THE BRYGGEN PAPERS

Main Series No 6

BERGEN c 800–c 1170
THE EMERGENCE OF A TOWN

Gitte Hansen

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Inquiries about this text can be directed to
Fagbokforlaget
Kanalveien 51
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P.O. Box 6050 Postterminalen
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Telephone +47 55 38 88 00
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FOREWORD

In this volume of the Bryggen Papers we present a study of the processes of the urban development of Bergen, how the town emerged and developed into an important urban community by the early Middle Ages. The study is primarily based on contemporary archaeological source material from c. 800 to c. 1170 - a complex and composite material, comprising traces of cultivation, culture layers, buildings, plots and artefacts. Its main aim is to investigate the town's structure, plots and plots systems, and the different activities, crafts and production as well as the character of the urban settlement and its development until around 1170. The main questions that are addressed are when, how, why and on the initiative of whom Bergen merged as a town

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The editorial board responsible for the publication of the series consists of Senior Executive Officer Ann Christensson, Directorate for Cultural Heritage, District Office West, Bergen, Professor Else Mundal, Centre of Medieval Studies, University of Bergen, Senior Advisor Anne Ågotnes, Bryggens Museum, and Professor Ingvild Øye, Department of Archaeology, University of Bergen.

Bergen, November 2005

Ingvild Øye
Chief Editor

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From December 1996 until June 2001, I was employed as a junior research fellow at the Department of Archaeology, University of Bergen, financed by a scholarship from the Faculty of Arts at the University of Bergen. From June 2001, I have been employed as a curator at the Medieval Collections of the Bergen University Museum. I thank these institutions for providing me with financial support and excellent working conditions while carrying out the present study.

Many people have been engaged in and supported me in carrying out this project. I am grateful to my supervisor, Professor Ingvild Øye, who carefully and effectively read and commented on drafts time and again. She has probably exhausted many grey cells and certainly many grey pencils on my project, but most importantly she has given me valuable feedback on all levels.

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In the early phase of the project Mona Mortensen in the 'Dokumentasjonsprosjektet' gave me access to the preliminary digitised version of the Bergen University Museum's accession catalogue ('tilvekst'). Lyn Blackmore, Per Kristian Madsen, Ian Reed and Alan G Vince gave me advice and references for pottery dates. Jan Bill answered my questions on boats. I thank them for giving me their time.

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Ellinor Hoff at the Cultural History Collections of Bergen University Museum drew artefacts and Svein Skare at the Photo Section of Bergen University Museum photographed artefacts from Bergen University Museum. Melanie Wriggelsworth has proof-read the preliminary manuscript. I thank them for their patience.

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The study was defended for the Dr. Art. degree on May 28 2004. Professor em. Hans Andersson University of Lund (S) and Professor Else Roesdal Århus University (DK) were opponents. I thank them for their comments and for interesting discussions.

The thesis was first published in 2003. Minor alterations have been added to the present edition.

Bergen, September 2005
Gitte Hansen

Bergen c 800-c 1170
The Emergence of a Town

PART I

AIMS, BACKGROUND, THEORETICAL, METHODOLOGICAL APPROACHES AND SOURCES

1 INTRODUCTION

In the Middle Ages Bergen appeared as the most important town in Norway. From the end of the thirteenth century Bergen was known as the country's largest trading centre and from the end of the twelfth century it was the ecclesiastic centre of western Norway. According to saga traditions, King Olav Kyrre (the Gentle, 'the Peaceful') (1066-1093) founded the town, probably about 1070, and based on different sources and methodological approaches, researchers have studied early Bergen and the king's role through the centuries. Today a large body of archaeological material can be drawn into the discussion and forms the basis for new approaches. The theme for my study is the emergence of Bergen and the development of the town until c 1170. This case study of urban development in Scandinavia in the early Middle Ages is based upon heterogeneous source material comprising archaeological, botanical, topographical and written sources.

My overall aim is to study the processes of how a place developed into a living urban community in the interplay between people from different levels of the social hierarchy and their wider historical context. The main questions to be addressed are how, when, by the initiatives of whom and why did Bergen emerge. These basic questions are approached through six studies of major initiatives and daily activities reflected in the available sources of the early town and its people. The studies comprise an investigation of activity in the Bergen area between the ninth century and c 1020/30, as well as investigations of plots and plot systems, settlement development, crafts and production, trade, and the character of the settlement in Bergen between c 1020/30 and c 1170.

The archaeological remains, spanning from traces of cultivation, plots, buildings, culture-layers, to artefacts reflect how major initiatives and daily activities in time shaped the urban community. My aim is to understand some of the strategies behind these initiatives and activities in order to elucidate the questions of why and by the initiative of whom the town emerged.

The period from the ninth century to about 1170 is investigated with a main focus on activities between c 1020/30 and c 1170. In order to obtain a varied and more nuanced understanding of the processes of the urban development during this period the sources are analysed within a chronological framework of five horizons. The time spans of the horizons are defined on the basis of the beginning and end of phases in the archaeological material. Some horizons also coincide with events mentioned in the written sources (horizons 1 to 5, cf p 55). I have chosen c 1170 as the upper chronological limit for my study for rather pragmatic reasons. I wanted to study the early history of Bergen, with a focus on the eleventh and twelfth centuries. Fires destroyed Bergen in 1170/71 and in 1198 and left firelayers that mark the 'end of phase' at many archaeological sites. From a practical point of view c 1170 or 1198 would thus be convenient places to stop. The amount of archaeological data to be analysed would become too large to handle within the present project had I chosen 1198 as the upper time limit, I therefore choose c 1170.

The area around the Bay of Vågen denoted as 'the Bergen area' (Figure 1) is covered in the study. The Bergen area is divided into six areas. The division serves as an analytic tool and as a reference when orientating oneself geographically. The six areas comprise (1) Holmen, (2) the

northern town area, (3) the middle town area, (4) the southern town area, (5) the Nonneseter area, and (6) the Nordnes peninsula. An inlet, in the High Middle Ages known as a swampy area called Veisan, separated Holmen from the northern town area. The stretch of land along the Vågen Bay in the northern and middle town areas is known today as Bryggen, the southern town area is known as Vågsbotn. The natural topography about 1000 will be reconstructed and provides the spatial framework within which the sources are analysed and interpreted.

Contemporary archaeological, botanical, and written material, as well as the reconstructed natural topography form the empirical basis of this study. However younger written records and later patterns in the archaeological material are drawn upon when relevant. The archaeological and botanical material comprises both published and unpublished data from investigations and masonry studies on buildings and ruins from altogether 46 sites covering about 14 924 m^2 and 149 profiles in trenches. These sites have been investigated from the nineteenth century until 1998. To simplify references the sites are numbered from 1 to 46 (Table 21, p 105).

I have regarded it as a methodological challenge to activate and thus be able to make use of as much of the material as possible, whether retrieved during the nineteenth or the twentieth century. Inherent in the methods applied is that the Bergen area is considered as one site where data from the various sources will be analysed spatially in relation to one another and to the natural topography. Material from individual archaeological and botanical sites and their close vicinities will be interpreted drawing upon patterns and main tendencies in the material discerned when the sources are considered on a broader basis. Methodologically the production of maps is used as an important analytic tool for the visualisation and interpretation of the sources. The sources will also be evaluated and divided into different categories according to their reliability as evidence. In this way sources that are poorly dated or located may be drawn into the study, while inherent uncertainties of the material are kept in mind.

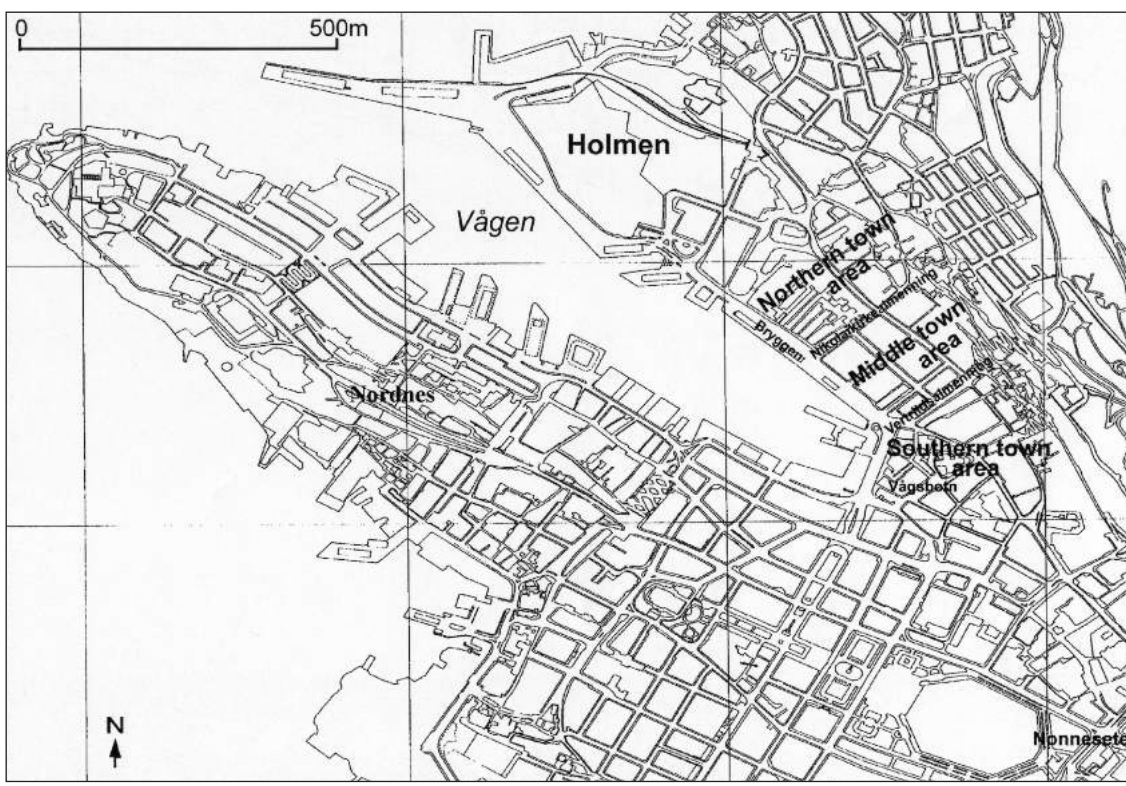

Figure 1. *Bergen on the west coast of Norway. The Bergen area*

The archaeological 'raw data' is with a few exceptions destroyed when excavated. As researchers we are left with material that has been documented to a varying degree and the excavator's interpretation. The Bergen material has come to light through different methodological approaches and the questions posed in this study have rarely been considered in the reports. Archaeological and other data do not tell a story in itself; we have to ask questions in order to get answers that may be used further on in analyses and discussions. In order to use the material as sources for my study, a number of questions are posed, ranging from basic questions of chronology and localisation of the single sites to questions on a higher level of abstraction involving the study of patterns across the sites and in a wider historical context. In some cases the material consists of 'hard facts', it poses resistance and there is a straight and narrow answer to the questions. Often, however, the answers are complex and an interpretation of the material is dependent on 'circumstantial evidence', chains of indications and convincing arguments.

The three part division of the thesis reflects the complex process of analysing the sources. Part I presents the aims and sources and a background for the study. It also gives an outline of overall theoretical and methodological approaches to the sources. The natural topography is reconstructed here and the sources are classified so they can be used in broad analyses across the sites. Part II of the thesis comprises six part-studies of the sources across the sites, addressing different themes that are drawn upon in part III in the synthesising discussions of how, when, by the initiative of whom and why Bergen emerged.

2 THE BACKGROUND

What is a town?

Urbanisation displays great differences chronologically and geographically and different sociopolitical settings produce urban communities with various functions and characteristics (eg Andrén 1989; Hodges (1982) 1989). Through the history of research many attempts have been made to define the medieval town. Narrow legalistic approaches were in time abandoned for broader *Kriterienbündel* approaches; a 'bundle' of criteria were listed and settlements qualified as towns if they fulfilled one or more of the criteria (for further references eg Schück 1926; Hodges (1982) 1989, 20ff).

The Norwegian historians Knut Helle and Arnved Nedkvitne's (1977) 'bundle' of structural and functional criteria are quite representative for historical, geographical and social criteria suggested in the literature and are commonly used in relation to Viking age and medieval towns in modern Scandinavian research (eg Ambrosiani and Clarke 1995 (1991), 3). According to Helle and Nedkvitne a settlement may be defined as a town if it is permanent and denser in structure than settlements in its hinterland. Furthermore, the settlement should have specialised functions compared to the surrounding rural area. These specialised functions may be economic, jurisdictional, administrative, religious, and/or cultural and the townspeople should predominantly live off such activities. If a place was considered as 'urban' in the eyes of contemporary people this is considered sufficient for that place to qualify as a town even if the place was apparently small and insignificant (Helle and Nedkvitne 1977, 190-191). Recently, 'mental criteria' such as an urban lifestyle has also been suggested as a criterion for a place to qualify as a 'real' town that is fundamentally different from the surrounding rural community (Carelli 2001, 99).

The legalistic, functional, structural and mental criteria characterise the permanently settled, urban community but not seasonal marketplaces, like eigth century Ribe in Denmark (Frandsen, Madsen, and Mikkelsen 1988, 8; Jensen 1992; Ferveile 1994) or the ninth century Löddeköpinge in Sweden (Ohlsson 1973). The criteria relate to a living urban community and presuppose that this community has been under development for some time. Thus the criteria do not relate to what may be designated embryonic stages of an urban community, neither do they cover the planned town that did not develop into a living urban community as for instance the eighth century planned town of Anjar (Hodges 2000, 49ff).

Through the present case study I aim to elucidate how a living urban community developed in the Bergen area and how this development

took place in the interplay between various actors and the wider society. The aim is not to determine when early Bergen fulfilled a sufficient number of criteria to qualify as a 'real' medieval town but rather to present a case study of processes towards a permanently settled living urban community in Scandinavia.

Analytic tools are necessary when approaching the myriad of sources available. The bundle of functional and structural criteria suggested by Helle and Nedkvitne apply to central themes, some of which can be aptly discussed on the basis of a predominately archaeological body of sources. They may serve as a point of departure when deciding which major initiatives and daily activities to study and also as a loose frame of reference when discussing the structural features and different functions and activities discerned in the Bergen material.

Geographical setting

Bergen grew around the Vågen Bay located on the inner coast of western Norway. In the Middle Ages, Bergen's hinterland was relatively rich in arable land compared to local standards, and agriculture could be supplemented by fishing and hunting. The Bergen area could be reached from the mainland by horse or on foot, but boat was no doubt the best means of transport when carrying a heavy load. Bergen had a central location for seagoing transport between Lofoten and Vesterålen in the north and continental northern European harbours. The town also had a central location for traffic across the Atlantic heading for Iceland, Greenland, the Faroe Islands, Shetland, the Orkneys and the British Islands (Helle 1982, 53-70, with references).

Historical setting

The emergence of Bergen should be seen in the context of the considerable changes that took place in many important aspects of life between the ninth century and c 1170 within the medieval boundaries of Norway. The political system in Norway changed towards a central monarchy. Previously, power had been centred in the hands of petty kings or magnates (Andersen 1977, 185). The political centralisation was a result of a long process that first comes to light in the written records with Harald Hårfagre's (Harald Fairhair) efforts to win recognition as a king in the last half of the ninth century. Stronger connections to Western Europe through raids, trade and colonisation have been seen as the background for this centralisation process. In the years to come Harald's descendants aimed to gain royal power over the whole or parts of Norway in opposition to local magnates - especially the Lade earls of Trøndelag - and in periods between 960 and 1034 also in opposition to the rulers of Denmark who were distant overlords (Andersen 1977, 84ff). From 1034 and in the following three centuries royal power was in the hands of Norwegian kings. Between 1130 and 1240 rivalling joint kings and pretenders to the throne fought each other and civil wars ravaged the country.

As part of the centralisation policy, Harald established royal estates through land confiscation, at least in western Norway. Establishing the royal estates has been seen as a strategy to secure an economic foundation for the central kingdom. The collection of land rent (*landskyld*) - tax on land paid to landowners - the king (and later also to other lay landowners and ecclesiastic landowners) and *veitsler* a general tax paid to the king by all persons liable to taxation were introduced and perhaps administered from the royal estates (Andersen 1977, 88-99, 295ff). Both *landskyld* and *veitsler* were paid in kind (KLNM X 277ff, XIX 632). Of 13 possible royal estates dated to before 1100, four were located in the close vicinity of Bergen. Such concentration of royal estates is unique in western Norway. Alrekstad, about 2 km southeast of the Bay of Vågen was one of the royal estates already from the days of Harald. The others were Herdla, Seim, and Lygra (Iversen 2004).

During the reign of King Olav Haraldsson (later Saint Olaf) (1015-1028) Christianity was introduced as the official religion. Researchers have seen the official conversion as a means for central kings - first Olav Tryggvason (994/995-999/1000), later Olav Haraldsson and his successors throughout the eleventh century - to strengthen royal territorial control over Norway. The central king was the real leader of the Church and probably used the Church to administrate the land. From the last half of the eleventh century churches were built (Skre 1995), the kings are known as donators of land for churches

and monasteries and founders of many churches throughout the country (Krag 1995, 191). Bishops were chosen and appointed by the kings (Andersen 1977, 103, 124, 153, 289-90). As part of the king's attendant guard (*hird*) the first bishops travelled with the king. The country was not divided into dioceses until the reign of Olav Kyrre (1066-1193). The episcopal residence of western Norway was located at Selja, a small island on the coast in the northern part of western Norway. The bishop, however, may have resided on a regular basis in Bergen before the episcopal residence was formally attached to Bergen, probably about 1170 (Helle 1982, 92, 146; Lidén 1993, 10). Tithe was introduced after 1111, during the reign of the joint kings Øystein Magnusson (Eystein Magnusson) (1103-1123), Sigurd Magnusson Jorsalfar (Sigurth Jerusalemfarer) (1103-1130) and Olav Magnusson (1003-1115) (Andersen 1977, 181). In 1152/53 the Church was formally given the right to administer its own property and income and appoint church leaders and other clergy. It is uncertain to what extent these rights were immediately carried into life, but it seems clear that the Church now took an important step towards independence from the Crown (Helle 1995, 31).

Towns were also introduced in Norway as a new feature in the period studied here. The term town or urban is used here in accordance with the wide bundle of town criteria suggested by Helle and Nedkvitne (1977). The Viking Age town Kaupang in Tjølling, Vestfold, or Scirings heal is mentioned in contemporary sources about 890 (Helle and Nedkvitne 1977, 192) and archaeologically dated to between the late eighth century and the late ninth centuries (Ambrosiani and Clarke 1995 (1991), 65ff; Blindheim, Heyerdal-Larsen, and Ingstad 1999, 162). Other Iron Age towns may have existed in Norway. Toponymic evidence suggests that places where the exchange and transhipment of goods took place existed throughout the land, many of these places were localised close to the seats of local magnates or royal estates (Andersen 1977, 222ff; Christophersen 1991). So far, however, none have been directly located and investigated archaeologically. Consequently, the date, structure, function and character of these places are in the dark.

In the tenth, eleventh, and twelfth centuries a number of towns emerged. Ordericus Vitalis mentions six *civitates* on the Norwegian coast when writing about Norway about 1135. These have been identified as Trondheim (Nidaros), Oslo, Tønsberg, Konghelle, Sarpsborg (Borg), and Bergen. Since these were the only ones mentioned by Ordericus they may have been the largest or most important (Helle and Nedkvitne 1977, 206). In addition eight other places referred to in urban terms are related to the period before 1200 in documentary records (Helle and Nedkvitne 1977, 206ff), Figure 2 presents these 14 places. Starting with Ordericus' towns - excluding Bergen - excavations in Trondheim have dated the first non-agrarian phase tentatively into the first half of tenth century; the area, however, was not permanently settled until the end of the century (Christophersen and Nordeide 1994, 266, 274). The first 'town phase' in Oslo is dated through archaeology to about 1000 (Schia 1991, 116ff; Schia 1992, 46). Tønsberg may, based on archaeological sources, date back to the first quarter of the tenth century (Brendalsmo 1994, 113). Written sources mention Konghelle from the reign of Olav Tryggvason (994/995-999/1000) but not as a town until the days of Olav Kyrre in the late eleventh century (Helle and Nedkvitne 1977, 214). According to written sources Borg (Sarpsborg) was founded by Olav Haraldsson about 1016 (Helle and Nedkvitne 1977, 212), this town has not been investigated archaeologically (Schia 1992, 32). The urban localities not mentioned by Ordericus are: Vågan, Steinkjer, Veøy, Borgund,

Kaupanger, Stavanger, Skien, and Hamar. The dating of the origin of Vågan in Lofoten as a central place has been considered obscure (Bertelsen and Urbanczyk 1988, 98). However according to several sagas, Øystein Magnusson built a church and lodges for fishermen in Vågan, and on this basis Vågan has been considered as a church centre and a centre for stockfish trade from the beginning of the twelfth century. According to later saga tradition, Steinkjer was founded in the early eleventh century, but there is no mention of the place later on and there is no archaeological record of a central place here (Helle and Nedkvitne 1977, 214ff). Veøy may have functioned as a centre from the middle of the twelfth century, according to the archaeological material

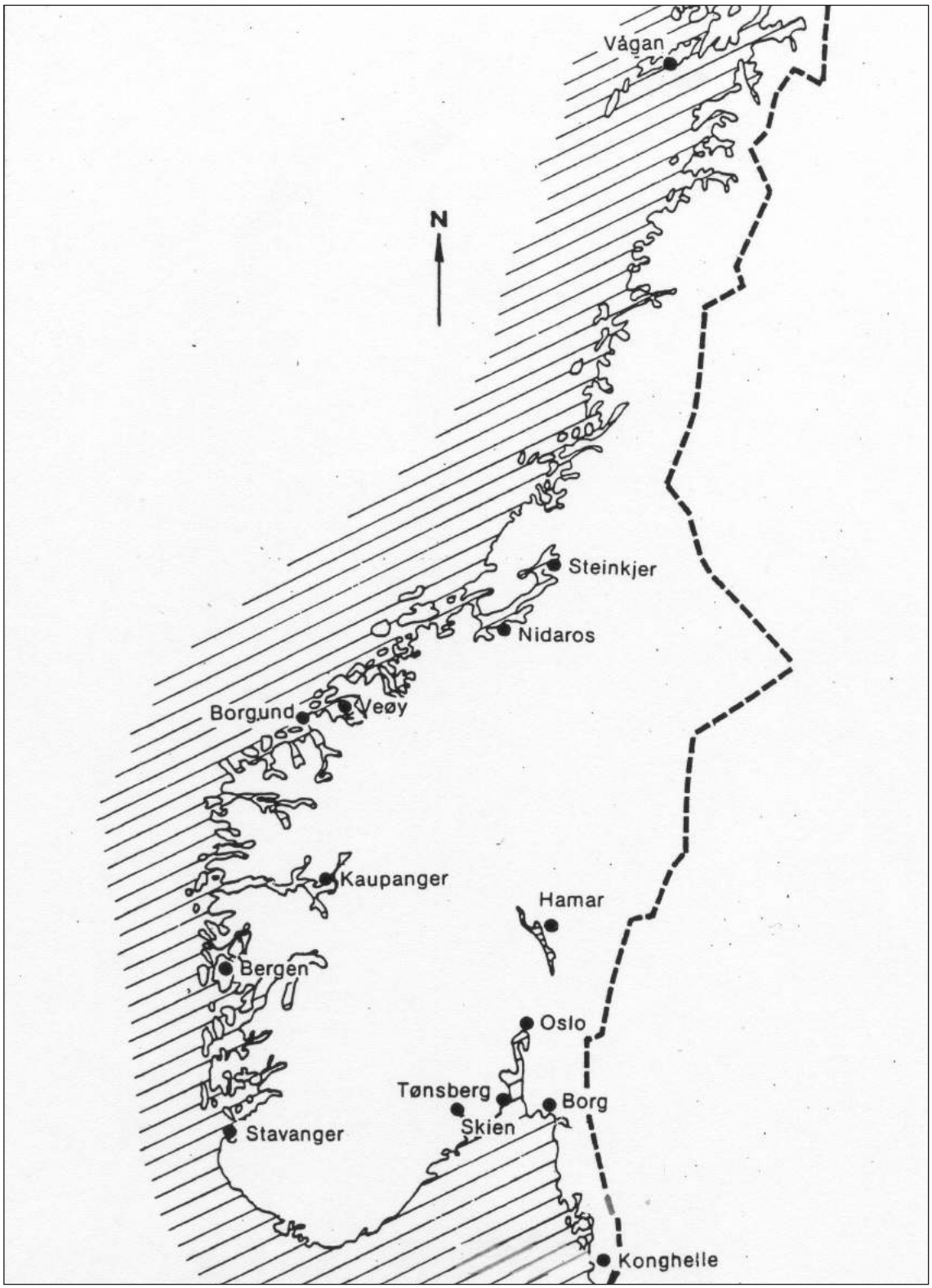

Figure 2. *Fourteen medieval towns related to the period before 1200 in the documentary records. (Modified from Helle 1992, 8)*

and other sources (Solli 1996, 206). In Borgund, settlement has been dated to the early eleventh century through archaeological investigations (Herteig 1957, 462), however, the character of this settlement is not clear. Kaupanger in Sogn was first mentioned in connection with events in 1183-84, an actual settlement area has yet not been identified. Based on toponymical, written and archaeological evidence, Øye suggests that Kaupanger may have functioned as a central place with an urban character as early as the last half of the eleventh century (Øye 1989, 149ff). Stavanger became an episcopal seat shortly after 1120, but the place was not mentioned as a town until the last half of the twelfth century (Helle 1992, 15). Through archaeological investigations the oldest non-rural phase in Skien has been dated to the second half of the tenth century. However, the area was not permanently settled until the eleventh century (Myrvoll 1992, 249ff). At Hamar, Harald Sigurdsson Hardråde (Harald Hardruler) (1046-1066) struck coins, and the place is known as a town in 1154, when a letter refers to the newly established episcopal seat there (Helle and Nedkvitne 1977, 216). From this account it should be clear that Bergen did not emerge in an urban vacuum, towns were a known phenomenon in Norway in the period under investigation, and the tenth and eleventh centuries seem to have been a very productive period of urbanisation. The same trend is seen in contemporary Denmark and Sweden (Andrén 1989).

