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The rural–urban connection as revealed in the terrestrial sediments at Nidarneset, Trondheim, Norway

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ABSTRACT

The medieval town of Trondheim stands on Nidarneset, which is part of the river plain at the mouth of the river Nidelva, in the county of Sør-Trøndelag, central Norway. Archaeological investigations on the river plain have identified traces of a rural settlement that gradually transformed into an urban one. In 2009 an interdisciplinary investigation was performed involving archaeology, analysis of plant macroscopic and microscopic sub-fossils, soil micromorphology and ^{14}C dating aimed to gain a deeper understanding of the earliest land use as well as processes that took place later on. This investigation acquired new data, which needed to be compared with data from investigations since the early 1970s to re-evaluate the consequences of past anthropogenic influence. Our study led to results that are further explored in this paper:

1) A chronological/spatial perspective of rural land use at Nidarneset
2) A basis for comparison between the rural and the urban landscapes
3) Driving forces in the transformation process through a time span from c. 900 BC until c. AD 1200, when a centre with urban functions was well established.

1. Introduction

Trondheim in the county of Sør-Trøndelag, is the northernmost Norwegian and European medieval town (Fig. 1), at about 63.5° N. The town is located on the eastern part of Nidarneset, a small peninsula on the river plain beside the mouth of the river Nidelva on the southern shore of Trondheimsfjord (Fig. 1).

Trondheim was one of the four known marketplaces (kaupsteder) within the larger region of Trøndelag in the Viking Age, and the only one in the region that can show clear evidence of established urban functions already by the beginning of the 11th century, possibly even by the end of the 10th century (Christophersen and Nordeide, 1994; Brendalsmo, 2006). The transition from a marketplace to an early permanently occupied settlement at Nidarneset, and the later consolidation and growth to a centre with fully urban functions as defined by Helle (2006), are well recorded from archaeological evidence, written records, and references to passages in the Norwegian Sagas (Lunde, 1977; Christophersen and Nordeide, 1994; Blom, 1997; Brendalsmo, 2009). One has focused on the known and investigated remains of the early medieval and medieval settlement such as streets and houses, latrines and wells and a great diversity of objects found in the eastern part of Nidarneset close to the river Nid. Less effort has been devoted to understanding the landscape on the river plain and its surroundings, in terms of formation and land use. Evidence of rural activity and early subsistence revealed by archaeological records, scientific analysis of organic remains, and ^{14}C-datings dating back as far as to 900 BC, has been documented by various investigations, both by the local archaeologists in charge (Petersén, 2015; Reed et al., 1998) or palaeo-ecologists (Sandvik, 1990a, 2000, 2006) and reported to the local heritage management authorities. The origins of a rural settlement at Nidarneset have, with few exceptions (Christophersen et al., 1989; McLees, 2003), not been explored in any greater depth before, although substantial work has been made on reconstructing the natural topography at Nidarneset at the time of the emergence of the non-rural settlement c. AD 1000 (Lunde, 1977; Christophersen et al., 1989). Circumstantial evidence and saga narratives about a farmstead at Nidarneset in the late Iron Age have been studied by both historians and archaeologists in attempts to form an explanatory link between the farmstead and the establishment of a non-rural settlement (Lunde, 1977; Hallan, 1976; Christophersen and Nordeide, 1994; McLees, 2003; Brendalsmo, 2006).

All the same, specific efforts to combine the different archaeological and scientific sources to further investigate and problematize the

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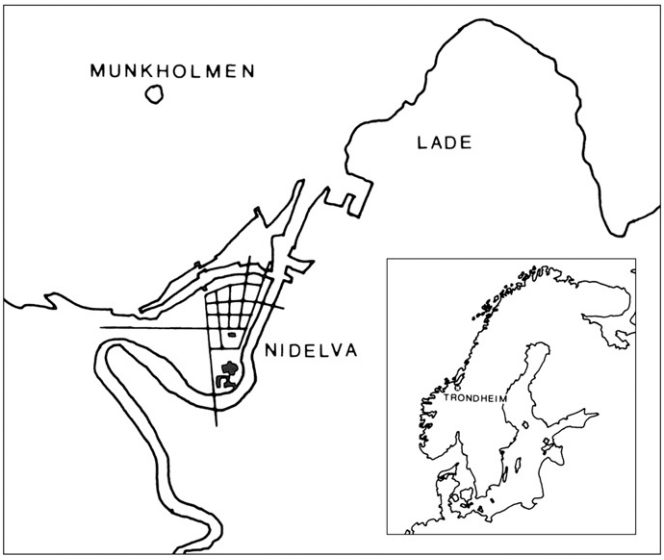

Fig. 1. The present landscape at the river plain at the mouth of the river Nidelva (Christophersen, 1987). Inserted map of Scandinavia, with Trondheim marked.

development of the rural settlement from an archaeological perspective have so far been in short supply. Two examples of research on the transition from urban to rural settlement in other Norwegian medieval towns can be singled out for mention (Brendalsmo, 1994; Hansen, 2003), and both of the authors involved have combined archaeological and scientific data in their work regarding the emergence of Tønsberg and Bergen respectively.

