1938, Hovin became a local school centre, when a new school was opened, replacing three smaller schools in the district.

Since 1945, there has been a decline in the number of workplaces in Hovin, while the population has continued to increase. Many of the small industries disappeared in the 1940s and 1950s, unable to compete against larger urban-based enterprises. Dairy amalgamation led to the closure of Hovin dairy in 1948. Of the sawmills, one moved out of Hovin across the valley to the main road after the flood of 1940, reflecting the changing emphasis from rail to road transport, while two others closed down in the 1960s. Remaining small industries are carpentry and machine-repair enterprises.

At the end of the 1960s, a new housing estate of 30 dwellings was built at Hovinsåsen under a plan drawn up by the local authority. Plans are in hand for further housing construction in the area. The new estate lies 1½ km from the station, but physically

separated from the station settlement by a belt of agricultural land. More than half of the estate's working inhabitants commute to Trondheim, while only 10% work in Hovin. Hovin is in the process of becoming a dormitory settlement, wlith only the most essential shops and public services providing local workplaces outside agriculture. The station centre has declined, as shops have moved to a crossroads nearer the new housing estate. The move reflects both the shift in the population centre and the decline of the railway as a localization point in favour of road communications.

Plate VIII New housing estate in Hovinsåsen. Standard house types financed through the State House Bank.
Photo: Alf-Ivar Oterholm.

Hovin enumeration district had a population of 384 in 1970, an increase of 42 from 1960; the proportion of working population in secondary or tertiary occupations increased in the same period from 79.7% to 87.5%. The urbanized settlement forms a functional entity, with common services and activities, but as a physical entity is broken up by agricultural land, thus not counting as an urban settlement for statistical purposes.

Tømmessletta enumeration district still retains its rural character, although there is a large degree of hidden urbanization: the proportion of the working population in secondary or tertiary occupations rose between 1960 and 1970 from 54.2% to 74.5%. There has, however, been a decline in total population from 260 to 245.

The majority of the working population in both districts are commuters: 60% worked outside Melhus commune in 1970, primarily in Trondheim and Støren; 27% worked within Melhus but outside Hovin and Tømmessletta; while only 13% had their working-place within the two enumeration districts.

The growth of trade activities and small industries in Hovin was initially favoured by the arrival of the railway and Hovin's location as a traffic centre in relation to the surrounding rural area. A small centre began to develop close to the station, and urban influences became increasingly evident in the landscape, not least in architectural styles. Since the last war, local handicrafts and small industries have largely disappeared due to competition from larger-scale enterprises and the general tendency towards economic centralization. While workplaces have become increasingly concentrated in larger urban centres such as Trondheim, Hovin's advantages with regard to both rail and road communications have favoured its development as a commuter settlement. Planning regulations have made their influence felt since 1965, leading to the concentration of housing devleopment in selected areas.

Conclusion

The changes evident in the cultural landscape of Hovin and Tømmessletta at the present time reflect the trend towards economic rationalization characteristic of modern society. Land tenure is typified by a reduction in the number of operational farm units. Technological developments are leading to more specialized farming, in which replacement of local resources by external resources is resulting in the disappearance of the traditional, diversified farming landscape. Local building traditions

are threatened by standardized houses and farm buildings based on a national norm. The initial trend towards greater economic variation in local workplaces has reversed itself, and Hovin has become primarily a dormitory settlement in agricultural surroundings. While a rural environment has many attractions, Hovin falls between two stools, being neither completely town nor completely countryside. Nonetheless, the landscape of Hovin and Tømmessletta illustrates within a small area a wide range of aspects of natural as well as economic and social history. An appreciation of the landscape's natural features and historical depth, and of the forces lying behind landscape change and development, can provide a basis for selecting and conserving those elements which give the area its identity and individuality.

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Map sources

Figure 2 **Bosettingskart. Folketelling 1970,** sheet 16, Trondheim. Redrawn and published with the permission of the Geographical Survey of Norway (**Norges geografiske oppmåling**).

Figure 3 Map manuscript, Lundamo sheet, Quaternary geology, prepared by A.J. Reite. Base map: **Økonomisk kartverk** 1:20 000, published 1971, based on aerial photographs from 1963. Redrawn and published with the permission of the Norwegian Geological Survey (**Norges geologiske undersøkelse**).

Figure 4 **Hovin/Tømmessletta. Kulturlandskap i forandring** (Geografisk institutt, Trondheim, 1977, mimeo.). Base map: **Økonomisk kartverk** 1:5 000, published 1971, based on aerial photographs and cadastral data from 1963.

Figure 5 Norges matrikkel, 14:3:8. **Fortegnelse over matrikulerede Eiendomme og deres Skyld den 31te December 1890 i Horg Herred af Guldalen Fogderi, Søndre Trondhjems Amt, affattet i Henhold til Kgl. Resolution af 29de Mai og 6te December 1886** (Kristiania, 1891), p. 10; Jordskifteverket, Matrikkel for Melhus kommune (unpublished cadastral register, updated to 1962 by the land-reallocation agency for Gauldal & Strinda, Trondheim); Gauldal sorenskrivarembete, Realpanteregister, Horg (real-estate register, State Archives, Trondheim); **Hovin/Tømmessletta. Kulturlandskap i forandring** (Geografisk institutt, 1977, mimeo.).

Figure 6 Map archive of the Norwegian land-reallocation agency (**Jordskifteverkets kartarkiv**), Ås. Published with permission.

Figure 7 Stigum, Hilmar, **Byggeskikk** (Institutt for Folkelivsgransking, Oslo, 1972, mimeo.).

Figure 8 **Hovin—Tømmessletta. Kulturlandskap i forandring** (Geografisk institutt, Trondheim, 1977, mimeo.).