Early Bergen, state of research

A scholarly interest in early Bergen goes far back, to the socalled Bergen humanists in the sixteenth century (Edvardsen 1951 (1630-95); Edvardsen 1952 (1630-95); Sørlie 1957 (1559/60)) The origin of Bergen has been a central question; was Bergen an organically grown town or a founded town, and how far back can the town be dated? Studies on the oldest Bergen are numerous, and only the most relevant to my study will be presented here. I have chosen to emphasise the character of the sources studied and the methodological approaches and explanations provided in order to single out and compare important elements of relevance to my own analysis and trying to work out new approaches and new inputs to the town's earliest phases.

According to the Kings sagas: Morkinskinna, Fagrskinna and Heimskringla, written in the 1220-30s, a town was founded in Bergen during the reign of Olav Kyrre. Morkinskinna and Fagrskinna tell that the town was founded and Heimskringla tells explicitly that Olav Kyrre founded the town (*setja kaupstad*) (Helle 1982, 86-87). The Old Norse verb *setja* is used in differing ways in the written sources. It is used in the sense that something is founded juridically: an established settlement was given jurisdiction or was demarcated topographically. But the verb is also used when something was actually founded on a virgin site like a building, a church or a town (Bjørgo 1971b, 69-73; Helle 1982, 87-90). The Kings sagas are in other words somewhat ambiguous when describing the character of the foundation of the town and the question of what actually happened in Olav's days has been a central theme throughout the history of research.

The origin of Bergen

As early as in the seventeenth and eighteenth centuries different historians and topographers argued that the area by Vågen had been settled before Olav Kyrre; the settlement had its roots in rich herring fisheries near Vågen. Olav Kyrre founded the town by giving privileges. This view was based on a series of interrelated sources: local tradition, the place name Bjorgvin, and sagas, the convenient location for trade was also stressed (Meyer 1904 (1764), 16-17; Edvardsen 1951 (1630-95), 32-34). Yngvar Nielsen added closeness of the sheltered Bay of Vågen to the royal estate at Alrekstad as an additional factor that may have triggered the growth of a small settlement by Vågen. According to Nielsen the town was founded when given privileges by Olav Kyrre. The area around Vågen belonged to the royal estate Alrekstad and the king donated land to the town, laid out plots, wharves and streets and also pointed out Bergen as the episcopal seat for western Norway, the area jurisdictionally described as *Gulatingslagen* (Nielsen 1877, 1-7).

From the nineteenth century, research on the early history of Bergen has generally followed two main lines of thinking, known as 'the or-

ganic town tradition' and the 'founded town tradition'. P A Munch, a historian claimed that the major towns of Norway, including Bergen, were 'organic towns' grown out of early market-, trading- or fishing places and only later regulated and given town privileges by the king. The towns were thus neither founded nor planned by the king from the beginning (Munch 1849, 27-30). This hypothesis was rooted in local traditions (Helle and Nedkvitne 1977, 207) and in one of the Sagas of the Icelanders written from the middle of the thirteenth century and later (Storm 1899; KLNM VII 496-513). In 1899, the historian Gustav Storm rejected the Sagas of the Icelanders as historical evidence to urban history as they contain too many anachronisms. In opposition to Munch's 'organic town hypothesis' he claimed that towns of Norway, were founded on virgin sites as market towns, laid out and structured by the king. Storm based this hypothesis on the Kings saga Snorre Sturlason's Heimskringla and an anticipated uniform building topography in Trondheim, Oslo and Bergen. According to Storm, Bergen's original name, *Bjorgvin*, shows that Bergen originated from a farm, the farm was royal property that the king chose to develop into a town (Storm 1899, 433-36). Storm's hypothesis of how the towns were founded and organised implied a strong central power, the king. His hypothesis, however, did not receive support until the 1950s.

In the beginning of the twentieth century the local historian, painter as well as director of the Hanseatic Museum (*Hanseatisk Museum*) Christian Koren-Wiberg found support for the 'organic tradition' through a new category of source material: secular archaeological material, which he documented in the middle town area (Figure 3). He suggested that the town had grown out of a number of farmsteads located along an old road at the foot of Fløyfjellet. The old building pattern structured the layout of the new settlement that was given laws and an administration by Olav Kyrre. The king also built churches, and in this sense founded the town. The settlement prior to Olav Kyrre emerged because the topographical location of Bergen attracted merchants and fishermen (Koren-Wiberg 1908a, 149; Koren-Wiberg 1921, 14-22, 45-51).

The historian Bernt Lorentzen, also director of the Hanseatic Museum, succeeding Koren-Wiberg, was the first who supported Storm's founded town hypothesis for Bergen. In his doctoral thesis of 1952 his main aim was to reconstruct the medieval secular building topography based on relevant written sources including late medieval documentary evidence, used retrospectively to illuminate the earliest phases (Lorentzen 1952). This approach in many respects represented a new approach to the source material and opened for more detailed studies of the local topography in the Middle Ages. Lorentzen found support for the old hypothesis that the area around Vågen was originally royal property and argued that the rise of Bergen must have had its background in a royal initiative. Lorentzen, however, found little evidence to support the theory that Olav Kyrre planned the building topographical layout of the town. The layout, as reconstructed by Lorentzen, was rather a result of natural gradual growth spreading out from the northern town area (Figure 4). He did not elaborate on why the king founded Bergen. The central location of Bergen in western Norway was, however, considered favourable as a religious centre (Lorentzen 1952, 38-42, 75-77).

The historian Johan Schreiner, acting as opponent at Lorentzen's thesis, lent full support to Lorentzen's thesis. Based on general considerations of the needs of the late Viking - early medieval elite, he added that the town must have been founded as an institution on a national level, a commercial centre for the exchange of local, national and international goods to serve the interests of both the secular and ecclesiastic land owning aristocracy (Schreiner 1953, 436-37). In the 1950s central researchers thus agreed that Bergen was founded by King Olav Kyrre on a site not previously occupied by an urban community. However, the king did not plan the town physically.

In the years from 1955 to 1969 (and with several campaigns in the years until 1979) the first modern excavation of urban secular medieval remains was carried out in Bergen at the Bryggen site in the northern town area. The earliest building topographical layout along the Vågen waterfront was exposed, with the oldest structures tentatively dated to the 1130-50s and accordingly younger than Olav Kyrre's reign. The

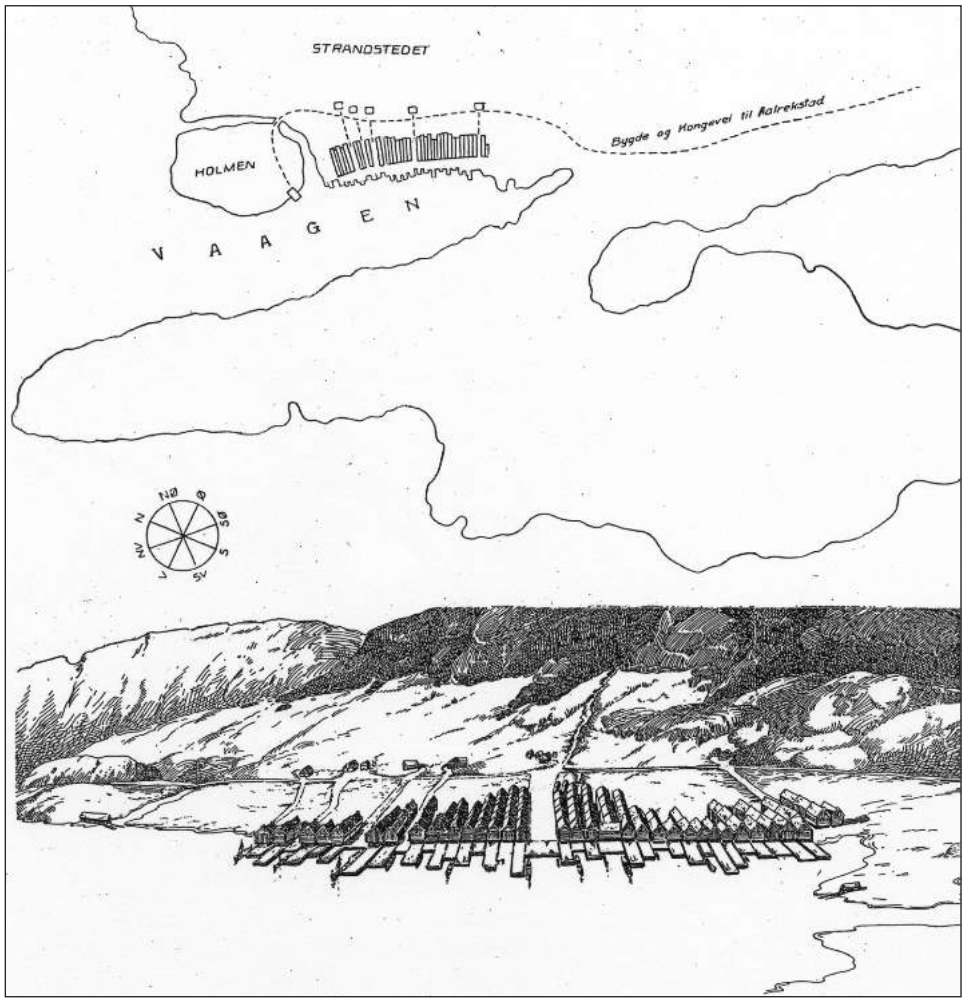

Figure 3. *Koren-Wiberg's reconstruction of the settlement in Bergen before Olav Kyrre. (Koren-Wiberg, 1921, 48 Plan III)*

preliminary results from the excavation (Herteig 1969) gave way to a renewed debate about the origins of Bergen. The excavation supervisor and archaeologist Asbjørn E Herteig argued that Bergen was founded, organised and given its physical layout by Olav Kyrre. This did not, however, exclude the possibility of a smaller settlement in the Bergen area prior to Olav Kyrre, whether permanent or seasonal or connected to a landing-place for the royal estate at Alrekstad. He had no direct evidence to support this theory. Still, he made the case that indirectly the building topographical layout with double tenements as basic units from the start, indicated a regular town plan organised on a high level by the king.[1] Bergen was thus founded in order to coordinate and control trade along the coast. Herteig's arguments were based on the regulated layout of the oldest recorded structures at the Bryggen site (although dated to the middle of the twelfth century), and they were based on Lorentzen's theories that the area around Vågen was originally royal property, and that the oldest tenements were located towards Holmen (west of the Bryggen site) (Herteig 1969, 139-46, 210; Herteig 1970; Herteig 1985, 11). With this interpretation of the sources Herteig landed on a 'mild' version of the founded town tradition; the town was founded physically, but not necessarily on a virgin site.

The historian Narve Bjørgo, who participated in the discussion, criticised both Lorentzen's and Herteig's arguments for being loosely founded and weak from a critical point of view regarding the source material. In this way he reduced

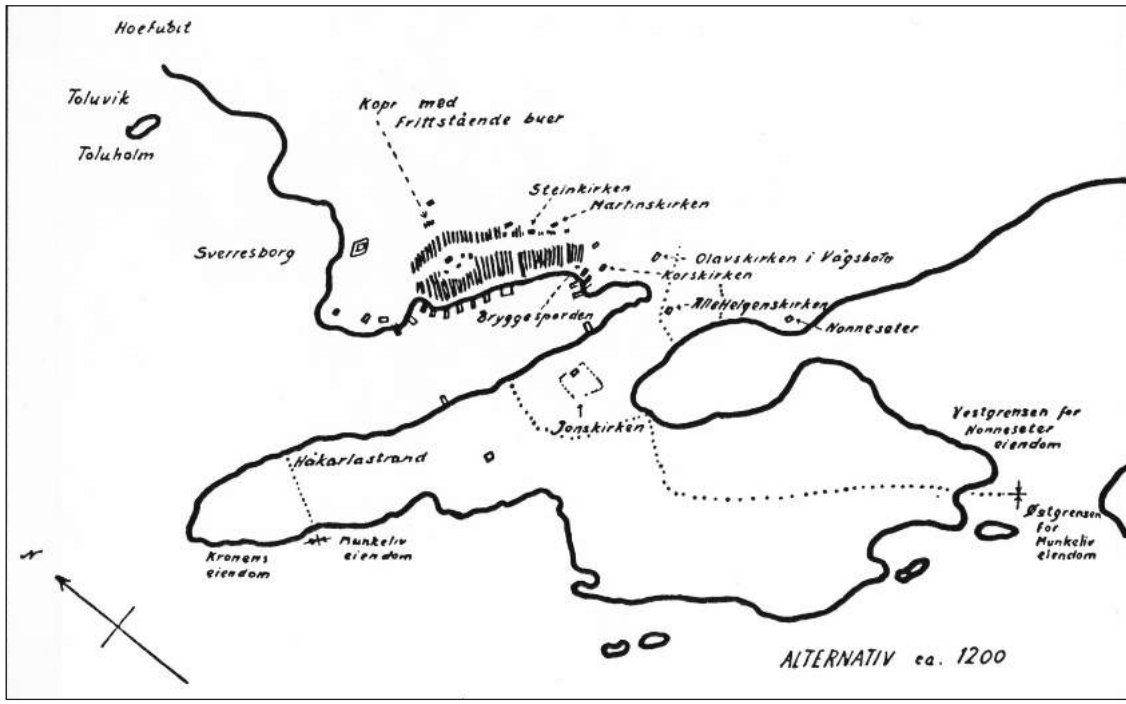

Figure 4. *Lorentzen's reconstruction of Bergen c 1200. (Lorentzen 1952, 75)*

Lorentzen's theory of the localisation of the oldest settlement to a mere chain of indications. Furthermore, since the oldest structures at the Bryggen site were not older than c 1130 they could not directly elucidate Olav Kyrre's Bergen. And the double tenement building pattern could be explained in other ways, such as an architectonic answer to the special topography and orientation towards the harbour and therefore could not be used as a conclusive argument for a royal initiative. Bjørgo looked further into philological expressions and interpretations of the saga texts and showed that the Old Norwegian term '*setja*', could mean that Olav Kyrre regulated an already existing settlement administratively. (Bjørgo 1971b; Bjørgo 1971c, 69ff, 106ff, 126). In the rather heated discussion that followed, Lorentzen, Herteig and Bjørgo contributed through a number of chronicles in a local newspaper *Bergens Tidende* (See eg Bjørgo 1971a; Bjørgo 1971c; Herteig 1971a; Herteig 1971b; Lorentzen 1971a; Lorentzen 1971b). No concluding arguments could be advanced so the question about the origin of Bergen was not settled.

In 1982, in the first volume of *Bergen's town history*, Helle gave a thorough discussion of the available sources for the oldest Bergen and an evaluation of earlier arguments. Helle's discussion of the period prior to 1130 was based on the written sources, and topographical data, and he also considered the general conditions for the location of a town in the Bergen area. He agreed with Bjørgo that in a scientific sense the early history of Bergen was still in the dark and only further archaeological investigations could elucidate the theme. Helle gave a thorough account and discussion of sources that may elucidate the original ownership of land in the Bergen area, and found evidence to support the theory that the area around Vågen was most likely royal property before a town emerged here. He found it likely that the town was preceded by an earlier undefined settlement prior to Olav Kyrre; as the royal estate at Alrekstad probably had its harbour or landing-place for boats by the Vågen bay, this could involve a small year-round settlement by Vågen. He referred to contemporary sources to support this view. According to ecclesiastic rules, bishops should have their seat in a town. However, Olav Kyrre did not place the first bishop in western Norway in Bergen, but rather at Selja further up the coast. Furthermore, when writing

the history of the Hamburg-Bremen archiepiscopal in the 1070s, Adam of Bremen did not mention Bergen, this may imply that there was not a major settlement by Vågen at this time. Thus, according to Helle, Bergen was probably founded by Olav Kyrre in the sense that a small harbour centre was helped along the way to achieve the status of a town in the eyes of the contemporaries. Olav Kyrre's initiative to build churches at Holmen and initiate the establishment of an episcopal residence here may have been sufficient for his name to be associated with the foundation of the town. However, still according to Helle, it is also reasonable to think that the town was given its own judicial rights, a special administration and was founded in this way. He suggested that Olav Kyrre may have given land to people that wished to build here (Helle 1982, 86-113). Helle thus concluded with a position between the organic town theory and the founded town theory: the town grew up in a place previously occupied by a small permanent settlement, but was founded jurisdictionally by Olav.

In the 1980s, botanical investigations added yet new source material to the history of early Bergen. With a basis in ^{14}C dated ecofacts, botanists Knut Krzywinski, Peter Emil Kaland and Kari Loe Hjelle found arguments for a denser non-rural settlement prior to the days of Olav Kyrre, in the northern town area and in the area by the Veisan inlet, (Krzywinski and Kaland 1984; Hjelle 1986). Their results have been used as an indication of a non-rural denser settlement in the Bergen area prior to Olav Kyrre (cf Helle 1992; Ersland 1994; Herteig 2000).

In his doctoral thesis from 1994, the historian Geir Atle Ersland discussed the early history of Bergen using both comparative and retrospective methods. Several north European towns were studied and 'the typical process of town foundation' identified. Elements from the typical town foundation process were then compared with the Bergen material. Through the ownership of land in the later Middle Ages, Ersland showed that medieval Bergen may have consisted of several plan-units. Based on the axiom that Olav Kyrre founded Bergen and a plot layout for the Bryggen area, reconstructed among others on sixteenth century sources and the eighteenth century tenement layout of this area, Ersland argued that the Bryggen area formed a plan-unit with a plot pattern resembling that of eleventh and twelfth century planned towns in northern Europe. This would indicate that Bergen was also a planned town, where land was initially parcelled into plots. The study could not determine if the suggested Bryggen plan-unit was the oldest of such.

The comparative study did not exclude the possibility that Bergen also had an organically grown pre-urban phase, and Ersland suggested that Krzywinski, Kaland and Hjelle's botanical material indicates such a settlement in the Veisan area, between Holmen and the town area. The Vågsbotn area at the mouth of the Vågen Bay was also suggested as a location for a pre-urban settlement centre. Ersland thus argued that Bergen was planned and founded physically, but may have had an organic origin (Ersland 1994, 30, 44, 72ff).

By the middle of the 1990s there was general consensus as far as the origin of Bergen was concerned. The town was most likely founded by Olav Kyrre, perhaps juridically (Helle, 1982, 1992) perhaps physically by parcelling the Bryggen area into plots (Ersland 1994) but probably on a site previously occupied by a denser non-rural settlement.

In the 1980s and 1990s archaeological investigations were carried out in various parts of Bergen. None, however, produced data that could be dated to the period before the 1120s. Researchers with material culture as a point of outset took the state of research as represented by Helle 1982 and 1992 as a point of departure when dealing with early Bergen and other themes than the origin of Bergen were addressed.

The physical layout of the earliest town

The physical layout of the earliest town was one such theme (see Hansen 1994 for a history of research prior to the 1980s). The archaeologist Siri Myrvoll gave a short presentation of excavations carried out in the town area under her direction from 1980 to 1987. On the basis of material dated to the second quarter of twelfth century, Myrvoll suggested that the oldest town originally could have consisted of two settlement centres, one in the southern town area and one in the northern town area (Figure 5) (Myrvoll 1987) (cf also

Figure 5. *The double nucleus situation. (Myrvoll 1993, 87)*

Dunlop 1985a, Plan 12). The presentation gave no discussion or suggestions about the historical background for this double nucleus situation.

Helle criticised Myrvoll's presentation as weakly founded empirically and argued that large parts of the available building land in the town area was settled through most of the twelfth century. According to Helle the location of the Church of St Nicholas between Myrvoll's two nuclei shows that this area was occupied by secular settlement already at an early stage in the town history (Helle 1992, 26).

The art historian Hans Emil Lidén on the other hand supported Myrvoll's double nuclei hypothesis. Based on a discussion of the initial function of the twelfth century churches in Bergen he argued that the Church of St Mary (or actually a possible predecessor to the standing church) in the northern town area and the Church of St Cross in the southern town area may reflect two settlement nuclei (Lidén 1993).

My own master's thesis (Hansen 1994) may also be seen as a contribution to the theme of building topography, as it represented the first attempt to discuss the complete span of archaeological, botanical, written and topographical material from early Bergen under one theme. Through the methods of map production, division of the sources into categories and a critical survey of the contemporary available sources, a 'time-picture' of Bergen around 1190 was produced. This was as far back in time as one could go in the archaeological sources with an acceptable level of security; archaeological material older than the late twelfth century was generally dated on weak premises. Structures and the location of culture-layers were used as sources for the building topography, while artefacts were only used as a means of dating. Through the new methodological approaches I showed that the town area was not as densely built in the late twelfth century as assumed in earlier research (Hansen 1994b, 134).

Artefact studies

At the Bryggen excavations (1955-79) all artefacts were collected systematically for the first time in Norway. Artefacts from were from then on collected as a routine for all excavations in Bergen.

Sigurd Grieg's 1933 publication on urban medieval finds from Bergen and Oslo was for a long time the main reference for urban medieval finds in Norway, supplemented by data from a few published excavations from the 1960s in Denmark and Sweden.

In the late 1970s and 1980s a number of projects were initiated in Norway based on the vast amounts of archaeological material from urban excavations undertaken from 1955 and after. The projects had different research strategies and aims. In the '*Gamlebyen project*' artefacts from excavations in Oslo were studied in groups considering the need for basic typological and chronological studies of the material and according to the special interest of the individual researchers (Molaug 1991, 93). In Trondheim, the publication of the large body of material from the Folkebibliotekstomten site (the Library site) started with the research and publication project '*Trondheims Fortid i Bygrunnen*' in 1985. The research strategy was to study selected groups of artefacts that were considered especially important as sources for the main goal of the project (Christophersen and Nordeide 1994, 25). The artefact studies were integrated in the synthesising publication from the Folkebibliotekstomten site in Trondheim (Christophersen and Nordeide 1994).