Palaeo-ecological data from investigations in Trondheim combined with ^{14}C-datings (Sandvik, 2006) have yielded results that made it possible to identify a change at c. 600 AD in the diversity of botanical remains compared to finds from earlier periods. Stratigraphy seen in sediment cores together with ^{14}C-datings made it possible to construct an outline for the position of the river bed along with the extent of dry land at c. 2000 BP. The development of the present landscape at Nidarneset and the surrounding area is strongly influenced by the combination of a regional regressive shoreline displacement of some 175 m during the Holocene and the erosion, transport and re-deposition of sediments in connection with fluvial processes, landslides, and anthropogenic influence. These formation processes, which caused large-scale changes to the landscape during the Holocene (Reite et al., 1999), have left traces both above and below the present surface, and thus constitute the basis for understanding the landscape at any given time.

Although the history and development of the medieval settlement in Trondheim is not the main object of our present paper, we wish to stress that the bulk of the empirical data and material that we have utilized originate from the heritage site, the medieval town of Trondheim. Without doubt, the archaeological remains, regardless of type, character and age, would have been destroyed or impoverished without the legislation that defines specific parts of all medieval towns in Norway as scheduled areas and thus protected by the Cultural Heritage Act of 1978 (with later amendments). Section 1 of the Act states: "The purpose of this Act is to protect archaeological and architectural monuments and sites, and cultural environments in all their variety and detail, both as part of our cultural heritage and identity and as an element in the overall environment and resource management".

In 2009 an archaeological investigation was planned at a site hereafter named the Residence Hotel within the medieval area of Trondheim. This provided a wealth of new data and initiated the need to further explore the nature and history of the rural settlement within the landscape at Nidarneset.

2. Material and methods

The investigation at the Residence Hotel site was designed by scientists and archaeologists in close cooperation. The strategy chosen for the project was to analyse macroscopic and microscopic sub-fossils and soil micromorphology, and in addition results from ^{14}C-datings and archaeological evidence. These results constitute our baseline for comparison and discussions.

We have evaluated all available datasets from archaeological rescue excavations and surveys carried out in the scheduled area of Trondheim from the early 1970s until 2009. The selection of sites, 14 in number including the Residence Hotel (Fig. 2, Table 1), has been based on the following criteria. 1) The archaeological material has been processed, and is available in printed form, 2) the archaeological sites have ^{14}C-datings from ca. 1200 AD or older, 3) the archaeological excavation has been combined with scientific analysis such as macro- and/or microscopic sub-fossils and soil micromorphology, and 4) one or more of the following structures are present above the alluvium:

- anthropogenic sediments
- ard marks
- pits

The presence of these structures has been used as markers for past anthropogenic influence at Nidarneset.

2.1. The Residence Hotel

The excavation at this site (Fig. 2, Table 1, site 9) was performed as a rescue excavation, just like every other in the medieval towns, and had a budget approved by the property owner and the Directorate for Cultural Heritage. The excavation was conducted by NIKU (the Norwegian Institute for Cultural Heritage Research) in close cooperation with soil scientists from the Division for Soil and Environment at Bioforsk and palaeo-ecologists from AM UiS (the Department of Archaeological Excavations and Natural Sciences, Archaeological Museum, the University of Stavanger) (Sandvik, 2009b; Sveistrup and Pedersen, 2010; Petersén, 2015).

The Residence Hotel is located on the western outskirts of the medieval town (Fig. 2) in an area that was peripheral to the built-up medieval settlement, but nevertheless an important economic resource for the inhabitants throughout medieval times, in the form of land accessible for fields, meadows and pastures. Earlier excavations near the Residence Hotel site conducted in 1987, 1996 and 2000 (Fig. 2, sites 7 and 8) had revealed scattered ard marks in the surface of the alluvium beneath 0.2–0.4 m thick soil layers (Fulks and Sandvik, 1987; Towle et al.1996; McLees, 2001; Sandvik, 2001). The ard marks, together with the soil layer, were interpreted as the remains of fields, representing the start and development of agrarian activities in the area. One of the main aims for the excavation at the Residence Hotel site was to further document possible traces of past farming in the area, and to improve the chronological sequence regarding past farming.

2.2. Archaeology

The investigations took place over a period of four weeks, starting in May 2009. Even before excavation started it was clear that the locality had been severely disturbed by various intrusions in the 19th and 20th centuries. Approximately 0.7 m of the modern topsoil consisted mainly of bricks, mortar and concrete, and this deposit was removed by machine under archaeological supervision so as to reveal the undisturbed surfaces of older anthropogenic sediments. After clearing, the site amounted to about 140 m^2 comprising two parts separated by a 19th century wall foundation oriented north–south. The larger part to