From the 1980s several scholarly studies of artefact material from Bergen were also undertaken. Those of relevance here are: boat finds (Christensen 1985), textile equipment (Øye 1988), footwear (Larsen 1992), different kinds of pottery (Lüdtke 1989; Blackmore and Vince 1994), runic inscriptions (Dyvik 1988; Seim 1988b; Seim 1988a), tools of trade (Grandell 1988), coins (Skaare 1984), and selected osteological materials (Hufthammer 1987; Hufthammer 1994) all from the Bryggen site. These artefact groups were studied in connection with the Bryggen Project and published from the middle of the 1980s. The studies of pottery had the specific aim to date the material from the Bryggen site. From the late 1990s artefact groups from the whole town area in Bergen have been studied in several master's theses. Those of relevance here are: fishing tackle (Olsen 1998) and weapons (Nøttveit 2000).

Basic identification and classification of the artefacts have been a time consuming aim of all

these studies. In addition the finds have been discussed thematically through space and time. However, in most studies the material has been considered within wide time ranges and most often all finds from the period before 1170 have been studied in one unit. The artefact material from Bergen has therefore not been discussed in connection with the earliest history of Bergen. One reason for this is that no artefact contexts have so far been dated to before the first quarter of the twelfth century, and contexts from before c 1170 have been considered as dated on a rather uncertain basis.

3 THE PRESENT STUDY, THEORETICAL APPROACHES AND DEMARCATIONS

As shown in the preceding chapter the present study builds on a history of research with long traditions when evaluating the written evidence, the general conditions for the location of a town in the Bergen area, and the natural scientific sources. Also long traditions of research into the archaeological sources including the churches may provide a platform in my study. So far research has not been able to throw much light upon the earliest history of Bergen.

In my study of the earliest history of Bergen different theoretical and methodological approaches to the sources will be applied.

The earliest urbanisation of Bergen can be seen as part of a more general discussion on the rise of towns in early medieval Scandinavia. The theory of a town community, 'organically grown' out of the more or less spontaneous initiatives of merchants, artisans and other individuals on one hand, and the theory of a strong central power - the king or the church - as a founder and planner of towns on the other hand, may be argued to have their roots in two basically different theories of action; two fundamentally diverging understandings of the ways of social change. The classical discussion between the methodological individualist approach to social change on the one hand and the methodological collectivist approach on the other is thus also reflected in urban history. These positions are often referred to as subjectivism/an actor-based perspective and objectivism/a structure-based perspective. Max Weber was an early advocate of the first, Emile Durkheim supported the latter position (Gilje and Grimen 1992, 202; Bugge 1999, 1; Hansen 2000).

According to the organic town theory, trade carried out by independent merchants, was considered the most important factor for the development of towns. In Norway this tradition, in a broad view, goes back into the nineteenth century with Munch (Munch 1849). In the twentieth century the ideas became established in Sweden and in Denmark through the work of A Schück and H Matthiessen (Schück 1926; Matthiessen 1927). H Pirenne's work (1925 and 1939) on the rise of towns in Europe also inspired this line of thinking (Nielsen 1997, 181, 183). Better means of transport, an increase in international and national trade and a surplus of goods serve as a backdrop for the emergence of towns within this tradition. The main actors were merchants - individuals who: 'saw the advantages of permanent trading places on appropriate localities, where they could meet their customers' (my translation) (Olsen 1975, 248). Later, as the town developed, professional and independent artisans were attracted to the settlement that provided a suitable place for the production and sale of crafts to townspeople and a wider local market (Olsen 1975, 250ff). The role of the king was to provide protection and secure market peace for the towns (see eg Olsen 1975; Skovgaard-Petersen 1977). According to this line of thinking, which was clearly influenced by a methodological individualist approach to action, the rise of towns was explained as the product of enterprising individuals that followed their own interests and seemingly did not have to take into consideration the society they were part of (Hansen 2000, 5). The king played a secondary role, merchants and craftsmen a primary role for the rise of towns within this tradition (Christophersen 1982, 104).

Within the other main tradition of thought, scholars have emphasised the institution of the king and/or the church as important factors for the rise of towns. From a broad view this direction also has a long history. In Norway it goes back into the end of the nineteenth century with Storm's founded town theory as well as E

Bull's (1918) theory that the establishment of church centres was the main determinant for the development of towns (Storm 1899; Helle and Nedkvitne 1977, 207-208). The advocates of this tradition claim that the medieval town was too complex to have evolved by itself, and consequently strong institutions like the king or the church must have played a decisive role. In early studies, towns were perceived as founded by the king in an attempt to centralise trade and crafts to places with a central location in relation to transport and communication (Herteig 1969). Medieval archaeologists have in more recent research connected the rise of towns to a basic reorganisation of society in the early Middle Ages (Andersson 1977; Andersson 1990, 84). Trade and crafts have been given less weight and towns are perceived as regional centres of administration and power, founded by the central kingdom as an instrument of physical control over a region and as centres of administration and concentration of taxes (Christophersen 1982, 118; Andrén 1985, 119-120). To cite the archaeologist Axel Christophersen, the town is explained as 'a functional element in a socio-economic system... where the emergence of a monarchy founded on feudal relations is stressed as a primary dynamic factor in the oldest phase of the process of urbanisation' (my translation) (Christophersen 1982, 120). According to Christophersen, the church did not count as an independent dynamic factor in the early Middle Ages but gave ideological and spiritual support to the emerging central monarchy. Trade is primarily seen as a response to the needs arising from the towns' function as political and administrative centres. Crafts in the early Scandinavian town are primarily characterised by the production of luxury items by artisans who were part of the king's household (Christophersen 1982; Christophersen 1989, 130, 144; Christophersen 1994). This approach is clearly based on a methodological collectivist view of social change; towns are founded by the royal institution as a response to the inherent needs of the central monarchy; the towns serve as centres of control and administration, the church, trade and craft are not independent factors for the first rise of towns (Hansen 2000).

From what may be characterised as an intermediate position, Helle and Nedkvitne have suggested that the rise of towns in Norway between 1000 and 1135 had its main basis in the development of a central monarchy and the establishment of a Christian church organisation. Based on political, military and administrative considerations these two institutions initiated and developed centres. A denser settlement developed as a direct or indirect result of activities connected to the king and the church. The centres then attracted trade and crafts, and especially trade became a deciding factor for the development of the towns (Helle and Nedkvitne 1977, 225). Thus towns were initiated as political, military and administrative centres for the king and the church. Individual merchants and craftsmen are, however, also seen as important determinants that operate independently of the king and the church. An increase in the population and in agrarian production is seen as a general background for the rise of towns.

The classical 'organic town tradition' has been criticised for reducing the urban origin into being an element in the history of trade where the town is regarded mainly as a medium for the growth of trade and capitalism (Christophersen 1989, 113). The 'founded town' tradition may likewise be criticised for reducing the early towns into mere instruments for the emerging central monarchy. Being too narrow in scope, the two traditions both offer a somewhat one-dimensional view. Within the 'organic town tradition' individuals act, apparently without consideration of the wider framework of society they are a part of. Within the founded town tradition, towns are seen as a product of the system of society and the individuals as marionettes of the 'system' (Hansen 2000, 6).

In the present study, social change is understood as a product of the interplay between people from different levels of the social hierarchy and their wider historical context. Not as either the product of the free will of individuals or as the product of inherent 'laws' of the system of society. The sociologist Anthony Giddens' theory of structuration inspires this line of thinking (Giddens 1979; Giddens 1984; Giddens 1995 (1981)). According to the theory of structuration, human action creates and influences structures that constitute social systems and *vice versa*: 'The structured properties of social systems are both the

medium and the outcome of the practices that constitute those systems' (Giddens 1979, 69). Structures may be rules and resources (material or authoritative) drawn upon when acting (Giddens 1984, xxxi). Action is not always restricted by rules, because people are knowledgeable, creative and conscious actors and find solutions to problems along the way, this may result in new rules. Furthermore though actors are knowledgeable, action may not always have the intended outcome, because the actor's scope of control is usually limited to the immediate contexts of action and interaction (Giddens 1984, 8-10; Cassel 1993, 10-11).

Somewhat simplified and schematically one may say that in a stratified society, like that of the early Norwegian central kingdom, initiatives were taken from the 'top and down' and from 'the bottom and up'. In this model, top-down initiatives were taken by resourceful actors with a central position in society, these individuals had an opinion on how society was to be formed and did perhaps have the resources to realise their ideas. The king or his representatives belonged to this group of actors, while the church was hardly an independent factor prior to the middle of the twelfth century (cf Andersen 1977, 311). Bottom-up initiatives were taken by less resourceful actors positioned at lower levels of the social hierarchy. The townspeople and visitors in Bergen may be regarded as representatives for such. Both types of actors could carry out major initiatives and daily activities in interplay between one another and in a wider historical context.

Action takes place in a physical location. The actors influence or create the physical setting: the landscape, the building, but the physical setting also structures activities (Giddens 1984, 118; Cassell 1993, 19). Accordingly, the archaeological material may be seen not only as a reflection of events and decisions that took place during Bergen's early period, the physical material, such as the building topography or the infrastructure of the town, also represents the assets and constraints that the actors of the early town could or had to act in relation to. The sources thus reflect both the intended and the actual (and sometimes random) outcome of major initiatives and daily activities carried out by these people in interplay within their wider historical context.

Today, it is commonly accepted that material culture may have meanings that are not exhausted by their physical attributes (eg Tilley 1989, 185). Material culture may convey its meanings in a wide diversity of ways, these 'meanings' being culture-specific (Ucko 1989, XIV). The sources of early Bergen comprise a large body of data spanning from humble production waste to impressive ecclesiastic and secular monumental buildings, not to mention that the town as a whole constitutes a physical material manifestation. The conceptual meaning contained within the material remains probably spans the whole scale between the functional and symbolic.

In order to elucidate why Bergen was initiated I will discuss the intended and actual functions of the town. These functions may be more complex than is practical and they may have changed as the historical context changed. The intended functions are those that the initiator(s) of the town had planned for the town, whereas the actual functions are those that were carried into life by the users of the town. I will mainly address the functional aspects involved. I hold as a premise that activity in the very beginning reflects the intended function of the town. The town's physical layout as well as 'rules' for the use of the town probably constrained and limited the users but also presented assets and possibilities. In time, new functions may have been introduced and the town may have begun to live a life of its own.

Remains of buildings and constructions are likely to reflect conscious strategies and intentional actions. Structures indicating boundaries and monumental and secular buildings may thus reflect sets of major initiatives that had a sustained impact on the development of a living urban community in the Bergen area. Two sets of major initiatives discerned in the sources are the establishment of plots in the different town areas and the occupation of the plots and other parts of the Bergen area. These major initiatives will be addressed in two sub-studies of the sources from horizon 2 to horizon 5 (Chapters 9 and 10).

Accumulated layers, waste and artefacts either lost or thrown away reflect all kinds of daily activities, some of which are relevant for the understanding of why Bergen emerged. In order to elucidate the actual function of Bergen it is

central to discuss traces of productive activities and trade discerned in the sources and discuss the character of the settlements in early Bergen. These daily activities are discussed in three sub-studies covering horizon 2 to horizon 5 (Chapters 11, 12 and 13).

As I see it, major initiatives that can be associated with top-down initiatives reflect the intended functions of the town, whereas sources that signify bottom-up initiatives carried out by the users of the plots and daily activities undertaken in the town reflect the actual functions of the town. I will link the two groups of actors to the major initiatives and daily activities and elucidate how the town emerged in the interplay between the actors and their wider historical context. By this approach my aim is to achieve a more varied and nuanced understanding of the origin of Bergen.

The part-studies

Horizon 1 (c 800-c 1020/30), a backdrop

In the first part-study the localisation of activity in the Bergen area in the oldest horizon (horizon 1) is studied. The study elucidates whether or not Bergen grew organically out of an earlier non-rural settlement. The activity is going to be characterised in terms of general land use and in terms of urban versus non-urban settlement. This serves as a backdrop for the study of the younger horizons (horizon 2 to horizon 5).

Plots and plot systems

The existence of a regulated topographical layout with distinct plots or infrastructure is commonly seen as a signifier of a town or marketplace deliberately founded by a central authority (eg Skovgaard-Petersen 1977; Tesch 1992; Ambrosiani and Clarke 1995 (1991), 137). Fences indicating boundaries are among the oldest structures discerned in the Bergen material. The investigation of plots and plot systems in the Bergen area is therefore relevant for understanding how and by the initiative of whom Bergen came about. A plot is here defined as a piece of land parcelled out from a larger estate. The plot may reflect an ownership unit or a user's unit. The original plot may in time have been subdivided into smaller properties or parts may have been rented out on a more or less permanent basis. King Magnus' town code of 1276 refers to such a subdivision (Bl 1923, 48).

W A van Es' large-scale excavations in Dorestad have demonstrated that this early town had a regulated layout (Hodges 1999). These investigations gave way to the recognition of plots, boundaries and regulated infrastructure in places like the eighth century marketplace of Ribe (Frandsen, Madsen, and Mikkelsen 1988; Jensen 1992; Ferveile 1994), and the early medieval town of Sigtuna (Tesch 1990; Tesch 1992). Recent studies of Viking Age Kaupang in Tjølling and medieval Oslo, Tønsberg and Trondheim have also shown that plots were parcelled out at an early stage in these towns (Schia 1987a; Brendalsmo 1994; Christophersen and Nordeide 1994; Skre, Pilø, and Pedersen 2001). In medieval Lund, plots were laid out about 1020 in an area that until then was occupied by perhaps a political and ecclesiastic central place. These plots were re-regulated into smaller plots in the last half of the century or in the beginning of the twelfth century (Carelli 2001, 106-109).

Until Herteig's first publication of the Bryggen site in 1969, there was, as mentioned earlier, a general consensus that the layout in Bergen was 'so natural' (Lorentzen 1952), or 'a result of natural conditions and local needs' (Bjørgo 1971), that it could not have been actually founded physically. The medieval building topography in the northern and middle town areas was, however, synonymous with the layout of tenements formed by long rows of buildings that ran perpendicular to the Vågen shoreline. Herteig was the first to claim that Bergen was founded with a planned building topographical layout. But Herteig also referred to the concrete tenement layout rather than to the plots under the buildings and held that the double tenement was the central unit in the planned townscape (Herteig 1969). In Ersland's thesis from 1994 the plot under the building rows was introduced as a central unit for the first time (Ersland 1994). Ersland's reconstruction of plots was, as already mentioned, based on among other sixteenth century sources and nineteenth century maps of Bergen, not on archaeologically documented boundaries from early medieval Bergen. When studying the

Gullskogården area at the Bryggen site in her master's thesis the archaeologist Hanne M R Moldung took a closer look at the plots. Here she found that through the middleages the building pattern within the Gullskogården area varied, the location of eaves drops that mark the plot boundary was, however, stable (Moldung 2000, 116-7). The plot as a central unit on a more general level was not discussed. Herteig has also suggested in a recent article that Olav Kyrre laid out plots in Bergen (Herteig 2000). The question of plot sizes and systems was not addressed.

When studying plots and plot systems in early Bergen I will focus on the plots under the building rows, not the tenements and buildings as such. The methodological approach is accounted for in Chapter 9.

To what extent was the Bergen area 'occupied'?

This theme may elucidate how and to what extend actors from different levels of the social hierarchy invested in the early town. Were plots in the town area occupied from the beginning and was there pressure on building land? The extent to which the Bergen area was occupied or built up is an old question. As mentioned earlier, several attempts have been made to reconstruct the built-up area of the early town, but on a rather general level. In my master's study the lowest level of inquiry was the excavated site, individual variations between plots were not discussed (Hansen 1994b). In the present study smaller entities, such as the single plot or monument will constitute the main analytic unit (cf p 65ff) and a more in-depth picture of the scope of occupied and vacant areas is given. The methodological approach is accounted for in Chapter 10.

Crafts and production

In earlier research on town history productive activities have been seen both as a fundamental economic basis for the rise of towns and as subordinate to this. Activities carried out on a household basis and those aimed at in 'inter-urban market' did not 'add value' to the town community and therefore may not have made up a fundamental economic basis for the initial rise of the town. As opposed to this, productive activities that served a wider market beyond the town may have played an important part as an independent economic factor in the early town (Christophersen 1982, 108). I will look closer into the source material trying to single out productive activities of different categories according to this perspective.

Comb production, textile production, metalworking, and shoemaking have been considered and analysed in several studies of productive activities in the early medieval Scandinavian towns (eg Christophersen 1980; Øye 1988; Bergquist 1989; Flodin 1989; Ulriksen 1996; Rytter 1997; Tørhaug 1998; Carelli 2001; Hagen (1988) 1994). I will focus on two questions. The first being, the nature of productive activities identified in the Bergen material; were the products manufactured and used within the household, or were they made by professionals? I am going to use Karin Gjøl Hagen's definition of the term professional, where professional production is production for sale, as opposed to production for consumption within the household (Hagen (1988) 1994, 29-31). Sale in this context is used in a broad sense, meaning distribution beyond the household (cf *Trade* below). The term household is also used in a broad sense, including family members, free and possible un-free servants (cf KLNM XVII 230ff). Guests or visitors are people that were not members of the settlement but visited for a shorter period of time (KLNM V 689ff). The second question addressed is: how were the activities organised - were the artisans/producers sedentary residents of the site where production took place, or were they visitors of the town and travelled between several places of production?

I aim to identify places where productive activities were carried out and discuss the nature and organisation of these activities and thus elucidate whether the productive activities found in early Bergen may have provided a fundamental economic basis for the rise of Bergen. The concrete methodological approach is accounted for in Chapter 11.

Trade

When approaching the theme of trade I will focus on one question: Was long-distance trade an important factor for the rise of Bergen? Trade is here used as a wide term for buying, selling or ex-

change of commodities for profit. The profit may be material or of a social character (Carelli 2001, 178). The social mechanisms involved when exchanging goods (cf eg Christophersen 1989) will not be dealt with in my study.

In the late Viking Age, long-distance trade in heavy bulk commodities was introduced (Jensen 1990; Näsman 1990; Carelli and Kresten 1997). In the earlier periods, long-distance trade had mainly been directed towards the acquisition of prestige goods and scarcities of small volume and weight (Hodges (1982) 1989, 53). Trade was probably mainly carried out within the social sphere, by members of the leading class or representatives of such. With the new bulk goods trade a new social group of specialised salesmen evolved. Whether, in the early part of the period studied here, they traded for their own profit or as representatives for others is not clear (Näsman 1990, 112ff). The status of the salesmen, and the social context within which trade was conducted has been a central question in modern urban archaeology, but will not be explored here.

Hones from Eidsborg in eastern Norway and dark grey schist hones from western Norway, quernstones from Hyllestad in western Norway and soapstone vessels are some of the non-perishable products that were exported from Norway from the late Viking Age and onwards (Mitchell, Askvik, and Resi 1984; Myrvoll 1986; Christophersen 1989; Jensen 1990; Carelli 2001; Baug 2002). An increase in the production of stockfish in Lofoten and Vesterålen in northern Norway is known from the written records from the early twelfth century (Helle 1982, 116). In 1177, 40 or 50 boats were on their way southwards from Vågan, probably with stockfish (eg Ss 16; Helle 1982, 162) if this is correct, it is clear that the production was extensive and must have been directed at exports. The production of bog iron also increased in the early Middle Ages and was probably directed at market production (Narmo 1997, 133, 187ff; Narmo (1991) 1996, 195ff). Along with the increase in the weight and volume of goods traded, new boat types were developed. The long and slender Viking Age warships were supplemented by both seagoing and coastal going freight carriers with high cargo capacities (Crumlin-Pedersen 1991).

In early Bergen, trade may have taken place in various forms. Raw materials and items, not produced in Bergen, show that goods from near and far were brought into town and used here, and some of these materials may reflect trade. When elucidating the existence of trade as a daily activity and the importance of trade for the users of Bergen, only traces of regional and international long-distance trade are going to be investigated. Thus the entering and departure of goods in and out of Bergen is considered not the redistribution of goods within the town. The broad term long-distance trade covers both trade that was part of an international network and trade limited to Norway. I shall discuss the importance of long-distance trade to the initiators of early Bergen and the function of the town as a place of trade. The methodological approach is accounted for in Chapter 12.

The character of the settlement on the plots

Were the settlements on the town plots of early Bergen permanent and well established or were they seasonal or only occasional? Neither of these questions have been discussed earlier for Bergen. They refer to classical criteria for a place to qualify as a town and are addressed in Chapter 13 where the methodological approach is also accounted.

4 GENERAL PRESENTATION OF THE ARCHAEOLOGICAL, BOTANICAL AND TOPOGRAPHICAL SOURCES

In this chapter the archaeological, botanical and natural topographical sources are presented on a general level. The main excavation and dating methods applied through the history of research are accounted for and I will determine how the sources can be used in the study, on a general level.

Until 1899, archaeological investigations in Norway were mainly carried out by *'Foreningen til Norske Fortidsminders Bevaring'* (hereafter: *Fortidsminneforeningen*), (The Society for the Preservation of Norwegian Antiquities) established in 1844. Medieval archaeology was then

more or less synonymous with the study of monumental architecture, as the interest for more secular types of objects had still not been evoked. In 1920 the Central Office (now Directorate) for Monuments and Sites (hereafter: *Riksantikvaren),* which had its seat in Kristiania (now Oslo) became the authority for protecting medieval archaeological remains in addition to medieval standing buildings (Myhre 1985, 180).

Until 1981 *Riksantikvaren* did not have a local excavation office in Bergen. Therefore, although *Riksantikvaren* has been formally in charge of all excavations in the medieval parts of Bergen since 1920, the professional responsibility for the actual investigations was delegated through the years to various persons who came to Bergen on special assignments, usually in connection with the restoration of monumental buildings. From 1955, however, archaeologists with responsibility for the medieval town were attached to Bergen on a more permanent basis. Through *Historisk Museum*, The University Museum of Bergen (now Bergen University Museum) on behalf of *Riksantikvare*n, archaeologists connected to the milieu around the Bryggen excavations took care of the field archaeology in medieval Bergen from 1955 to 1979. From 1981 to 1994, *Riksantikvaren* established a permanent excavation unit in Bergen. In the few years between 1979 and 1981 the central office of *Riksantikvaren* in Oslo recruited excavation supervisors for Bergen projects from outside the Bryggen milieu. *Riksantikvaren, Utgravningskontoret for Bergen* (The Excavation Unit of Bergen under the Central Office for Monuments and Sites) (hereafter: *The Excavation Unit*) was established in 1980 and carried out all investigations in the medieval town of Bergen until 1994. In 1995 *Norsk Institutt for Kulturminneforskning* Norwegian Institute for Cultural Heritage Research *(NIKU)* was established and *NIKU* has carried out all investigations in medieval Bergen since then. The methods used between 1979-1994 and 1994-1998 have basically been the same and it is natural to consider the methodological approaches applied in these investigations as one.

The methods used in Bergen have depended on the professional supervisors of the investigations. In accordance with the development of medieval archaeology as a discipline, the following groups of investigations provided valuable sources for the questions dealt with here:

- Investigations before 1899
- Investigations from the late 1800s until c 1920
- Investigations carried out between 1929 and 1955
- Investigations carried out between 1955 and 1979
- Investigations carried out from 1980 until 1998

In addition the archaeological, botanical and topographical sources stem from:

- Recent studies of the medieval churches
- Independent botanical investigations carried out in Bergen
- Information from probe drilling in connection with building projects

Investigations before 1899

Between 1844 and 1899 a number of regular archaeological investigations in Bergen were carried out on the initiative and responsibility of *Fortidsminneforeningen*. In 1860 the antiquarian Nicolay Nicolaysen excavated the ruins of the Munkeliv Abbey at Nordnes, and collected information from random observations in the vicinity of the abbey (Nicolaysen 1861). In the 1870s and 1880s Peter Blix, an architect, investigated the foundations of the Church of St Olav in Vågsbunnen, located under the present Cathedral in the southern town area. Blix also carried out investigations at Bergenhus, the medieval royal and ecclesiastic centre at Holmen, and at the Nonneseter convent in the Nonneseter area. In the 1890s an other architect Schak Bull also excavated at Nonneseter (Øye 1997, 443). B E Bendixen, a local school headmaster, was also connected to *Fortidsminneforeningen.* He was an active observer and investigator of medieval physical remains found during construction work. Bendixen documented the foundations for the Church of St Nicholas in the middle town area at the foot of Fløyfjellet. He also observed and collected random information on the church and churchyard from other construction works in the vicinity (Bendixen 1896). All the regular investigations from before 1899 comprise

churches or church buildings at monasteries. I have not studied the original documentation from the sites as the material has been thoroughly discussed and included in more recent studies of the churches of Bergen in the book series *Norges Kirker* (Churches of Norway) (Lidén and Magerøy 1980; Lidén and Magerøy 1983; Lidén and Magerøy 1990) (cf p 51).

Investigations from the late 1800s until c 1920

Between the late 1800s and c 1920 Koren-Wiberg worked as a town archaeologist. When the eighteenth century tenements along the Bryggen harbour front, in the middle town area were torn down, Koren-Wiberg documented the exposed medieval remains. In his search for the medieval town hall and wine cellar, and for the churches of St Peter and St Columba he also carried out smaller investigations on sites within the northern and middle town areas. Koren-Wiberg was active collecting information from random observations made by construction workers (Koren-Wiberg 1900; Koren-Wiberg 1908b; Koren-Wiberg 1908a, 150; Koren-Wiberg 1921; Ersland 1988, 54-59). He also collected artefacts during his observations, however, only special and more or less complete objects were collected. The artefact material is thus not representative for what was really to be found there. In the museum catalogues the location of the finds is only specified on a tenement level and it is not possible to localise or date the activities represented by Koren-Wiberg's artefacts more precisely.

Koren-Wiberg was the first to show interest in the secular buildings from medieval Bergen. He was also the first to use the method of dating by correlating fire-layers found underground with fires known through written sources, a method which ideally could also date structures unknown and undated in written sources. By counting the number of fire-layers and dates for historically recorded fires in Bergen, Koren-Wiberg suggested that the number of fire-layers could be used to date the actual fire-layers found at the site. The dates provided should, however, be checked by artefacts found in the layers (Koren-Wiberg 1921, 15).

Koren-Wiberg did not take into account the many uncertainties involved by using this method; local or other undocumented fires may have struck and the fires known from the written sources may have ravaged parts of the town only. Furthermore, in Koren-Wiberg's days the typology and chronology of artefacts were not refined and could not be used to date the fire-layers independently. Consequently it is difficult to use his dates for structures that are not known and dated through the written sources. Excluding this material we are still left with valuable observations that throw light on the natural topography, the churches and churchyard topography.

Koren-Wiberg published some of his results in surveys of Bergen and as illustrations and models (Koren-Wiberg 1908a; Koren-Wiberg 1921). But much of his material remained unpublished and is today found at *Byarkivet,* (the City Archives) in Bergen and at the University Library in Bergen. His material will be used as sources both for the church topography (two sites) and as sources of the natural topography (five sites).

I have examined artefacts delivered to the Bergen University Museum in the days of Koren-Wiberg in order to identify activities in the period investigated here. The artefacts have no detailed information on context and have therefore been dated typologically by analogy. None of the artefacts could be dated safely to the period before c 1170, and can thus not be used as sources for the period under investigation.

Investigations carried out between 1929 and 1955

Between 1929 and 1957 Gerhard Fischer, an architect, and colleagues carried out several major investigations at the castle of Bergenhus on Holmen, the castle of Sverresborg north of Holmen and the Archbishop's palace at Nordnes. Fischer also investigated and documented minor sites in the northern town area around Bradbenken, Sandbrugaten, and around the Church of St Mary's. In the southern town area observations were made at Skostredet, and by the Church of St Cross. At Nordnes observations were made at 'Vestlandsbanken' and Østre Holbergsalmenning. Doroth Fisher, Cato Enger, an engineer, and a student (later architect) Håkon Christie assisted Fischer. The documentation material from regular excavations carried out in medieval Bergen before 1955 is found at *Riksantikvaren's* Archives in Oslo. I have gone through

the material sorted under Bergen in search of information that could be of use in my study.

The major investigations

Among the major investigations only those from the Holmen area are relevant. This material comprises churches, secular monumental buildings and botanical sources. The archaeological material was published in 1980 (Fischer and Fischer 1980). Data concerning the churches at Holmen has also been included in *The Churches of Norway* (Lidén and Magerøy 1980). I have not gone through the original documentation but based my study on the published material. The botanical material was published in 1979 (Fægri 1979). Since the material is not dated it is not included here.

The minor sites

The minor sites in the town area and at Nordnes were investigated in connection with construction work. Most often the trench locations were described according to buildings, street corners etc and can only be tentatively located today. In general, structures were described in some detail, layers only in vague terms and observations of the natural subsoil were merely commented upon. Structures were often levelled and photo documented. Sometimes artefacts were collected, however, without a description of context. No attempts were made to date structures, which could not be identified as buildings known from the written sources. The documentation of this material is found in hand-written diaries along with a few drawings (Fischer Undated). These form the basis for my evaluation of the material.

Having identified the approximate location of the observations made in the town area and at Nordnes, it seems clear that Fischer and his colleagues did not reach eleventh and twelfth century layers in the trenches at Bradbenken/ Sandbrugaten, in Skostredet and at 'Vestlandsbanken'. All these trenches were located in areas that were open water in the Veisan inlet or in the Vågen Bay in the eleventh and twelfth centuries. The trenches around St Mary's, St Cross and at Østre Holbergsalmenning have been difficult to localise and the observations are so vague that I had to disregard them.

A hand-written note dated 22 May 1953, probably written by Cato Enger, gives information about observations made at the 'Hotel site' at Sandbrugaten, these observations are used as a source for early Bergen and as a source for the reconstruction of the natural topography.

As with the material from the late 1800s untill c 1920, I have also studied artefacts delivered to the Bergen University Museum from 1927 to 1955. The artefacts have been dated typologically, and none could be dated with any certainty to before c 1170.

Investigations carried out between 1955 and 1979

Excavation and dating methods

The excavation and dating methods applied between 1955 and 1979 were developed through the Bryggen excavation. Based on field methodology in prehistoric archaeology and being the first large-scale excavation of secular remains from the Middle Ages, the Bryggen excavation represented methodological pioneering work. The method applied was stratigraphical excavation, with constructions and fire-layers as the leading strata. Where culture-layers exceeded about 15 cm in thickness, they were excavated in arbitrary about 15 cm thick layers. Fire-layers were documented and given numbers as separate defined layers; other layers were only documented according to their main features. Most constructions were numbered according to their excavation unit and artefacts were recorded in relation to constructions and fire-layers (Herteig 1985, 33). The fire-layers were central in the documentation of the relative as well as the absolute chronology (Herteig 1985, 22) and the use of permanent and intermediate standing baulks aided the stratigraphical analysis of the site (Herteig 1985, 18).

When the Bryggen excavation was carried out, the material could not be dated through the archaeological finds alone; important artefact groups such as pottery, shoes and combs, were still not sufficiently studied and dated at this early state of medieval professional archaeology. Consequently the dating method applied at the site was based upon the assumption that the stratigraphically recorded fire-layers could be identified with a series of fires known from me-

dieval written sources (Herteig 1985, 22). The method implied that it was possible to find physical traces of these fires and that they could serve as a stratigraphical and chronological framework for the whole site. The framework was given an absolute date, mainly by correlating and counting fire-layers and relating them to the historic fires mentioned in written records. A few runic inscriptions and the preliminary results from dendrochronological (hereafter dendro) dating provided the link between the historically known fires and the actual archaeological fire-layers (Hansen 1998).

Counting fire-layers and relating the sequence to historically known fires is as already mentioned an unreliable method for dating purposes if other dating methods cannot supplement it. First, one cannot be sure that all the fire-layers found on a site actually represent a fire known from written sources. The written sources must also be thoroughly analysed. This was not done until 1979 (Helle 1998). Later excavations, such as Domkirkegaten 6 BRM 245 (Dunlop *et al.* 1994, 112) and also the Bryggen excavation itself have shown that there have been several 'unknown'/local fires in Bergen and that the fire-layers do not always cover the whole site (Christensson 1988). Consequently, it is not methodologically advisable to use the number of fire-layers alone as a means of absolute dating.

Herteig was aware of the problems when establishing the 'fire-layer chronology' and much effort has been devoted to dating the series of fire-layers and thus the periods in the Bryggen material through the archaeological evidence. Studies of the ceramic material and the dendro samples were undertaken in the late 1980s. Some of these studies were taken into account when publishing the stratigraphical analysis and the dating of the Bryggen material in 1990 and 1991 (Herteig 1990; Herteig 1991).

The other excavations carried out between 1955 and 1979 followed the main principles of the methods developed during the Bryggen excavation. The fire-layer sequences at the smaller excavation sites were not, however, so clear (eg Larsen 1967a). And as 'the Bryggen method' depended upon the stratigraphy of fire-layers, the lack of discernible and extensive fire-layers seems to have made an analysis of layers and dating of the material difficult. The artefact material was not studied in connection with the report work.

Four of the excavations carried out in the period between 1955 and 1979 are used here as sources for studying early Bergen. Fourteen other investigations can be used as sources for determining the natural topography. Two investigations throw light upon the church topography.

Investigations carried out from 1980 until 1998

Excavation and dating methods

The main methodological principle applied between 1980 and 1998 was stratigraphical excavation, as at the Bryggen excavations. However, all culture-layers and structures were now documented and given individual numbers. Layers were excavated one by one stratigraphically, unless special circumstances did not allow it, artefacts were recorded according to the numbered layer they were located in. The archaeological strata were interpreted as remains of activities in a literal sense of the word according to principles developed in collaboration with the Polish archaeologist Andrzej Golembnik (Golembnik 1995).This method is today referred to as the 'single context metod'. The culture-layers played a decisive role when performing an analysis of the material and dividing the archaeological remains into phases. A relative chronology was established through stratigraphical analysis of the material. The relative chronology consisted of phases, divided into three stages: the foundation stage, the activity stage, and the destruction stage (Myrvoll 1991, 72). Such a division of the layers made it possible to distinguish between primarily and secondarily deposited layers. In the terminology of *The Excavation Unit/NIKU* primary layers were, layers that have been accumulated over a short or long period, but which have not been disturbed or moved on a later occasion. Secondary layers were layers which consist of masses moved from their original place of deposition or which have been disturbed (Christensson 1988).

The dating principle was that artefacts should be analysed in order to obtain an absolute date for the different phases. Pottery was the most important finds group, but other artefact groups such as combs and shoes have also been used. Dates based on dendrochronology, the ^{14}C method and

the thermoluminiscence (TL) method were used when available. Finally, when an approximate absolute dating frame was established, attempts were made to give the phases a more accurate date by comparing these dates with the recorded dates of town fires. This was because some of the physically documented fire-layers might represent the fires known from the written sources (cf Christensson, Dunlop, and Göthberg 1982).

In the investigations carried out by *The Excavation Unit/NIKU* the historically documented fire-layers have often been used when giving an absolute date. But the methodological principle has been that an absolute date should be obtained through the archaeological material or through natural scientific methods. Secondly, a more accurate date might be established by comparing the archaeological dates for the fire-layers, with the town fires known from the written sources. In this way the recorded town fires would become a supplement to the other dating methods and counting fire-layers can be avoided.

In principle the dating method seems ideal. Still, the dates obtained are not unproblematic. The size of the investigations varies. Some excavations were fairly large, with diversified and datable finds. However, some were very small open area or trench excavations, with too few finds to establish a firmer dating frame. In some of the smaller investigations 'the ideal dating method', could not be applied, and the old method of counting fire-layers has often been used. This use of fire-layers presupposes that we know the number of town fires that have struck the general area of the site.

The number of great town fires that devastated Bergen before 1250 has been a somewhat controversial theme (cf Hansen 1994b; Dunlop and Sigurdsson 1995). At the present state of research there is no general consensus on the number and the date of major town fires before 1250. The written sources give information about several conflagrations in the years before 1250. There is general agreement that one should expect the fires in 1170/71, 1198 and 1248 to have struck the northern and middle town areas. At several sites a fire-layer dated to c 1225/1230 has been recorded in addition to the fire-layers that may correspond to the three fires known from the written sources (Dunlop 1998). The sites, where the 1225/1230 fire is recognised, more or less surround the Bryggen site. A close investigation of the earliest fires at the Bryggen site has demonstrated that the first fire documented here is older than formerly recognised and the formerly assumed 1225/1230 fire (Hansen 1994b) is most likely to be identical with the recorded fire in 1198 (Hansen 1998). This result also has consequences for the dating of the surrounding sites, and in some cases a discussion of the absolute chronology at sites investigated between 1980 and 1998 is necessary.

Seventy investigations undertaken between 1980 and 1998 can be used as sources for the natural topography. Twenty of these also provide culture historical sources for studying early Bergen.

Recent studies of the medieval churches

The medieval churches have been investigated archaeologically and through masonry and style studies. The studies are published in *The Churches of Norway*, Bergen (Lidén and Magerøy 1980; Lidén and Magerøy 1983; Lidén and Magerøy 1990). I will use this publication of the material as the point of departure here.

Botanical investigations

Since the 1940s botanical investigations have been performed as independent research projects or in connection with archaeological investigations in Bergen. Through the identification of indicator species (pollen and macrofossils) and mechanical processes involved in the deposition of the botanical material, botanists have identified three general types of environments predating c 1070 in the Bergen material: natural environments, agricultural environments (cultivation/grazing) and populated environments.

In 1979, botanical investigations were carried out on marine deposits at the Bryggen site. Organic layers were recorded and dated to periods extending into prehistory. The layers contained macrofossils, identified as latrine and other household waste, and pollen that clearly reflected anthropogeneous activity. The organic material in the marine layers was well preserved and the presence of the marine dinophycea-cyste *Operculodinium centrocarpum* was low. This was interpreted as a result of a fast accumulation of

the layers, indicating that the waste had been dumped in the sea (Krzywinski and Kaland 1984, 26). It was then argued that in traditional *'Plaggenboden'* agriculture, which was considered the most common tradition for manuring the land on the west coast of Norway back into prehistory, all household and animal waste was used as fertiliser on the fields. Therefore the household waste in the marine sediments at the Bryggen site indicates a surplus of waste in relation to fields, which again indicates a higher population than normal on an ordinary farm. Furthermore, the youngest layers contained pollen from species which did not grow in western Norway, indicating the import of grain. On this basis, Krzywinsky and Kaland suggested a 'Merovingian/Early Viking Age pre-urban 'coastal settlement' and a 'Late Viking/Early Medieval 'early town' on the northern shore of the Vågen Bay (Krzywinski and Kaland 1984, 31-33). These arguments formed the basis for a more elaborate analysis performed by Hjelle in her master's thesis in 1986. She analysed similar waste-layers containing macrofossils and pollen indicating imported goods. Her samples were taken in the early medieval Veisan inlet between Holmen and the northern town area, and some were dated to the Viking age. She interpreted the layers as indirect evidence of a denser settlement, a central gathering point for the exchange of goods, in the close vicinity of the sampling location (Hjelle 1986, 55-57, 61, 71). In later investigations in the southern town area, fast-accumulated layers with only pollen present have also been interpreted as the remains of waste-layers dumped into the sea (Hjelle 1998). The presence of import-indicating pollen in naturally deposited layers has formed the main argument for a denser settlement in the vicinity of the sampling locations (Hjelle 1994, 164; Hjelle 1998).

The arguments presented in 1984 and 1986 for a denser settlement predating the end of the eleventh century were based on the presence of natural scientific data and on indirect reasoning. The most central premise seems to be that waste would not be thrown into the sea in a rural settlement, but used as fertiliser. Therefore waste-layers deliberately dumped in the sea are interpreted to reflect a denser population than normal on an ordinary farm.

Two factors characterise the layers in the 1984 and 1986 studies: (1) the layers accumulated fast and (2) macrofossils, which could be identified as anthropogeneous waste, were identified in addition to pollen. In my view both these factors must be present when a layer is interpreted as a waste-layer dumped into the sea in the close vicinity of the sampling location because: ad (1) other mechanical factors than actual dumping may have caused the fast accumulation of a layer. Such factors may be natural as well as human; a change of cultivation systems in an area may, for instance, cause a sudden fast accumulation of layers. The fast accumulation of a layer cannot in isolation be used as a conclusive evidence that waste was dumped in the sea. Ad (2) in addition to pollen, macrofossils, which can be identified as anthropogeneous waste, must also be present in the layer. Because, whereas pollen may travel over longer or shorter distances by for instance air or water (Hjelle 1986, Section 5.2), macrofossils are not so mobile and tend to be more local in origin (Robinson, Kristensen, and Boldsen 1992, 68). They would probably not travel far with surface water. The presence of macrofossil material accordingly 'ties' the place where masses were dumped to the close vicinity of the sampling location. The presence of the macrofossils in the material in the 1984 and 1986 studies indicates that these waste-layers were in fact dumped in the sea in the close vicinity of the sampling location, and were not for instance first used as fertiliser on fields and later carried into the sea by natural mechanical forces.

Pollen in a fast accumulated deposit may stem either from (1) a pollen containing waste-layer deposited in the sea or (2) from pollen, capsulated in a waste-layer used as fertiliser on fields and later washed into the sea the with surface water. There is no way of determining which through a botanical sample alone. In the present study, fast-accumulated deposits that contain only pollen and not macrofossil identified as the remains of anthropogeneous waste are therefore not considered as sufficient evidence that waste masses were dumped in the sea in the vicinity of the sampling location. Fast-accumulated deposits containing this type of macrofossils may, however, convincingly represent waste masses dumped in the sea in the vicinity of the sampling location.

Results from five botanical investigations are used in the present study as sources for the early history of Bergen and the natural topography. Ecofacts from dated contexts are used in the same way as other archaeological data.

Random observations

In Bergen, archaeological random observations have been recorded since the nineteenth century. The observations were made by interested lay people, often in connection with construction work. Most of the information from random observations made through the years has been collected in connection with the regular excavations, or local historians have recorded them on other occasions. Five of these observations provide useful information for the reconstruction of the natural topography. Other information has been gained when artefacts, found during groundwork were given to the University Museum of Bergen. The accession catalogue (*tilvekst*) for The University Museum contains a description of the 'stray finds' - artefacts handed over to the museum through the years, but generally the finds circumstances are vague. In order to localise activity from the period under investigation, outside areas with regular excavations, I have studied all stray finds from the Bergen area. However there were no artefacts that can be dated typologically to between the ninth century and c 1170.

Geo-technical investigations

Geo-technical investigations in connection with construction work have also contributed important information and several investigations are used as sources for the natural topography. I have gone through relevant reports on subsoil conditions from *Norsk teknisk byggekontroll* (NOTEBY) this is material from geo-technical investigations performed in connection with construction work and in some cases research projects.

Maps

Grunnkart Bergen 1992 serves as a source for the reconstruction of the natural topography, several contour lines on bedrock are taken from this map.

5 GENERAL METHODOLOGICAL APPROACHES, DEFINITIONS AND DEMARCATIONS

As seen above, the archaeological and botanical data stem from excavations carried out within different scholarly traditions, this has a great impact on the information potential and on the methods I choose to apply. It is important to try to activate the sources whether excavated during the nineteenth century or more recently, so as to make the best of the information potential inherent in the available sources.

The Bergen area

The area around the Vågen Bay, here called 'the Bergen area' is included in the study (cf Figure 1) and I study this area as one site. The natural topographical features of the Bergen area around 1000 differed considerably from those of today. Centuries of building activities and land reclamation have changed the landscape thoroughly. Reconstructing the natural topography around 1000 is necessary, as a background for the spatial analyses. The reconstruction of the natural topography is based on data derived from archaeological, botanical, geo-technical investigations and investigations in connection with other groundwork. The methodological approach to the reconstruction is found in Chapter 6, Appendix 1 presents the data behind the reconstruction.

A diachronic approach

The period from the ninth century until about 1170 is studied in order to create a differentiated understanding of the emergence of Bergen as a town. I have chosen a diachronic approach and the material is divided into five archaeological time levels/horizons that serve as the chronological framework. In order to establish the beginning and end of the horizons the absolute chronologies of five sites have been studied. These are: Koengen (site 1), Bryggen (site 6), Finnegården 6a (site 26), Vetrlidsalmenningen (site 30) and Domkirkegaten 5 (site 38). The time spans of the five horizons are defined on the basis of the beginning and end of phases in the archaeological material from these five sites.

- Horizon 1 covers the period from the ninth century to the first decades of the eleventh century: c 800-c 1020/30
- Horizon 2 covers the period between c 1020/30 and the last quarter of the eleventh century: c 1020/30-c 1070
- Horizon 3 covers the period between c 1070 and c 1100
- Horizon 4 covers the period between c 1100 and the late 1120s
- Horizon 5 covers the period between the late 1120s and c 1170

The younger horizons also happen to coincide with events known from the written sources. As already mentioned King Olav Kyrre is supposed to have founded Bergen about 1070. The period 1103-1122 was the reign of King Øystein Magnusson (Helle 1982, 113) who was a very active initiator in Bergen. In 1170, the relics of St Sunniva were transferred from Selje to Bergen and Bergen was officially established as an episcopal residence at about this time (Helle 1982, 92). Furthermore, a fire struck the town of Bergen in 1170/71 (Helle 1998, 23), corresponding well with a convenient fire-layer that marks the end-of-phase at many archaeological sites. The short time spans provided by the horizons give the rare opportunity to discuss the sources for studying early Bergen closely to the historical context.

Structures assigned to a horizon are those that were in use by the end of the period represented by the horizon. If, hypothetically, two phases of structures are dated to the period between the 1120s and 1170, only the youngest structures are assigned to horizon 5. Culture-layers and artefacts/ecofacts are assigned to a horizon according to the phase of structures they are associated with or according to their history of deposition (cf p 68).

Spatial analysis

The material is analysed spatially. As a general method I will visualise and analyse the sources through maps, an approach inspired by the Visual Impact Analysis, used in landscape geography (Emmelin 1984; Hansen 1994b). This method implicates the production of maps as a means to visualise patterns and tendencies in the material and analyse relationships between the natural topography and buildings/physical structures, people and activities/artefact assemblages in this setting, patterns and relationships, which might otherwise be difficult to discern.

The maps consist of several layers of information, where the reconstructed natural topography for the Bergen area around 1000 serves as the background layer.[2] Geographical north constitutes north on the maps.[3]

When applying the Visual Impact Method it is essential that as many structures as possible can be reconstructed and that the extent of culture-layers is reconstructed on sites where no other physical remains have been documented, thus enhancing visibility. Data comprise buildings, pits, thoroughfares, fences, and settlement traces that cannot be given a precise interpretation. Usually, the reconstruction suggested by the excavator is followed. When the excavator has described the material without further interpretation, I have reconstructed the size or extent of structures by using contemporary parallel material from Bergen. For instance passages between buildings were often founded on 2 m x 2 m stonefilled timbered caissons in the tidal area. Above the tidal area, however, actual remains of the surfaces of the passages are not always preserved. Where the 2 m x 2 m caissons are found, a passage is therefore reconstructed.

Classification of the material into basic, supplementary or general background sources

In order to activate the sources, but not lose track of the varying degrees of uncertainties inherent in the material, the archaeological, botanical and written sources are divided into three categories based on the validity of the dates and spatial location of the material. The sources are thus classified as respectively basic, supplementary or general background sources for the five horizons using the variety of dating methods described in this section. The written sources are divided into categories in the present chapter and drawn into the discussions when relevant. The archaeological and botanical sources are divided into categories and horizons site by site in Chapter 7 where they are also visualised on maps horizon by horizon. Basic archaeological and botanical sources are:

- Well-located physical remains directly dated

to the period between the ninth century and c 1170, by artefacts, masonry, stratigraphy and/or dendrochronology
- Well-located remains of abbeys, castles, churches and churchyards, documented through archaeology or written sources, erected or under construction in the period before c 1170

Supplementary archaeological and botanical sources are:
- Archaeological material, which cannot be dated through the methods mentioned above, but, which on the basis of broad carbon 14 (^{14}C), thermoluminiscence (TL), and pollen dates or indirect means of dating, may represent early Bergen. The indirect means of dating are the establishment of vertical (time depth) or horizontal (contemporaneity) links between directly dated sources and undated sources. These links may be made considering:
    - Changes in the orientation of structures through time
    - The number of phases below better dated material
    - The estimated age of timber structures that were not destroyed in fire
    - Reused wood in younger phases
    - Horizontal patterns in the material on closely located sites discerned through the Visual Impact Analysis
    - Parallels in building technique and the choice of materials
- The location of 'vacant' sites, that is sites where the natural topography has been reached, but where structures or culture-layers other than cultivation layers are not present in the periods represented by the various horizons, except where sites are located on top of protruding bedrock.[4]
- The location of monuments (abbeys, castles, churches churchyards) described in the written sources as erected or under construction prior to c 1170, but not archaeologically located (see below)
- Dendro dated reused timbers

Archaeological and botanical general background sources are:
- Material which cannot be dated more precisely than relatively as 'older than' the oldest datable material in an investigation

When dating sources indirectly by horizontal links to dated sources at other sites in the vicinity the indirectly dated sources become 'interrelated' with the directly dated sources.

Information derived from the written sources is also divided into the categories of basic and supplementary sources. About 1135, Ordericus Vitalis mentions Bergen as a town located on the coast of Norway (Ordericus Vitalis V, 220-21; Helle 1982, 3), this is the only contemporary written source that mentions Bergen in the period investigated. The four thirteenth century Kings sagas: Morkinskinna, Fagerskinna, Heimskringla, and Sverre's saga and the Orkneyinga saga have, however, been used as main sources for aspects of the early history of Bergen. The first three Kings sagas describe events that took place in Bergen in the years between the 1130s and 1160. Morkinskinna was most likely written in Norway in the last half or quarter of the thirteenth century by an Icelander. An older version apparently existed and may have been written down as early as between 1217 and 1222 based on older manuscripts (KLNM XI 704-705). Fagrskinna was recorded between 1220 and 1240 in Norway perhaps by an Icelandic author, using older manuscripts, amongst others probably an older version of Morkinskinna, as sources (KLNM IV 139-140). Heimskringla was most likely written by the Icelander Snorre Sturlason, probably around 1230. Snorre used older manuscripts, most likely both Morkinskinna and Fagrskinna, and perhaps also oral tradition as sources (KLNM VI 299-302). The three sagas are remote in time to the events described but they do, among other, cite scaldic poems that are considered to be reliable as sources for the events described (KLNM XV, 386ff). The fourth Kings saga, Sverre's saga, was probably written between the middle of the 1180s and 1210. It is based on eyewitnesses and is commonly considered to be a reliable source for the events described, it may however be politically biased (KLNM XVII 551-

558). The Orkneyinga saga was probably written at the end of the twelfth century, the parts that are of relevance here - those that concern the deeds and whereabouts of Ragnvald Kale - may have been written as early as c 1165 (KLNM XII 699-702).

The sagas, to a large extent, describe events that took place in connection with twelfth century successional disputes with the Norwegian kings and claimants to the crown as central actors. The town of Bergen appears as the scene of the events, localities are mentioned but seldom given a detailed description. A detailed topographical description of Bergen is thus not an aim in the sagas. In a society where oral and written traditions were strong, the sagas, even if they are remote in time to the events described, may still be quite reliable concerning the events and the persons involved. They may, however, be less reliable as sources for secular building topography. The town area was devastated by fires in 1170/71 and 1198 in these fires the secular (timber-) building topography was, at least partially, destroyed. It cannot be excluded that thirteenth century Bergen, known to the saga writers, was quite different from twelfth century Bergen. This consequently weakens the value of the sagas as sources for the early twelfth century secular building topography. Nevertheless, the sagas may still serve as basic sources for the identification of churches and monuments that have been archaeologically investigated or identified, as these probably had the same location through out the Middle Ages. The sagas serve as supplementary sources for the location of churches and monuments that are not localised physically through archaeology and to the secular building topography. For other aspects of early Bergen, information in the sagas will be considered along the way.

In addition to the sagas, several written sources date and describe town fires through the Middle Ages. The extents and dates of these fires have been analysed by Helle (1998), and his work will be used as a reference.

Dating the archaeological and botanical material

On several archaeological sites an absolute chronology for the oldest material has not been worked out previously. When dating and categorising the archaeological and botanical material in Chapter 7, I shall use the following procedure as far as possible: a relative chronology is established through a stratigraphical analysis of the structures and (fire-) layers on the site. Secondly, the relative chronology is made absolute by dating through a variety of methods.

Generally, the stratigraphical analyses presented in the site reports serve as the relative chronology of the site. Where no relative chronology has been worked out, I have analysed the material in the attempt to establish one. The absolute date for the relevant material is obtained through dendrochronology, pottery and to some extent masonry, shoe and comb typology. Also ^{14}C and thermoluminiscense (TL) samples, and the presence of pollen of *Centaurea cyanus* (cornflower) are considered. When more traditional means of dating are not available an attempt is made to establish vertical and/or horizontal links between the undated material and better-dated sources. Vertical links refer to the time depth in the material on a site, horizontal links refer to the contemporaneity between material on one site with material on other sites.

The different dating methods imply varying degrees of accuracy. Dendrochronology provides the most accurate date, that is when a sample is taken from wood that has not been reused and which has intact outer tree rings. Dendro material may thus provide narrow *post quem* dates for when a building was erected or a phase began. Dendro samples can also indicate how long building activities continued within the phase they were taken from. Samples from reused timber may be of help dating building activities in earlier phases, if it is possible to estimate how many times the actual timber was reused before it ended up in its final context. Unfortunately, this type of information is seldom available in archaeological contexts and interpretations must be made considering the general patterns in the material from the actual site (cf Hansen 1998). In this text a dendro sample dated to for example 1103 is referred to as 'after 1103'. When the outer treering was also the last year of growth for the tree, the date is referred to as for instance 'after 1103/04', where the winter of 1103/04 was the felling year of the tree. All samples from Bergen have been taken from pine. Sapwood statistics

concerning the number of treerings has not been applied.[5]

Before I started on this project, the main part of the archaeological material from before c 1190 had generally not been dated in detail (cf Hansen 1994b, 7) and did not seem to include strata that could be dated further back than the 1120s. In order to obtain more reliable dates for the lowermost levels of the archaeological material, I started out by taking 61 dendro samples from stored timbers from several Bergen sites.[6] Dendro samples taken earlier during excavations were also re-examined thus a body of 85 dendro samples dating to the years before 1170 is now available, the samples are listed in Appendix 2. The reuse of wood was very common at site 6, Bryggen, especially in foundations and other substructures (Hansen 1994b, Eskurs 1). Thus, when taking new samples the timbers were examined for traces of reuse, the sampled spot was also examined for traces of surface work or wear in order to determine if treerings could be missing. For both the new samples and samples taken during excavations the finds context was studied through the original site documentation. These efforts were made so that the dated samples could be evaluated in relation to reuse and to the reliability of the dates provided. Samples that turned out to be 'crucial' for my dating of the sources have been re-examined after the dating results were first ready.[7]

The dendrochronological analyses have thus produced 'fresh' dating material for the oldest archaeological phases at the central sites. The new dating material along with pottery from the Bryggen site form the basis for a re-examination of the chronology of this site and the oldest phases here have been dated further back in time than formerly assumed (Hansen 1998). This new chronology serves as a point of departure for my study of sources from the Bryggen site. The remaining new dating material is discussed when reviewing the relevant sites in Chapter 7.

Pottery generally provides a wider dating frame than dendro samples. The existence and coexistence of different pottery types provide a *post quem* date of how long activity must have lasted in a phase. In some cases, pottery may also indicate an estimated *ante quem* date for a phase if very common wares are missing. In this study only the presence of wares is used when dating. Pottery usually has an estimated start and end of production date. These dates are rarely directly documented through well-dated kiln finds or literary sources for example, but are more generally established through finds of (or the lack of) sherds in other well-documented contexts, implying a margin of uncertainty on either side of the dates.

Other dating methods used in this study are studies of masonry, shoes and combs - all with rather wide dating frames. Masonry typology gives a wide dating for when a building was erected, whereas shoes and combs indicate a date for how long activity can have lasted in a phase. Typology on masonry, shoes and combs is, however, only applied as a means of dating when no other methods are available.

Dates provided through the carbon 14 (^{14}C) and the thermoluminiscence (TL) methods also give wide dating frames. Quartz or feldspar is the sampling material when dating through TL, both are present in ceramics. Dates provided by the TL method reflect the date of the last time the sampling material was heated up to more than 500 ^{o} C, this method is therefore useful when dating fire-layers. The dates provided are given with a +/- 5-7 % uncertainty for dates from the Middle Ages (Mejdahl 1988).

The ^{14}C method gives a date for when organic material, from which the sample is taken, ceased to live. Thus nuts or twigs with a short growth period provide more precise dates than charcoal from a tree trunk, for example, because the latter may be infested with the 'old wood problem' if the charcoal does not stem from the outermost tree rings. When nothing else is stated ^{14}C dates have been calibrated according to INTCAL98 (Stuiver and van der Plicht 1998) and they are interpreted using the OxCal Radiocarbon Calibration Program[8]. The OxCal program gives a graphic presentation of the relationship between the measured ^{14}C date and the historical date according to the calibration. The presentation is based upon a statistical analysis and shows a probability distribution of the matches between the ^{14}C date and the calibration curve. Even though the graphic presentation of the OxCal calibration program makes it possible to narrow the time intervals with the highest probability,

these time intervals are still inflicted with a high degree of uncertainty. Because of the uncertainties involved in dating through TL and ^{14}C, dates provided by these methods are considered to be better than nothing, but they cannot be used alone when dating a basic source.

In the Bergen area, the presence of pollen of *Centaurea cyanus* - cornflower- may give a wide *post quem* date for the deposition of the layer. Dating deposits through the presence of this pollen is based on material from sites in Bergen: At Nedre Korskirkealmenning/Vågsalmenningen (1998) (site 37) pollen of *Centaurea cyanus* was not present in a deposit ^{14}C dated to between 730-860. In the overlying deposit, ^{14}C dated to between 810-970 pollen of the species was, however, present (Hjelle 1998, Section 5.2, 5.3). At the Bryggen site (site 6) the pollen was not present in a deposit ^{14}C dated to the seventh or eight centuries (Krzywinski and Kaland 1984, 29, 31). At the Koengen site (site 1) layer 11, which was ^{14}C dated with two peaks of probability to 780-790 or 810-1000, contained pollen of *Centaurea cyanus*. According to the material from these sites, it appears that pollen of this plant was not introduced until (roughly estimated) the ninth century in the Bergen area (see also Hjelle 1986, 58). Consequently, when they are documented in otherwise undated contexts, it is reasonable to assume that the contexts stem from the ninth century or later. Dates based on the presence of C*entaurea cyanus* pollen are considered as tentative, and cannot be used alone when dating a basic source.

When the material cannot be dated directly, attempts are made to make vertical or horizontal links between the undated material and directly-dated sources. When making vertical links the number of phases 'below' directly-dated phases and changes in the general orientation of structures on a site may be considered. An evaluation of how long timber buildings and structures could last in Bergen, if they were not destroyed by fire, may also be drawn upon when discussing the time depth of the material. The maximum age for a timber building depends on the structure type and factors such as the quality of the building material, foundations, climate etc.

At Domkirkegaten 6 (site 38) the structures in phase 10 were built 'after 1128' and replaced by structures in phase 9, built 'after 1156' (Komber *et al*. 1994, 111): a period of about 25 years. At Finnegården 6a (site 26) structures in phase 12 were dated to 'after 1103' structures in the following phase were dated to 'after 1118'. Accordingly, the structures in phase 12 were 15-20 years old when replaced. At the Bryggen site (site 6) buildings that were constructed in the 1120s, were still in use when the fire in 1170/71 occurred (Hansen 1998), thus standing for about 50 years. These examples, though few in number, show that buildings could last for at least 25 to 50 years in twelfth century Bergen unless they were destroyed by fire.

When horizontal links are made, the contemporaneity of undated material with directly dated sources is elucidated; parallels in building technique, the choice of materials and other patterns in the material discerned through the Visual Impact Analysis may be drawn upon. Using vertical and horizontal links, when no firmer dating evidence is available, cannot be used alone when dating basic sources.

As mentioned, Bergen has been ravaged by a number of extensive fires through the centuries, many of which have been recorded in the written sources (Helle 1998). When dating the archaeological material I will try to relate the archaeologically dated fire-layers to the historically known fires, assuming that some of the archaeologically documented fires may be identified as a historically recorded fire. In this way the written sources serve as an additional and accurate means of dating. The recorded fires of relevance here are the town fires of 1170/71 and 1198.

If the published material or excavation reports from the sites do not answer the questions of dating and localisation, these questions are discussed through the available documentation material in so far as it is possible.

Assigning basic archaeological and botanical sources for a horizon is mostly straightforward since the question of dating is well elucidated by direct and narrow dates. As for supplementary or general background sources, however, there is often no straight answer to the question of dating. In these cases I will discuss alternative dating possibilities for the material, and eventually choose the dating alternative involving the least 'coincidences' as the most plausible, or I may

choose to omit the material from the study.

The basic sources provide the main platform in my study. But as we shall see they are scarce in the earliest horizons. When interpretations are made without basic sources I shall evaluate the tendencies in the supplementary sources. In these cases the interrelated sources that are dated indirectly through horizontal patterns do not count as independent sources. In chapter 7 the archaeological and botanical material is dated and assigned to horizons as basic, supplementary or general background sources on the basis of data from the single sites or through links to material from sites in their close vicinity. If the vertical and horizontal links, drawn upon when assigning the supplementary sources for horizons in Chapter 7, are strengthened by patterns emerging in Chapter 9, when I move from the micro scale of the single sites and their closer vicinities and study the material through a broader spatial analysis, this may strengthen the reliability of the interpretations (the dates) made in Chapter 7. To avoid circular arguments the patterns discerned when zooming out must be based on sources that are not interrelated with one another.

Implicitly my approach is that patterns discerned on a micro level - the single site and its vicinities - are evaluated in the light of patterns discerned when zooming out and studying the material in a broader spatial analysis. When basic sources are scarce, tendencies in the material based on sources that are not interrelated will be emphasised, whereas details depending on single or interrelated supplementary sources are considered less trustworthy.

The plot as an analytic unit

Due to the variety in the methods applied on the different sites I have chosen a scale of investigation that lies close to the lowest common denominator for the material. In order to activate the material the smallest analytic unit has to be operational on as much material from as many sites as possible. At several sites context information on the artefacts is too crude to support an analysis at the level of buildings or passages, for example. The accuracy of information on stratigraphy and finds location on the sites varies from descriptions on a general level, to descriptions of finds-location within grid systems varying from 8 m x 8 m to 2.5 m x 2.5 m, and to descriptions in relation to buildings and culture-layers. Quantitative comparisons between such context units are difficult to establish and they are a-historic. I have chosen the plot as the lowest analytic unit. The plot is a unit that makes sense historically (the medieval townspeople did live on a plot whereas they did not live in a grid). Furthermore given the large size of the material, the plot is manageable as an analytic unit.

I have studied the distribution of joining sherds and other artefacts from site 6, Bryggen; site 26, Finnegården 6a, and site 27, Finnegården 3a. The cross-fit artefacts stem from all periods of the Middle Ages. As seen in Figure 6 cross-fit artefacts derived from different bags of finds (site 6) or different layers (sites 26 and 27) seldom or never crossed the historical plot boundaries on these sites; out of the 64 examples only two crossed a boundary. My observations correspond with studies of medieval Lund and Sigtuna in Sweden (Roslund 1997, 41, 43) and indicate that people in the Middle Ages generally did not throw garbage and waste onto the neighbour's plot and in this way respected the property boundaries. One cannot exclude, of course, that the cross-fits within plots may stem from loads of garbage taken from somewhere else and unloaded on one plot. This explanation, however, seems quite hypothetical in the period under investigation here.

The find spots of joining artefacts thus imply that artefacts found on a plot were most likely used there as well and, as a premise I will assume that material found on a plot reflects major initiatives and daily activities carried out by residents or visitors to this plot.

When interpreting the artefacts found on a plot, as indicators of how the plot was used it is possible to activate the artefacts as potential sources as long as we can ascribe them to a specific plot. Plot boundaries are identified and discussed in Chapter 9 and the plots will be used as analytic units.

The plots are labelled by the site number and a letter, plot 6/C is thus plot C on site 6. When plot boundaries cannot be identified at a site, data is analysed with the site as the analytic unit. A unit then comprises the approximate excavated area in a given horizon at a specific site,

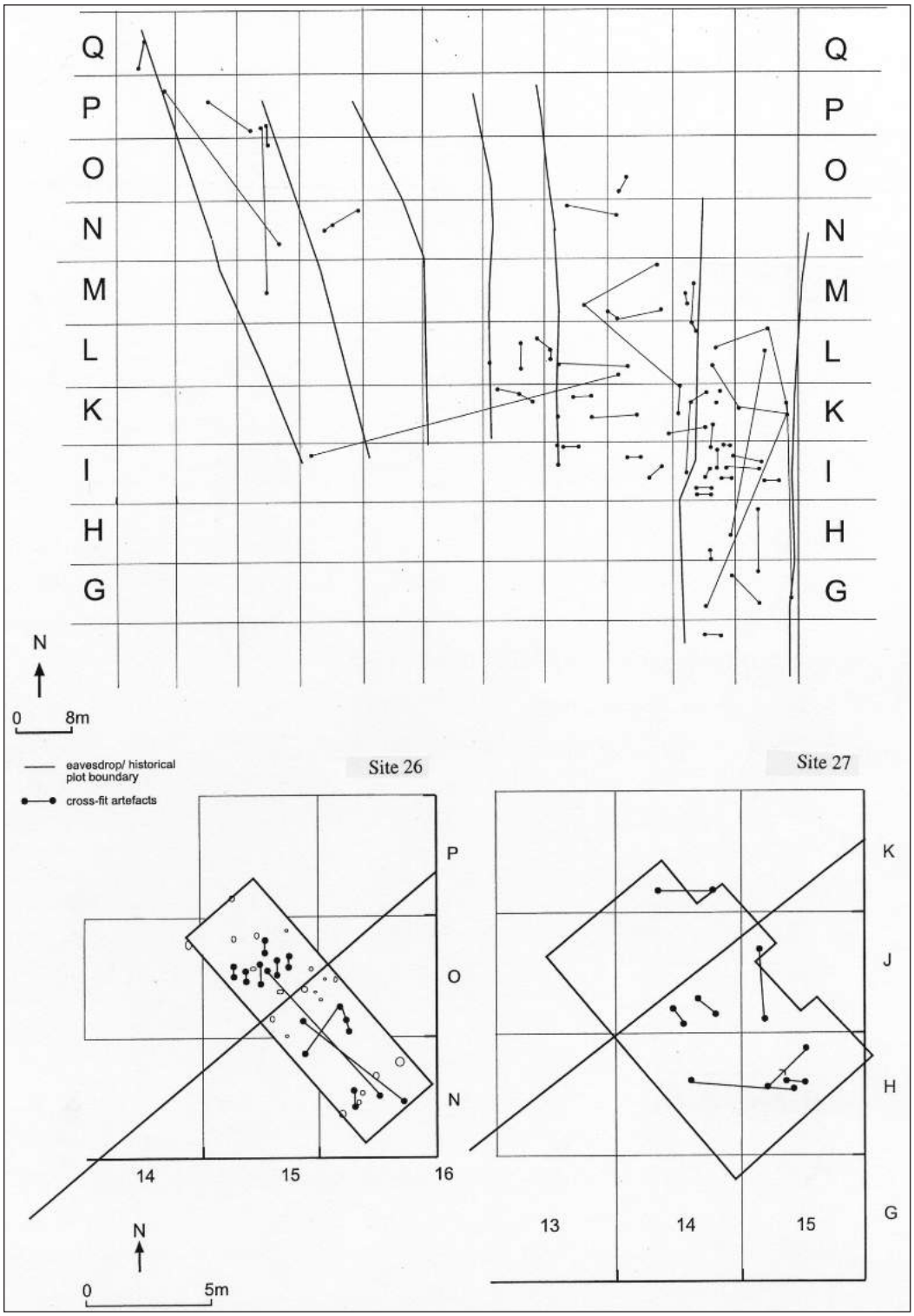

Figure 6. *Cross-fit artefacts at site 6, Bryggen; site 26, Finnegården 6a and site 27, Finnegården 3a. (The information on cross-fit artefacts stems from Lüdtke 1989, 15; Blackmore and Vince 1994, 73, 8, and from the original documentation from the three sites)*

these analytic units are not labelled by a letter, but merely by the site number. On a few sites, trench investigations, strata from the early years of Bergen's history are merely found in 'pockets' in the sections, not as a continuous blanket of layers and structures. Data from each 'pocket' of strata will also be treated as an analytic unit. The analytic units are, like the plots, labelled by the site number and a letter. Unit 30/E is accordingly unit E on site 30. When studying the function of buildings the single buildings will represent the analytic unit.

Some artefacts were found in the boundary area between two plots and they could not be assigned to either of the plots with any certainty. These artefacts have not been included in my analysis, as they do not make up a significant number. Artefacts found between plot 26-27/B and 27/C are an exception to this rule, as this group makes up the majority of finds from the two plots, and they have been included in the analysis.

Level of inquiry

The archaeological material reflects a myriad of single activities spanning from the accident of breaking a pot to organising the plot system of a town. Actors from different levels of society have intentionally or unintentionally carried out different activities. In principle the archaeological material may thus reflect activities carried out by individuals from different social categories, representing themselves or more resourceful actors. My scale of inquiry is not activities carried out by single people as such, but rather activities carried out by people representing different groups of actors: such as representatives for the king or representatives for the townspeople and visitors or guests of the town.

Land use, terminology

Four main types of land use are reflected in the sources: (1) secular occupation, (2) monumental manifestations, (3) cultivation, and (4) a natural topography. Churches, churchyards, monasteries or a royal residence are examples of monumental manifestations. Culture-layers that indicate cultivation in a broad sense (pastures, meadows, arable fields) are designated as cultivation layers. A site is generally characterised by secular occupation when structures or culture-layers other than cultivation layers, monumental constructions, or traces of the regulation of an area into plots are identified (a site may thus have been divided into plots without being occupied/taken into use). Determining whether the land was taken into use or not is often quite straightforward, because structures and culture-layers can be observed visually during excavation, unless preservation- or weather conditions have disturbed the possibilities of documentation. However, it cannot be excluded that structures or culture-layers were overlooked during excavation or that the natural subsoil was not reached on a site. The land use on the sites may be characterised by:

- 'Secular occupation', when the site is occupied/built on/settled, and structures or culture-layers other than cultivation layers, boundary indicating structures or monumental constructions are found.
- Monumental manifestations, when churches, churchyards, monasteries or royal residences are found archaeologically or otherwise documented.
- 'Cultivation', identified through botanical or archaeological investigations of the natural subsoil/cultivation layers.
- 'Vacant areas', when no structures or culture-layers have been identified above the natural subsoil.

Approaches to the artefact material

As a point of departure all artefacts from contexts dated to before c 1170 are considered as potential sources for my study of early Bergen. Textiles and rope have, however, been omitted from the study because they demand special insight and analysis and have not yet been fully published by specialists. The remaining artefacts are studied and classified according to the specific aims of the study, it is thus not an aim to give an exhaustive presentation or analysis of the artefact material as such. The artefacts are studied in several steps. First, the artefacts are identified through their context and assigned to horizons and categories. Second, the artefacts are classified in order to get an overview over what is there to be studied. Finally, the artefacts of relevance are analysed and discussed thematically through a qualitative, contextual and spatial approach.

Division of the artefacts into categories

Within the horizons, artefacts and ecofacts are assigned to artefact category I or II according to the history of deposition of the layers in which they were found. Basically, culture-layers with four different histories of deposition may be present in the material: (1) *In situ* culture-layers, which are layers found in their original and functional context. (2) Culture-layers that are redeposited but probably not transported so far. These layers, and the artefacts belonging to them, may represent ordinary everyday products and rubbish accumulated within a plot or a property. Although they are not found in their functional context, they probably still represent activities that took place in the close vicinity. (3) Culture-layers, which have been redeposited and transported when used as fill-masses, for example in connection with construction work, and (4) culture-layers/artefacts transported by fluvial action, such as by a stream. The two latter types of culture-layers with their artefacts may be found far away from their functional context.

It si only possible to obtain the detailed information necessary for a classification of the layers according to all these categories for the recently excavated material. It is therefore, possible to distinguish between two categories of artefacts only: category I that represents artefacts from *in situ* layers and layers which belong to the redeposited material that has not been transported far. And artefact category II that represents artefacts from fill-masses used during construction work and artefacts transported by fluvial action. By using these two broader categories most of the archaeological material can be activated in my analysis.

It has not been possible to connect any artefacts directly to monumental or other structures investigated prior to 1955. The following criteria are used to define the two categories of artefacts found on sites excavated between 1955 and 1979. Artefacts in category I comprise:

- Artefacts from fire-layers, including artefacts described as in or about a fire-layer in the field documentation
- Artefacts from contexts described as 0-10 cm under a fire-layer in the field documentation
- Artefacts which are described as under a fire-layer but above the structure that was destroyed/went out of use in the fire, like a floor or the surface of a passage

Category II consists of: the remaining artefact material from a given phase.

The material from investigations carried out between 1979-1998 is sorted into the two categories by the following criteria. Category I consists of artefacts from:

- *In situ* fire-layers and other layers described as *in situ*
- Layers that have accumulated in the activity or destruction stage of the horizon, but which are not in their functional context

Category II consists of the remaining artefact material, that is, material from the foundation stage of the phase that represents a horizon, material from fluvial layers is also included.

In some cases the material does not fit into the time frames given by the defined horizons. Hypothetically a phase at a site may have lasted from c 1100 to the 1150s: the structures were built c 1100, but artefacts in the phase all stem from *in situ* layers in the building and thus represent the years around 1150. The structures are then a source for horizon 4 (1100-1120s). But the artefacts, representing the time around 1150, are too young to signify activity in horizon 2. In this case the artefacts are assigned, as category II finds to the following horizon 5 (1120s -1170), as this is where they would have ended up, had they been used as fill-masses in connection with the construction of the following phase.

When studying the function of buildings only artefacts of category I are drawn upon. Otherwise, when studying the distribution of artefacts, both category I and II artefacts are included without considering the classification into source types. The picture that could have been drawn based on the category I finds alone would ideally represent a picture of a 'moment' by the end of the respective horizons. However, this picture would have many 'white spots' since several of the find-yielding sites, as we shall see, did not produce finds that could be classified as category I finds. When including the category II finds an accumulated picture of many 'moments' of activity that have passed within the duration of a horizon can be obtained. To some extent the

activity traces may also stem from the preceding horizon if artefacts from this horizon were redeposited in foundation layers and classified as category II finds to the next horizon. This is a problem that must be accepted, as most of the material has not been documented in such detail so that a clear distinction can be made between redeposited layers from a 'present' and a 'preceding' horizon.

Classification of the artefacts

As mentioned earlier, some artefact groups from the Bergen material have been studied and classified by others. I have drawn upon these studies as far as possible. The remaining material has been classified as part of post-excavation work. The quality and validity of the latter work varies and a re-classification has to a wide extent been necessary. Inso far as it is possible, classification systems established through former studies have been used as it is beyond the aim here to develop new systems. In a few cases I have developed established systems further to meet the needs of the present study.

The vast majority of pottery from the Bryggen site was classified during post-excavation work by A Rory Dunlop and Ian Reed. Dunlop has also classified most of the pottery excavated after 1980. In addition, Pingsdorf and Paffrath ceramics from the Bryggen site and pottery from southeast England have been studied by respectively Hartwig Lüdtke (1989), Lynn Blackmore and Alan Vince (1994). All these pottery classifications have been used directly. I have classified pottery that had not been studied, with the kind help of Dunlop. Ingvild Øye's classification of textile equipment from the Bryggen site (Øye 1988) is used and applied to the material from other sites. The classification of fishing equipment from the Bergen area (Olsen 1998) and weapons from Bergen (Nøttveit 2000) are also going to be used. Tallysticks are classified according to Grandell (1988), footwear and leather waste according to the principles outlined by Larsen (1992). Other leather articles are identified through Marstein (1989). Wooden objects are classified according to Mårtensson (1976), Christensen (1985), Weber (1990) or Fuglesang (1991a and 1991b). Metal objects are identified through Færden (1990), Hurley, Scully, and McCutcheon (1997) and Egan (1998). The classification of combs follows Wiberg (1977) and Flodin (1989) with a few supplements from my side. Inger Kellmer's unpublished manuscript and notes on the combs from the Bryggen site have been very useful during the study of combs. Waste from comb production has been identified with references to Rytter (1991). I have classified the remaining artefacts by comparing form and material with published or otherwise accessible illustrations and descriptions of artefacts from medieval Norway, Denmark, Sweden, Greenland and England.

A qualitative, contextual and spatial approach

In the last part of Chapter 7 I have argued that the representativity of the material in relation to the variety of what was once in use and of what was preserved in the ground should be regarded as fairly comparable from site to site in the early period of the town's history. As far as the finds-frequency from site to site within the horizons is concerned, there are so many methodological circumstances involved that a quantitative analysis of the material across the find-bearing plots/sites will not be possible. A qualitative, contextual and spatial approach is therefore applied.

As already argued it is likely that what was actually found in an analytic unit, was also used there. In all likelihood production waste or tools found on a plot stem from activities there. A qualitative approach implies a focus on artefacts and ecofacts that have actually been found and assigned to the horizons, and an analysis of what they may represent. Presence rather than absence is thus evaluated as signifiers of daily activities.

When studying the artefacts or ecofacts, the single finds are regarded as significant sources for various activities studied. In cases where the practical function of an artefact is ambiguous the item cannot be used in isolation when identifying an activity. The local context that is the find spot of the artefact and other finds from the plot/unit is then drawn into the discussion.

In the surveys of daily activities artefacts are considered as sources regardless of the number of objects and regardless of the number or class (basic versus supplementary) of the analytic units involved. However, to regard single finds or finds from a single supplementary source as conclud-

ing evidence to an activity is considered as too hazardous, as this approach presupposes that all artefacts have been classified, dated, localised and so forth correctly. This is of course the ideal situation, but hardly a reality, given the human element involved in all these procedures. Accordingly, the tendency in the distribution pattern of finds across the plots/units is emphasised when evaluating the reliability of the material as sources for studying daily activities. And when a source for a specific subject in a horizon stems from a single supplementary source or from interrelated sources alone it cannot be used in isolation as conclusive evidence. Pollen is not accounted for in numbers but their presence is used as a source.

The significance of the absence of certain groups of finds is only discussed in a few cases on selected plots/units where at least half of the available building land on the plot was excavated, or where the number of artefacts assigned to the plots/units per m^2 is large enough to carry a meaningful quantitative analysis. The only plots/units that meet these criteria are found in horizon 5. These are plots 6/C, 6/D, 6/E and 6/G. For horizon 5 I have considered more than four finds per m^2 (cf Table 28) as a sufficient number of artefats for a quantitative evaluation.

6 RECONSTRUCTION OF THE NATURAL TOPOGRAPHY ABOUT 1000

I will now reconstruct the natural topography that is going to serve as the background layer in maps produced throughout the study, and as a physical setting for initiatives and activities that took place in the Bergen area until c 1170.

State of research

The extent of the available building land about 1000-1100 has been discussed throughout the history of research on Bergen. Researchers have mainly been interested in the original shoreline of the Vågen Bay and the limit of building land towards the hill Fløyfjellet. Koren-Wiberg was the first to make a reconstruction of parts of the natural topography based on underground observations, he made a reconstruction of the Vågen shoreline in the middle town area (Koren-Wiberg 1921, 15ff). The town engineer ØW Grimnes later supplemented this picture by reconstructing the shoreline by Holmen and in the southern town area based on boreholes from test drilling and written sources (Grimnes 1937). Based on archaeological results from the Bryggen site, Herteig found that the early medieval shoreline along the northern shore of Vågen actually ran 25-30 m further to the north than suggested by Koren-Wiberg, thus leaving a much narrower strip of building land between the Vågen Bay and Fløyfjellet (Herteig 1969, 126ff). Egill Reimers presented the first detailed reconstruction of the 0-5 m above sea level (masl) contour lines to the south and west of the Church of St Mary's in the northern town area, his reconstruction was based on archaeological excavations in this area (Reimers 1974).

In 1976 H K Fritzvold, an engineer, wokred in collaboration with Helle and produced a map of the shoreline in Bergen about 1000-1100 published in Helle's town history (Fritzvold 1976, Tegning 1; Helle 1982). The reconstruction covered the Vågen Bay and the Bay of Alrekstadvågen, today's Lille Lungegårdsvann. It had its main emphasis on the shoreline, but contour lines between -8 and 20 masl were also reconstructed in some places. The reconstruction was based on data from building projects, reports from archaeological excavations, older maps, boreholes and surveys by Fritzvold (Fritzvold 1976). Along with a map Fritzvold gave an account of the methods and data behind the reconstruction, thus it has been possible for other researchers to use and evaluate his map and supplement it with new data. All later reconstructions of the natural topography have in principle been supplements or modifications of this map. Krzywinski's computerised reconstruction of the natural topography in the Holmen area (Krzywinski 1991), the map presented by Myrvoll in 1993 based on Fritzvold's map and data from archaeological excavations from the late 1970s until 1993 (Myrvoll 1993, 87), and also the map presented by myself in 1994 (Hansen 1994b) supplement his reconstruction.

The present reconstruction of the natural topography also presents an adjustment of former reconstructions based on up-to-date information. Contour lines and archaeologically documented streams/small rivers in the Bergen area about 1000 are reconstructed. The reconstruction of the northern, middle and southern town areas is largely based on my earlier work (Hansen 1994b). Since some modifications and new sources have come forward, I have chosen to present the sources used for the present reconstruction as a whole.

A map is a graphical presentation of an interpretation of data and it is a strong medium. Accordingly it is important to account for the methods behind the production of the map, to present the sources for the map, and discuss the problematic parts of the reconstruction.

Methodological approaches and premises for the reconstruction of the natural topography about 1000

The sources for the pre-urban topography are divided into basic and supplementary sources. Basic sources are:

- Height and orientation of moraine or bedrock recorded during archaeological investigations or other groundwork
- Bedrock contours from Grunnkart Bergen 1992 (based on aerial photographs)
- Bedrock contours from Generalkart 1879/80 (based on trigonometry)

Supplementary sources are:

- Measurement of bedrock and moraine from test drilling. These data are considered less secure than data from groundwork as they often show the level where bedrock and not moraine was encountered. According to Fritzvold (Fritzvold 1976, 5) there may often be as much as 1-3 m of morainic masses on top of the assumed bedrock surface. In some cases it is thus realistic to add 1-3 m to the measurements of bedrock from boreholes. Another aspect to be considered is that a probe bore has limited penetration ability in firm masses and the drill may stop at blocks of stone and compact moraine masses. This may have consequences for the evaluation of the bedrock surface and the thickness of masses above it (Fritzvold 1976, 7)
- Data from Koren-Wiberg's investigations, as these measurements are usually documented as metres under the pavement not in masl. The level of the pavement in Koren-Wiberg's days is estimated on the basis of Generalkart 1879/80.
- The level of the lowest recorded culture-layer, as this level is assumed to represent a maximum height of the natural surface
- General information on observations of moraine or bedrock from older investigations or groundwork
- The main configuration of the mountains around medieval Bergen
- The orientation of the buildings in the post-twelfth century town of Bergen. It is assumed, that the orientation of the harbour constructions and culture-layers later than the twelfth century Bergen reflects the man-made or natural landscape they were built in. The assumption is built on observations in the Bryggen material: at the Bryggen site (site 6) the original eleventh century natural surface was reached and the twelfth century harbour front was excavated. Later harbour fronts were also excavated. It is clear that buildings closest to the waterfront always related directly to the contemporary waterfront and perpendicular to the waterfront (cf figures in Herteig 1990; Herteig 1991).

In the reconstruction I assume that:

- The level of the sea was the same about 1000 as today (Herteig 1969, 100). Therefore the contour line of +/-0 is defined as the shoreline about 1000 (Fritzvold 1976, 5).
- The water level by normal high and low tide was the same in the Middle Ages as today (Herteig 1969, 100). Today the average high tide sea level is 0.46 masl for Bergen, the average spring tide level is 0.62 masl and the highest sea level observed at storm surge is 1.53 masl (personal communication *Norges Sjøkartverk*, Stavanger*).*
- The transition between culture-layers and moraine or bedrock represents the pre-urban surface if nothing else is indicated. In fact

this assumption may be somewhat unrealistic since there must have been a growth layer above the morainic deposits. However, in the map scale presented here such details are not significant.
- It is assumed that the orientation of buildings and culture-layers in the town that emerged, reflect the pre-urban landscapes they were placed in.

The map has been produced with an equidistance of 1m as far as this was possible through the available sources. The maps (Figure 62) where the sources for the natural topography are presented have an equidistance of 1 m in the northern, middle and southern town areas; outside these areas an equidistance of 5 m has been considered sufficient in the presentation. On other maps throughout the study where the natural topography serves as a background, an equidistance of 5 m is shown. The contours for the sea bottom have only been reconstructed in a few areas, since data is scarce. Streams or small rivers are only drawn where they are documented archaeologically. The contour lines have been drawn manually by interpolating between points with a known level. In areas where basic sources are scarce, the contour lines have been drawn based on the nearest basic sources and an estimate based on the supplementary sources. For a number of areas reconstructions based on basic sources, and methods similar to those used here, are already available. Where no new data have come to light, I have used these reconstructions. I have drawn the map manually, although computer programmes are available for doing the interpolation job (see eg Christophersen, Cramer, and Jones 1989). A manually produced map has the advantage that data, which cannot be given objective numbers may also be taken into consideration, such as the observation that buildings in the medieval town reflect the terrain they were built in. By drawing the map manually it is thus possible to have a more qualified reconstruction, even of areas where the basic sources are scarce. The method of interpolating known points produces a picture of a smooth and less detailed landscape. It is therefore important to visualise where the representation is built upon basic or supplementary sources.

Figure 62 in Appendix 1 presents the sources behind the reconstruction. Numbers on the map refer to the list of sources and to the discussions behind the course of the contour lines, found in Appendix 1. The reconstruction of the natural topography serves as the background layer for maps produced throughout the present study.

Major features of the reconstructed natural topography about 1000

As shown in Figure 62, the Vågen Bay stretches northwest - southeast into the land from the inner coast of western Norway. In about 1000, Vågen was deeper and wider than today. The original northern shoreline ran as much as 130 m north of the modern quay front and the bay extended some 300 m further eastwards than today. A strip of land separated Vågen from the Bay of Alrekstadvågen that was also much deeper than today's Lille Lungegårdsvann. Then as today the Nordnes peninsula made up the southern shore of Vågen. Along the northern shore, when going from the west to the east, one would first encounter the Holmen promontory that was separated from the later town area by the Veisan inlet. From the mouth of Veisan, the shore ran in slight curves before reaching the head of the Vågen Bay. The curves formed a shallow bay between the middle and the southern town areas, and a small promontory made up part of the southern town area. Holmen was a rather flat piece of land well-suited for settlement and with the highest point about 10 masl. The eastern shore of Veisan was made up of a morainic tongue, and suitable building land was found as a strip of land between Veisan, the Vågen shoreline and the 15 m contour of the hill Fløyfjellet. Between the northern and the middle town areas a protruding rock by the Vågen shoreline rose up 8-9 m and formed a natural topographical landmark.

7 EVALUATION OF THE ARCHAEOLOGICAL AND BOTANICAL SOURCES

The archaeological and botanical sources will now be evaluated in order to identify and classify the material that can elucidate the early development of Bergen. The individual sites are presented topographically and are given a site number as reference. The 'secular' sites are discussed with a reference to the present street address and the museum number of the excavation. The monumental manifestations are referred to by their contemporary names or their builder. A reference for site numbers, street address/monuments and museum number is given in Table 21 (p 10X). Figure 22 (p 10X) presents the investigated areas and monuments. The presentation and evaluation of the archaeological and botanical material comprise as far as possible, and when necessary:

- an evaluation of the dates applied in the material and a division of the material into basic, supplementary or general background sources and into horizons 1, 2, 3, 4 or 5
- a discussion of the location of a site or a monument
- an assignment of layers with artefacts or ecofacts to artefact categories I or II according to their history of deposition
- a rough reconstruction of buildings, passages and other major features at the localities

Structures and layers assigned to the five horizons are drawn onto the natural topography on maps presented in Figures 23-27, the reader should have these maps at hand when reading the chapter.

The Holmen area

Site 1, Koengen (Botanical investigation in Veisan by Kari Loe Hjelle) (1986)

Hjelle performed an analytic pollen investigation of marine sediments and organic deposits in the medieval Veisan inlet, located to the west of Holmen. Only the material from pollen zone 6 is dated to the period studied here. Layers 11-30, that is pollen-zone 6, accumulated fast and contained both pollen and macrofossils which could clearly be identified as among others wood chips, latrine-, kitchen- and brewery refuse, and dung (Hjelle 1986, 55). The layers may thus indicate that waste was dumped in the sea in the vicinity of the sampling location (cf p 51ff).

Dates

A ^{14}C sample from the lowermost layer, layer 11, was dated with two peaks of probability to 780-790 or 810-1000. Layer 14 was ^{14}C dated to 1160-1255 and layer 23 was ^{14}C dated to 1180-1300.[9] This leads to the question whether pollen zone 6 represents a continuous deposition of material from layer 11 and onwards or whether there were breaks in the deposition of material between layers 11 and 14. The thickness of the layers may perhaps throw some light on this question. The layer series from the bottom of layer 11 to the top of layer 14 is 50 cm thick and, according to the ^{14}C dates available, represents a roughly estimated time span of a maximum of 475 and a minimum of 160 years. According to Hjelle the low presence of phyto-plankton in the samples implies that the layers accumulated so fast that water plants did not have a chance to flourish (Hjelle 1986, 40). An accumulation of only 50 cm through a period of minimum 160 years cannot be characterised as a fast, continuous accumulation but rather implies that the layers were deposited in many sequences. Unfortunately, it is not possible to give a closer estimate of when the single layers between layers 11 and 14 in pollen zone 6 were deposited.

A deposition in sequences does not mean, however, that the deposition of waste was not a relatively recurrent event. What is documented and dated in pollen zone 6 may be the single 'bucket' or 'load' of waste, which was thrown out at one random location. It is not unreasonable to assume that other locations were also used as a waste dump through the years, the deposition of waste may therefore have occurred more frequently than the thickness and dates of the pollen zone 6 layers imply. The earliest possible date of waste deposition, represented in pollen zone 6, goes back to between 780-790 or between 810-1000 but the activity may have lasted through many years.

The oldest layer in pollen zone 6, represented by layer 11 is used as a source for **horizon 1**. Since

the material is dated through a wide ^{14}C date it is used as a **supplementary** source. The layers in pollen-zone 6 contained pollen of weeds that may indicate the import of grain.[10] The imports indicating pollen are found in layer 11 as well as in later layers (Hjelle 1986, 59). Ecofacts from layer 11 are assigned to horizon 1, **Category II**. I cannot determine if any of the later layers in pollen-zone 6 represent horizons 3-5 (c 1070-c 1170), since these layers have not been dated in detail. The later layers are therefore omitted from my study.

Table 1. *Site 1, Koengen (1986)*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
'Phase'	Pottery	Other	Dendro	TL	^{14}C			
Layers later than 11								Omitted from the study
Layer 11 pollen zone 6					Peaks of probability between 780-790 or 810-1000		1	S
Layers older than pollen zone 6								Beyond the period of the study

Data based on (Hjelle 1986)

Site 2, The Christchurch Cathedral (Store Kristkirke)

According to Heimskringla, Olav Kyrre started the erection of the Christchurch Cathedral on Holmen (Hkr 1893-1901, III 226). In 1170 the relics of St Sunniva were transferred from Selje to the Christchurch Cathedral (Storm 1880, 151), this may indicate the formal completion of the twelfth century cathedral (Lidén and Magerøy 1980, 145). Gerhard Fischer investigated the remains of the church in 1929. The excavations showed that the nave was 21-22 m wide and that the church was a basilica. Fischer suggested that the original length of the church did not extend 57 m (Lidén and Magerøy 1980, 147; Lidén and Magerøy 1990). The church serves as a **basic** source for **horizons 3, 4** and **5**. The churchyard is mentioned in the written sources (Lidén and Magerøy 1990), but the boundary and exact location is not known. The material cannot elucidate activity on the site before horizon 3.

Site 3, Christchurch minor (Lille Kristkirke)

According to Heimskringla, Olav Kyrre (1066-93) also built Christchurch minor (Hkr 1893-1901, III 226). The church was built in wood and later replaced by a stone church. The timber church was, according to the saga, completed in the reign of Olav Kyrre, no details are known about its layout or size. The church was located at Holmen in the churchyard of the Christchurch Cathedral (Lidén and Magerøy 1980, 144; Lidén and Magerøy 1990). It may serve as a **basic** source for **horizons 3, 4** and **5**. The material cannot elucidate activity on the site before horizon 3.

Site 4, The Church of the Apostles (Apostelkirken)

According to Morkinskinna, the twelfth century Church of the Apostles was built by King Øystein Magnusson (1003-1123) (Msk 352, 384). Presumably the church was a timber church (Lidén and Magerøy 1980, 137), no details are known about its layout or size. During excavations at Holmen, in the 1940s, Fischer found what he assumed were re-used wallboards, roof tiles and a half-colonette from the first Apostles' church. Later investigations, however, indicate that the remains do not stem from a twelfth century church. It is therefore unlikely that they stem from the first Church of the Apostles (Lidén and Magerøy 1990, 36-38). Since the church probably was built between 1103 and 1123 it may serve as a **basic** source for both **horizons 4** and **5.** The church was located at Holmen. Fischer also believed to have found the wall of the churchyard of the first Apostles' church, however, this wall does not date back to the twelfth century, according to a new investigation of the dating material performed by Dunlop (Dunlop 1996a, 3.2). The

second Apostles' church was built at the same site as the first church (Lidén and Magerøy 1980, 137). Walls of the second Apostles' church were identified by excavations in the 1950s (Lidén and Magerøy 1980, 137) and should thus indicate the approximate location of the first church as well. Against this background, the location of the first Apostles church is used as a **basic** source for **horizons 4** and **5.** The material cannot elucidate activity on the site prior to horizon 4.

Site 5, Øystein Magnusson's hall at Holmen

According to the written sources Øystein Magnusson (1103-1122) built a large timber hall at Holmen. About 1180 it was still standing, though it was in a somewhat poor condition, and it was considered the largest and most renowned timber hall in Norway (MHN 64; Hkr 1893-1901, 285, 294; Msk 352, 384; Ågr 94; Helle 1982, 115). The hall may accordingly be used as a **basic** source for **horizons 4** and **5.** During his investigations at Holmen Fischer believed that he had found the hall. But according to the investigation of the dating material it is unlikely that the remains found by Fischer date as early as the twelfth century (Dunlop 1996a, 10), the exact location of Øystein's hall is still unknown. According to the written sources, the hall was located close to the first Church of the Apostles, which in turn was succeeded by the second Church of the Apostles. Since we know the location of the second Church of the Apostles we may then also know the approximate site for Øystein's Hall. On this basis Øystein's hall is located close to the Church of the Apostles. The material cannot elucidate activity on the site before horizon 4.

The northern town area

Site 6, Bryggen (1955-1979) BRM 0

The excavations at site 6, the Bryggen site, was an open area investigation, covering about 5700 m^2 (Herteig 1990, 9), only an area of about 2000 m^2 is, however, relevant for my study. Asbjørn E Herteig published his stratigraphical analysis and dating of the Bryggen material in 1990 and 1991 (Herteig 1990; Herteig 1991). Herteig divided the site into four areas connected to historically known tenements: The Gullskogården area, Søstergården- Engelgården- and Bugården (Figure 7). Chronologically, the site was divided into 'periods', each terminated by a fire, and further subdivided into 'phases' (Herteig 1990; Herteig 1991). Period 1 comprised the oldest documented structures on the site.

The stratigraphical analysis presented by Herteig in 1990 and 1991, serves as my point of departure when discussing the stratigraphy of the Bryggen material. New interpretations based on dendrochronology and/or stratigraphy are, however, introduced. As an initial stage in the present study I have re-evaluated the dating of the Bryggen material before fire V (Hansen 1998), this serves as the chronological point of outset here. In order to analyse the oldest periods of the Bryggen material more closely, I have made an updated version of the so-called H-post database (for the artefact material from periods 1-4, period 4 ends about 1250), containing information about the context of artefacts and other finds from the excavation.[11] This updated version serves as a basis in my study of the artefacts from site 6.

The botanical material

In Søstergården botanical samples were investigated from marine deposits predating structures from period 2 at the Bryggen site (Krzywinski and Kaland 1984).

Dates

The botanical material indicated human activities in the vicinity of the site prior to period 2. The deposits were dated by ^{14}C (Krzywinski and Kaland 1984), but only the youngest deposit, 'unit 7' is relevant as a source for the period discussed here. A ^{14}C sample[12] taken from hazelnut shells dated the youngest deposit to BP 970+/- 40 BP (calibrated through Stuiver (1982)) and represents a historical date within the period 1000-1070 or 1090-1150 (one sigma) (Krzywinski and Kaland 1984).

Krzywinski and Kaland have earlier discussed the deposit from 'unit 7'. The composition of the deposit and the oldest dates provided by the ^{14}C sample have been used as arguments in dating the urban settlement to the beginning of the eleventh century (Krzywinski and Kaland 1984). I will

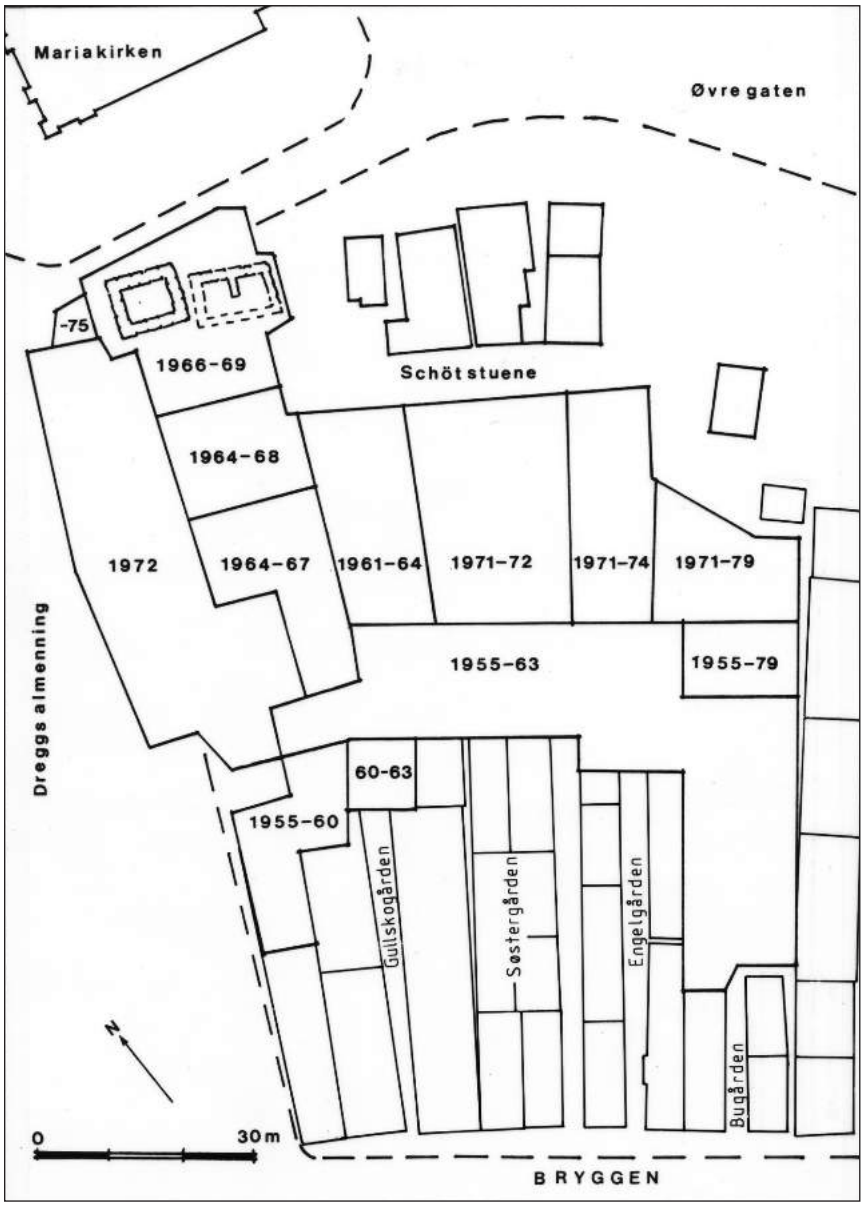

Figure 7. *Site 6, Bryggen. The different stages in the excavation of the site and names of the tenements. (After Herteig 1990, 10 and Herteig 1991, 12)*

discuss the dating frame for the accumulation of the 'unit 7-deposit' in more detail. The date for the end of the accumulation of the deposit should be looked into more closely. The profile drawn up in connection with the botanical investigation is the only source here, as the archaeological documentation does not contain any details on the stratigraphy in this part of site 6.[13] Judging by the profile in Figure 8, the 'unit 7-deposit' seems to make up the surface of the building-land (beach area) when period 2 started (in the 1120s (Hansen 1998)), indicated by caisson 41, dendro dated to 'after 1126',[14] and built directly on top of the deposit. An analogous situation, where similar caissons were constructed, shows that the caissons were placed directly on the building site without any prior preparation of the surface (Golembnik 1993, Figure 8). In all probability, no layers were removed from the building site before caisson 41 was placed on the beach thus making the 'unit 7-deposit' the youngest deposit on the site. The termination of the deposition of the layer should therefore be dated to shortly before 1126/ the beginning of period 2.

The composition and thickness of the deposit throws light on the duration of the accumulation. 'Unit 7' had a high content of disintegrated wood chips, hazelnut shells and mosses and 'the composition of the deposit was identical with the later waste deposits of the medieval town' (Krzywinski and Kaland 1984, 33). The composition points towards a rather quick and/or intensive accumulation, otherwise the organic components would have been washed away by the sea. The low content of marine *dinophycea-cyste* also implies a fast accumulation of the layer (Krzywinski and Kaland 1984, 26). The content of the 'unit 7-deposit' thus implies a relatively fast accumulation and the thickness of the deposit points in the same direction.

Since the composition was identical with the later waste deposits of the medieval town (Krzywinski and Kaland 1984) one may compare the speed of accumulation of such medieval waste deposits with 'unit 7'. The 'unit 7-deposit' had a maximum thickness of about 50 cm (Figure 8).

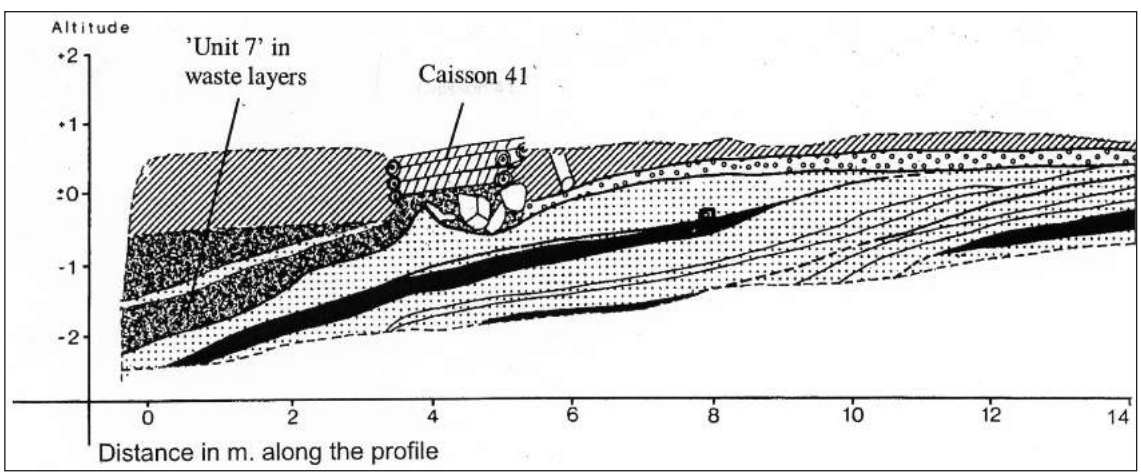

Figure 8. *The stratigraphy of profile 220 at site 6, Bryggen. (After Krzywinski and Kaland 1984 Figure 3)*

In comparison, waste deposits at the Bryggen site accumulated to a roughly estimated thickness of 70 cm in the respectively 30 and 50 year time span between 1170-1198 and 1198-1248 (Herteig 1990, Plates 1 and 2). This gives an average annual accumulation of 2.3 cm between 1170 and 1198 and 1.4 cm between 1198 and 1248. Of course, such a comparison is problematic depending on the degree of building activity and production of waste. Still, the comparison gives us the notion that a roughly 50 cm thick deposit was not a result of 120-130 years of relatively fast accumulation but rather the result of a maximum 20-35 years. A period of 20 to 35 years before 1126/the beginning of period 2 coincides with a date within the 1090-1150 peak of the ^{14}C date, rather than with the 1000-1070 peak, as suggested by Krzywinski and Kaland.

If 'unit 7' accumulated during a period of 20 to 35 years before the (late) 1120s, the accumulation may have started between the 1090s and c 1100. In this case the deposit can be used as a source for both horizons 1 and 2 in Søstergården. The stratigraphical relationship between 'unit 7' and caisson 41 indicates that the deposit had accumulated just before the caisson was built 'after 1126', consequently 'unit 7' may be used as a **basic** source for **horizon 4** in the Søstergården area. Whether the deposit also dates back to the time period covered by horizon 1 is based on weaker arguments. On the one hand, the composition of the deposit counts in favour of a fast accumulation, maybe a maximum of about 20 years. On the other hand, the comparison of thickness of deposits implies that the deposition could have lasted up to 35 years and we cannot exclude that the deposit actually dates back to the late eleventh century. On the basis of this, the deposit will be used as a **supplementary** source for **horizon 3** in Søstergården. No culture-layers or structures were dated to horizons 2 or 1, this information is used as a **supplementary** source for **horizons 1** and **2**.

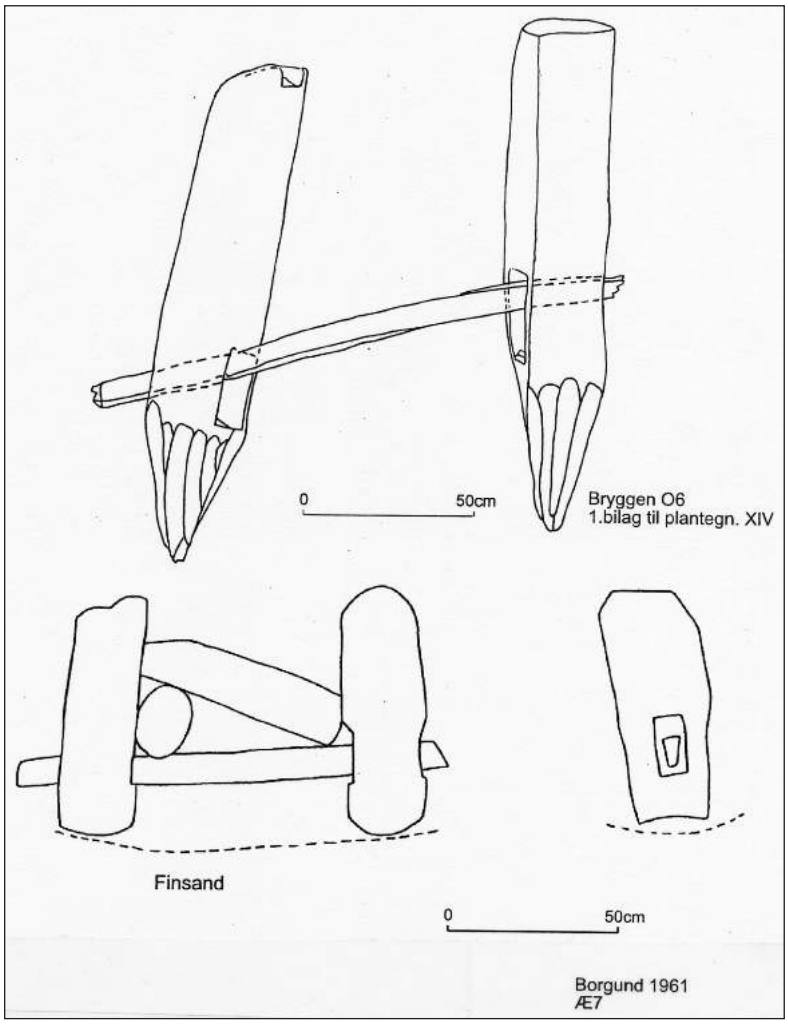

Figure 9. *The dendro dated posts in the jetty at site 6 and similar posts at Borgund, Sunnmøre. (Borgund 1961 Æ7, 48,50X/166,70Y and 45,4X/166,4Y; BRM 0, Bryggen Plan O6 XIV, Bilag 1)*

Artefact categories

Ecofacts from the deposit may be used as **category II** finds in horizons 3 and 4.

The archaeological material

Period 1, localisation, dates

Herteig divided the constructions in period 1 into phases 1.1 and 1.2. In addition a 'widespread layer of small stones' laid out on the beach and a jetty were assigned generally to period 1. The constructions from phase 1.1 and 1.2 were localised in the Gullskogården area, the jetty was recorded in Søstergården, and the stone layer was recorded both in the Gullskogården area and in the westernmost part of Søstergården. The natural subsoil was probably reached by the excavators in these areas. Engelgården and Bugården were not thoroughly excavated below the level of period 2 and the natural subsoil was probably not reached here except in two trenches, one by the jetty and one by the above mentioned 'unit 7'.

Herteig assumed that the structures assigned to phase 1.1 represented more than one building phase (Herteig 1990, 125; Herteig 1991, 97) and new dendro dates combined with stratigraphical observations suggest that a number of structures, assigned to period 2, should be considered as part of phase 1.2. This calls for a reconsideration of some of the earliest structures found at the site.

The jetty and associated layers in the Søstergården area

The two posts in the jetty, assigned to period 1, and located in the Søstergården area, were dendro dated to respectively 'after 1026' and 'after 1029'.[15] The samples were taken by Reimers and myself. We observed a rectangular cut in the

lower part of each of these jetty-posts, cuts that could not be explained as part of the jetty construction, and thus would imply that the posts were reused in the jetty (Hansen 1998, 93). After having looked closer at the original site documentation, it is, however, clear that the cuts did have a function in the jetty. A horizontal thin beam (still *in situ* when excavated) ran through the two holes to prevent the pair of posts from sinking into the deposits of the sandy beach. A similar arrangement has also been documented in jetties at the Borgund site in Sunnmøre, Norway (Herteig 1975, 28, Figure 4). The two holes in the site 6 posts were rather large compared to the horizontal beam, a similar difference in the proportions was, however, also observed in the Borgund material (Figure 9). There were no other indications of reuse on the posts, bark was not preserved but the surface of the timber had not been worked. A few treerings may still have been worn off, the early 1030s thus seems a reliable date for the timber. The jetty is consequently assigned to **horizon 2** as a **basic** source for studying the early history of Bergen. The posts from the jetty may have been visible above the ground (site documentation, profile 184 and plan O6 XIV bilag 1) (when referring to profiles, plans and grids in the following references are made to the original site documentation unless otherwise stated) until the end of Herteig's period 1, dated to the 1120s (but we do not know if the jetty was still in use), and serve as a **basic** source for **horizons 3 and horizon 4**.

The stratigraphical relationship between a post in the jetty and the surrounding layers is recorded in the original site documentation (profile 222 and plan O6 XIV, enclosure 1). Profile 222 was a 15 m long cross-section of the beach. It shows that three layers accumulated around the jetty before the post was superposed by period 2 constructions. These layers comprise layer '1': a roughly 10 cm thick 'yellow grey sand layer', deposited on top if this was layer '2': about 30 cm thick and consisting of 'yellow grey sand and pebbles'. On the top of here was layer '3': a roughly 15 cm thick 'dark brown layer with pebbles, shells and wood waste'. I interpret layer 3 as part of the 'widespread layer of small stones spread on the beach', generally assigned to period 1 (plans P6 XII, O6 XI, N6 XIV) and assigned by me to horizon 4 as a basic source (cf below). No structures were indicated in layers 1 and 2, implying that the jetty was the only construction in this area before layer 3 was laid out. The description of layer 1 as well sorted, indicates that natural forces may have deposited it. Layer 2, was not well sorted and probably reflects human activities on the beach of the Søstergården area. As the stone layer (3) may be assigned as a basic source for horizon 4 the layers preceding it must have been deposited after the early 1030s but before the period represented by horizon 4, that is in the periods represented by horizons 2 and 3. There is no firm evidence to narrow down the date of the layer depositions, but it may be argued that some time went by from when the construction of the jetty took place 'after 1029' - in the early 1030s - and layer 2 was deposited on the beach, enough time for layer 1 to accumulate. Thus it is more likely that layer 2 represents horizon 3 rather than horizon 2. Thus layer 2 is accordingly assigned to **horizon 3**. As the dating of the material is not based on solid evidence it will be used as a **supplementary** source only. No structures or culture-layers predating horizon 2 have been documented in the Søstergården area. This information is used as a **supplementary** source for **horizon 1**.

The stratigraphical relationship between groups of structures associated with period 1 in the Gullskogården area

In the Gullskogården area constructions that have been assigned to phase 1.1 in period 1 consist of two palisade-built fences.[16] Anticipating events a bit I shall label these respectively 6/C and 6/B.[17] Twenty-one scattered posts, some of them within fence 6/C were 'with every reservation' interpreted as a building by Herteig (building 497). Some of the posts outside fence 6/C were interpreted as traces of a cellar building (Herteig 1991, 97).[18] The structures assigned to phase 1.1 may represent more than one building phase. I have tentatively separated the structures into an older and a younger level of structures by a stratigraphical analysis.

According to the stratigraphy (profile 69/3) two layers accumulated over fence 6/C when it went out of use: first a 15 cm thick layer of 'brown fill-masses', then an about 20 cm thick

layer of 'light brown fine sand and gravel'. When comparing the profile with site plans (Q3 X, XI, and XII), the sand and gravel layer seems to have been deposited over at least two posts inside the fence as well,[19] implying that these were older than the sand and gravel layer. At least nine post holes from phase1.1 (some still with posts intact) had been dug through the light brown fine sand and gravel layer.[20] They probably belonged to a building and must be later than the sand and gravel layer. The fence 6/C and at least two posts must belong to a phase older than the nine posts. As the fence was covered with 'brown fill-masses' before the sand and gravel layer was deposited, it is likely that the fence was out of use when the nine posts were erected. Thus the phase 1.1 structures may be subdivided into phase 1.1.1: fence 6/C and associated structures, and phase 1.1.2: the nine posts. The nine posts are tentatively reconstructed as a post-built building. The construction of this '9-post building' in phase 1.1.2 was succeeded by the deposition of a coarse gravel layer in the area south of the building (towards the beach). Building 45 dating to phase 1.2, was most likely built on top of the gravel since one of the posts from the building, cut through the coarse layer (profiles 69 and 31). Consequently, the '9-post building' must have been built before building 45. The limited documentation of the stratigraphy makes it difficult to determine whether 'the 9-post building' went out of use before phase 1.2 or if the structure still existed in phase 1.2 contemporaneously with building 45. One of the posts in 'the 9-post building' was scorched by fire, a possible indication that it was burnt in fire VIII (the 1120s (Hansen 1998)), together with building 45. This, rather weak, evidence is taken as an indication that 'the 9-post building' from phase 1.1.2 lasted until the end of period 1 and thus existed contemporaneously with building 45 for some years.

The possible cellar building and the scattered posts in the area south of the '9-post building' must clearly have been demolished before building 45 was erected in phase 1.2, as they were covered by the 'wide-spread layer of stones laid on the beach', that was probably contemporary with building 45 (see below). A reused timber log[21] from building 45 in phase 1.2 can be interpreted as a stave originally belonging to a cellar building (Reimers in prep). Could this stave originally have come from the possible cellar building that must predate building 45 according to the stratigraphical evidence? The stratigraphical evidence does not contradict such a suggestion and it seems that the staves in the possible cellar building were pulled up when this structure was demolished as only post holes could be traced at the site. Anyhow the reused cellar building stave from building 45 implies that the Gullskoen area contained more than just 'the 9-post building' before phase 1.2. The cellar building may originally have belonged either to phase 1.1.1 or 1.1.2, probably the latter, if the reused timber stems from the possible cellar building. A couple of factors speak in favour of such an interpretation: The reused cellar building stave was in such good shape that it could be reused whereas the remains of the fence from 1.1.1 were mostly left to rot. There was also more than one level of structures, predating building 45, in the area where the possible cellar building was located. And if - again - the reused timber in building 45 stems from the possible cellar building I would presume that the building belonged to the youngest level of structures here and not to the oldest. Accordingly, I find it most plausible that the possible cellar building and associated posts belong to phase 1.1.2 and that the oldest level of scattered posts in the area south of 'the 9-post building' belong to phase 1.1.1.

How is the period 1 material dated?

The material from phase 1.2 is well-dated and will serve as a point of departure when dating the older phases at site 6. The main construction in phase 1.2 was building 45, well-dated through dendrochronology, built c 1110 and later destroyed in a fire dated to the 1120s (Hansen 1998, 123), thus dating phase 1.2 to between c 1110 and the 1120s. Another feature was 'the wide-spread layer of small stones laid on the beach'. This layer was recorded in the areas of Gullskogården, Søstergården and the northern part of Engelgården (Herteig 1991, 111). The stones were deposited on the beach in several sequences (grids Q3 and P3). In the Gullskogården area the layer was later than the scattered posts assigned to phase 1.1.2 (the assumed cellar building) but most likely contemporary with build-

ing 45. Structures and layers from phase 1.2 may serve as **basic** sources for **horizon 4**.

It is more problematic to date the beginning and end of phases 1.1.1 and 1.1.2. Timber from 'the 9-post building' (1.1.2) was dated through dendrochronology to 'after 1069'. The sample was characterised as being of good quality by Terje Thun. But we cannot determine if tree rings were missing or if the post was reused (Hansen 1998, 93).[22] The latter is always a possibility that should be considered when dating through a sole dendro sample. If some tree rings were missing the sample would still date the felling year of the timber to 'relatively shortly after 1069'. But since we do not know if the sample came from reused wood or not, there are two possible scenarios. (1) If the post was not reused and had all tree rings intact - or missed just a few, the sample would date the beginning of phase 1.1.2 (the possible cellar building and 'the 9-post building) to 'relatively shortly after 1069': (horizon 3). This would probably date the end of phase 1.1.1 with fence 6/C and associated posts to before the last quarter of the eleventh century and thus suggests that this phase began some 25-50 years (cf p 60) earlier in the second quarter of the eleventh century (horizon 2). (2) If the post was reused once, we should add 25 to 50 years to the 1069 date and this would date the beginning of phase 1.1.2 to the beginning of the twelfth century (horizon 4). This in turn would date the end of phase 1.1.1 to the end of the eleventh / the beginning of the twelfth century and date the beginning of this phase tentatively to 25-50 years before: the last quarter of the eleventh century (horizon 3).

Is it possible to find support for either of these scenarios in other material from the Bryggen site? Following the second scenario, the suggested cellar building in phase 1.1.2 would have to be 'crammed' into horizon 4: it would have to be built about 1100 and abandoned before the widespread layer of small stones was laid out contemporaneously with the construction of building 45 'after 1110' (The latter perhaps reusing material from the cellar building). The time depth in the sources discerned through the stratigraphical relationship between the possible cellar building and structures assigned to horizon 4 (the 'widespread layer of small stones' and building 45) thus favours scenario I as the most realistic.

The jetty, dated to the early 1030s, was located about 17 m south-west of fence 6/C and associated posts. If we date the beginning of phase 1.1.1 according to the first scenario to the second quarter of the eleventh century this date corresponds well with the date for the jetty, the jetty and the fence with associated posts would be contemporary. If we zoom out and have a look at the spatial relation between fences 6/B, 6/C and the jetty visualised in Figure 24, a pattern emerges: fences 6/B and 6/C make up the boundaries of two plots (cf footnote 17). If hypothetically a third plot '6/D', of the same width as plot 6/C, was located to the east of plot 6/C, the jetty would run straight up to the easternmost boundary of the third plot, connecting the jetty to the plot. If the hypothetical plot was real this would be an indication that the jetty was contemporary with the palisade fence bounded plots and *vice versa*. I shall return to this point again in pages 155ff and 183ff. If we follow the second scenario the jetty would not be associated with any known structures in the northern town area. When considering these circumstances I find that the dating suggested in the first scenario seems more plausible at the present state of research.

My conclusion is thus that phase 1.1.1 (fences 6/B and 6/C and associated structures) may have started during the second quarter of the eleventh century and it probably ended before the last quarter of the eleventh century, thus serving as a source for **horizon 2**. Phase 1.1.2 ('the 9-post-building' and the possible cellar building) most likely began 'after 1069', the 9-post building possibly lasted until the 1120s and thus serves as a source for **horizons 3 and horizon 4.** The possible cellar building was demolished before phase 1.2 began and thus serves as a source for **horizon 3** only. Since the material from phases 1.1.1 and 1.1.2 is tentatively dated it can only be used as a **supplementary** source. The question of the hypothetical plot is as already mentioned resumed on a broader basis in pages 155ff and 183ff, and an attempt is made to strengthen the proposed dates. There were no traces of structures or culture-layers below phase 1.1.1, this information is used as a **supplementary** source for **horizon 1.** In the area west of fence 6/C, no *in situ* structures, except fence 6/B, were documented prior

to period 2, however reused timbers (dated to 'after 1024 and 'after 1040'), found on plot 6/B in horizon 5 (cf below and Chapter 9) may stem from activities on plot 6/B (cf p 65ff) this information is used as a **supplementary** source for **horizon 2.**

Structures assigned to period 2 reconsidered

A complex of structures consisting of six 2 m x 2 m stone-filled caissons that formed the foundation for a passage and a quay front has been assigned to period 2 and associated with amongst others, building 502 in this period (Herteig 1991, Plate 14). Three of the caissons were, however, dendro dated to respectively 'after 1104', 'after 1106' and 'after 1108/09' (caissons 29, 27 and 28) (Hansen 1998, Table 2), implying that they should rather belong to phase 1.2 associated with among others building 45 dated to 'after 1110' (cf above). The sampled pieces of wood showed no signs of reuse, which strengthens the reliability of the dates. The stratigraphical relation between caisson 29 and buildings 502 and 45 respectively supports the association of the caissons with building 45 from period 1.2. According to plan O3 XI, caisson 29 was built on the same level in the terrain as building 45, whereas building 502, succeeding building 45, must have been built on top of fill-masses that had accumulated onto caisson 29 (plan O3, X) (Figure 10). I suggest that caissons 27, 28, 29, 30, 31, and 32 that formed a passage and a quay front should all be assigned to period 1.2. They may serve as a **basic** source for **horizon 4**. As they were still in use through period 2 they also serve as a **basic** source for **horizon 5.** A post from building 45 was reused when the northern part of the passage was repaired in period 2 (cf Herteig 1991, 94ff).

Building 66 in Gullskogården has been assigned to period 2 (Herteig 1991, 87ff). Three dendro samples from this building were dated to respectively 'after 1024, 'after 1040' and 'after 1127'[23]. The first two samples were taken in 1997/98 and produced dates that were much earlier than expected for building 66, being assigned to period 2. The third sample was therefore taken in 1999. This sample gave a younger date that places the building safely within period 2. The two older samples were taken from posts where only the bottom part was preserved, and the issue of reuse could not be decided upon. The sampling spots did not have signs of having been worked up. However, according to Thun's evaluation of the samples both may miss some treerings, so some years should be added to the date of the outermost treering. The fact that there was a large difference in the age of the dated timbers suggests that the two older samples stem from reused wood. Even if some treerings were missing the timbers still ought to stem from the middle quarters of the eleventh century. This may indicate that there was activity in the area where building 66 was later built. This information has already been assigned as a supplementary source for horizon 2 above.

The Bryggen site from horizon 1 to 4: major features, artefact categories

No structures or culture-layers could be assigned to horizon 1. A jetty and several constructions were assigned to horizon 2, these are: fence 6/C built in palisade technique (assigned by me to phase 1.1.1) this fence makes up the north, west and south boundaries of plot 6/C. Another fence indicates a plot 6/B to the west of 6/C, no *in situ* structures have been associated with this plot, however reused timbers from building 66 assigned to period 2 may stem from activities here. If there was also a plot to the east of 6/C, the jetty would run straight towards the eastern corner of this plot, providing the plot was of the same width as plot 6/C. This hypothetical plot is labelled 6/D and it is on a preliminary basis assigned to horizon 2 along with 6/B and 6/C. I will return to the factual existence of this plot on a broader basis in pages 183ff. Two posts within plot 6/C may be contemporary with the boundary indicating fence, as may some of the scattered posts south of fence 6/C. It is not possible to determine what kind of constructions the posts were part of. No artefacts have been associated with horizon 2.

During horizon 3, the jetty in the Søstergården area was still visible, but we cannot determine whether it was still in use. A 30 cm thick sand and gravel layer was deposited on the beach by the jetty. In the Gullskogården area, nine posts may represent a building here called the '9-post building'. A possible cellar building and associated posts have been assigned to horizon 3. Before

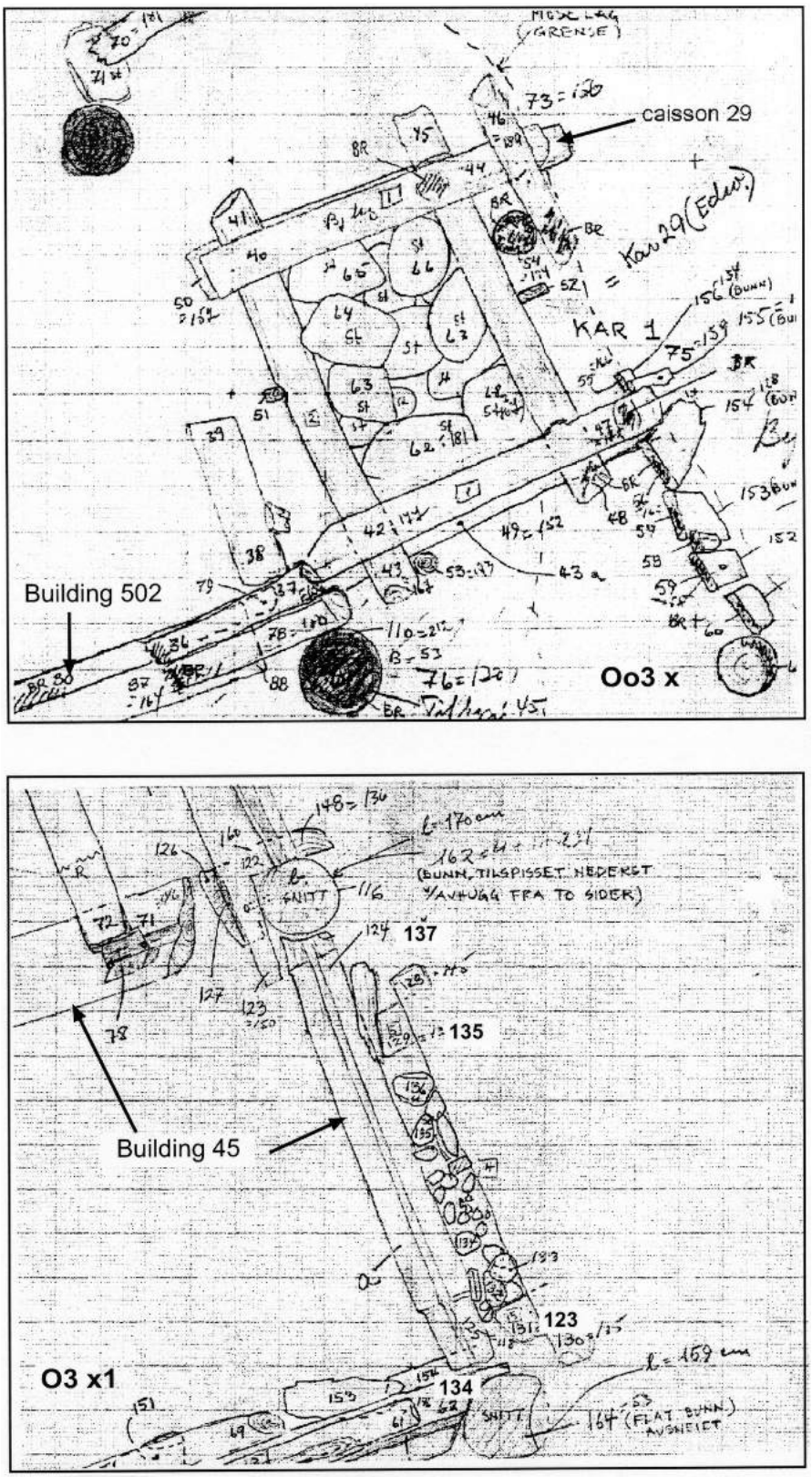

Figure 10.
Plan O03 X and O03 XI, site 6, Bryggen

the '9-post building' was erected, the site was prepared by depositing sand and gravel, fences 6/B and 6/C from phase 1.1.1 were thus covered leaving no visible traces of plot boundaries on the site in horizson 3. No artefacts have been associated with horizon 3.

In horizon 4, the '9-post building' was perhaps still in use, while the possible cellar building had been demolished. A gravel layer was filled in to prepare the building land for the construction of building 45 from phase 1.2, and the building was now erected. Layers of small stones were then spread over the beach to consolidate the ground. A row of caissons that served as the foundation of a passage and a quay front were also constructed. Fire-layer VIII (with its contents of artefacts) is the only layer that has been ascribed to phase 1.2 in the site documentation of artefact contexts, however, other contexts, and thus artefacts, have also been connected to horizon 4 as **category I** and **II** finds according to the criteria outlined earlier.

Period 2, dates, location

Period 2 at the Bryggen site consists of two phases: 2.1 and 2.2. Phase 2.2 is defined as the 'level' of structures that burnt in fire VII (1170/71). On most of the site only one phase of structures was found. The major part of the structures from phase 2.2 therefore make up the first and only 'level' of structures at the site in period 2. In a few places, however, the structures from phase 2.2 were preceded by an 'unburnt' level of buildings, which make up phase 2.1 (Herteig 1990; Herteig 1991). Structures from period 2 were recorded in the Gullskogården, Søstergården, Engelgården and Bugården areas. The northernmost part of Engelgården, and the southernmost part of Bugården were, however, not documented in detail. Period 2 is well-dated through both dendrochronology and pottery. The main part of the structures from phase 2.2 was under construction from the 1120s until the first part of the 1130s. The buildings representing the 'second generation' of structures period 2, were under construction from the late 1130s and into the 1150s (the youngest dendro sample from period 2 was from 1149). Period 2 ended in a fire dated to 1170/71 (Hansen 1998). The material defined within phase 2.2 represents the built-up area in the years before fire VII. This material is therefore placed in **horizon 5**, and can be used as a **basic** source.

Major features, artefact categories, period 2

Constructions from phase 2.2, assigned to horizon 5, include 25 buildings, 33 caissons, a number of pits and mooring posts. Quay fronts and five passages without numbers in the original documentation are reconstructed on the basis of the caissons that measured 2 m x 2 m. The structures form at least 8 rows of buildings extending down the morainic slope to the waterfront. Between the buildings, the passages provide access from the quay front to the buildings. The built-up area is reconstructed according to Herteig (1990, 1991) and Moldung (2000). Only fire-layer VII has been ascribed to phase 2.2 in the documentation of artefact contexts, but artefacts from other contexts can also be connected to phase 2.2 as **category I** and **II** finds according to the criteria outlined earlier.

Site 7, Øvre Dreggsalmenningen (1989) BRM 298

The excavation at site 7, Øvre Dreggsalmenningen, about 35 m northwest of site 6, was a trench survey where 14 profiles were investigated and analysed (Dunlop 1989e). Botanical material has also been studied in connection with the investigation (Hjelle 1989).

Dates

The oldest material above the natural deposits was not dated. The presence of pollen and a ^{14}C date can, however, be of help in dating the material. The oldest strata in profiles 1, 2, 3, 5 and 8 can be divided into three phases: layer 19/20 represents phase 1, being the oldest layer above the natural subsoil (layer 21). Phase 2 is represented by layer 18, and building K19, a pit-house, destroyed in a fire recorded as layer 17/31. Levelling layer 30 represents phase 3.

The presence of pollen from *centaurea cyanus* indicates that phase 1 should be dated to the ninth century or later. A ^{14}C sample[24] from charcoal in the phase 2 fire-layer 17/31 is dated with the highest probability to between 860 and 1020 (Figure 11). The sample does not provide the

Table 2. *Site 6, Bryggen (1955-1979) BRM 0*

	Archaeological evidence		Natural scientific dates		Dating	Horizon	Source type (B/S/G)
Building phase/ Site area	Youngest pottery types present	Other	Dendro	^{14}C			
2.2 Gullskogården, Søstergården, Engelgården, Bugården	London Coarse, London Fine Early Style, Dev Stamford, French Type, Near Stoneware		1127 **(1135-1149)**		Ends 1170/71	5	B
2.1			1100 **(1104-1129)**		Begins 1120s Ends c 1135-1140		
1.2 Gullskogården Søstergården, Engelgården	Paffrath		1100 **(1107-1110)**		Begins 'after 1110' Ends 1120s	4	B
1.1.2 Gullskogården, Søstergården			**1069**		Activity 'after 1069' Ends 1120s	3-4	S
1.1.1 Gullskogården		Stratigraphical relationship to 1.1.2			Begins 2nd quarter of eleventh century Ends before c 1069	2	S
The jetty, Søstergården			(1026) **1029**		Activity from the early 1030s	2-4	B
Reused posts in building 66			**'after 1024' 'after 1040'**		Activity in the middle of the 11th century	2	S
'Unit 7' Søstergården		Thickness of deposit, stratigraphical relation to caisson 41		1000-1070 or 1090-1150		3 or 4	S
Lack of culture-layers or structures					Below unit 7	1 and 2	S

Data based on Hansen 1998. Dates in **bold** are the youngest in the construction/phase

best dating evidence since we do not know more precisely from where it derived, the sample may also have had an 'old wood problem', thus providing a too early date. Still it may provide a wide *post quem* date for the establishment of phase 2 or of activities during the phase. According to this, the sample indicates that building K19 or activities associated with the building dates back to the eleventh century or earlier. The third phase: levelling layer 30 contained no dating evidence.

The cultivation activities represented in phase 1 may have taken place in the ninth century or later and ceased when the settlement represented by phase 2, building K19 and associated layers was established. It is not possible to determine, when phase 2 was established and phase 1 ceased on the basis of the material from site 7 alone.

If we look at sites in the close vicinity of site 7, patterns emerge that may be of help placing phase 2 at site 7 into my chronological framework. At site 11, Dreggsalmenning 20 (cf p 110ff) two palisade-built fences make up the boundaries for three plots that ran perpendicular to the Veisan shore. The plots and fences are tentatively assigned to horizon 2 as supplementary sources because they were quite likely constructed contemporaneously with identical fences and plots on site 6 Bryggen. The fences/plots on site 6 are tentatively assigned to horizon 2 as supplementary sources through vertical and horizontal links to better dated sources, the fences and plots are thus not dated directly (cf p 89ff). The orientation of the pit-house corresponds well with the orientation of the plots at site 11 (cf Figure 24). It is therefore reasonable to suggest that building K19 and associated layers may be part of a settlement generally associated with the plots. When choosing the youngest peak of probability for the ^{14}C date from layer 17/31 the date of about 1020 supports an assignment of the pit-house or as-

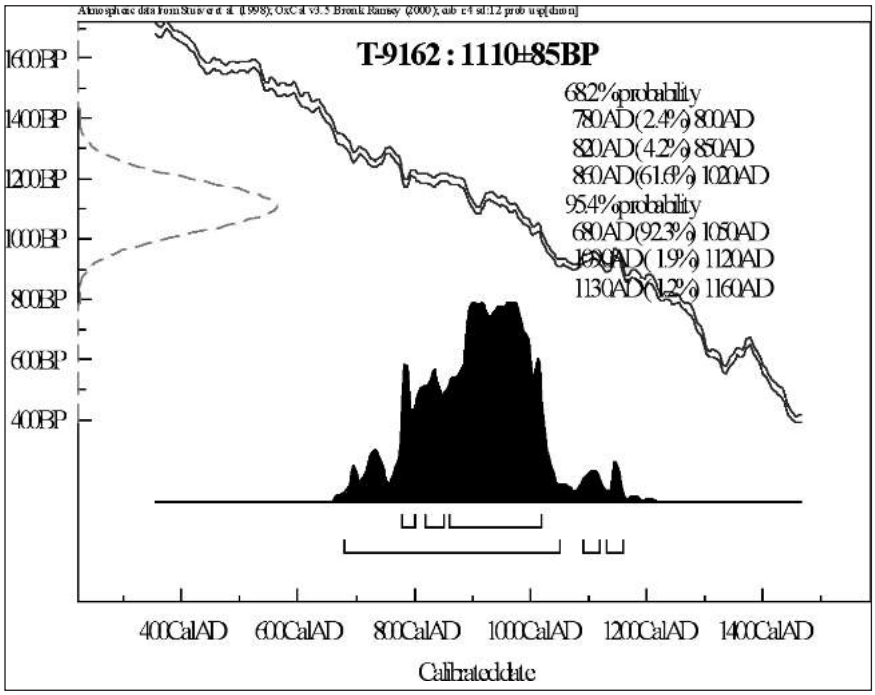

Figure 11. *^{14}C sample from layer 17/31 site 7, Øvre Dreggsalmenningen*

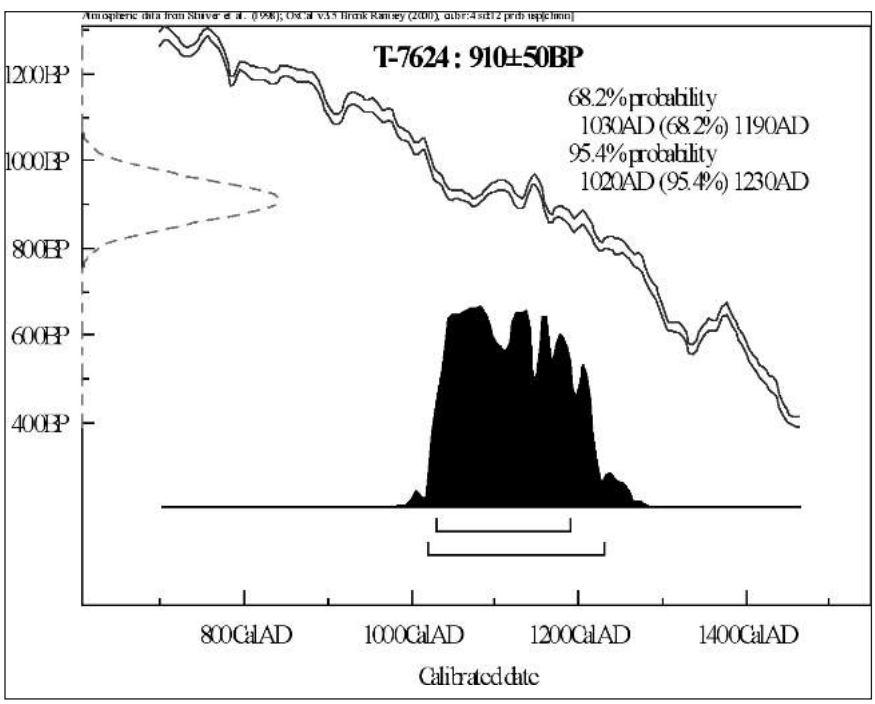

Figure 12. *^{14}C sample from phase 9/10 site 8, Dreggsalmenningen 14-16*

sociated activities to horizon 2. And the ^{14}C date in fact indirectly supports that the regulation of the palisade-bounded plots should be associated with horizon 2 rather than with younger horizons. Based on the corresponding orientation of the pit-house and plots on site 11 and the youngest peak of probability for the ^{14}C sample, I assign the pit-house in phase 2 to horizon 2.

It is not possible to date fire-layer 17/31 itself, the fire may in theory have occurred immediately after the construction of the building or it may have occurred much later, so the date

of the end of the settlement phase is difficult to determine more precisely. Still it is hardly likely that a pit-house was in use for more than 25-50 years, which is the estimated 'life time' for timber structure (cf p 60ff). I therefore assume that the building was not in use in the period covered by horizon 3.

To summarise, it is proposed that activity in the area around site 7, represented by layer 20, began in the ninth century or later and ceased before the first decades of the eleventh century, when the settlement represented by building K19 and associated layers was established. The settlement traces probably do not date to the time span covered by horizon 3. On this background, layer 20 is assigned to **horizon 1** and the settlement associated with building K19 and layers 18, 17/31 and 30 is assigned to **horizon 2**. As the material is dated by ^{14}C and *centaurea cyanus* and the date for the transition from phase 1 to phase 2 cannot be securely established the material will be used as a **supplementary** source. The material cannot elucidate activities on the site after horizon 2.

General land use, artefact categories

Dunlop interprets layer 19/20, in profiles 1 and 8 as a cultivation layer (Dunlop 1989e) (cf the broad definition of cultivation p 67). Pollen in the layer indicates meadow vegetation on the sampling location, pollen of barley (*Hordeum*) and wheat (*Triticum*) indicate cultivation or settlement in the vicinity and the presence of *centaurea cyanus* (Hjelle 1989) may signify household waste from a settlement in the vicinity. I will discuss the location of this settlement on a broader basis in Chapter 8. Layer 19/20 K19 in profile 2 was interpreted as a pit-house. Layers 17/31, and 18, and 30 in profiles 1, 2, 3, 5 and 8 were associated with the construction. The layers are assigned to horizon 2 **category I** (17/31) and **category II** (18, 30).

Site 8, Dreggsalmenningen 14-16 (1986 and 1990) BRM 237

The excavation at site 8, Dreggsalmenningen 14-16 located about 15m, to the west of site 7 was carried out in two steps. In 1986 about 550 m^2 were excavated, in 1990 about 80 m^2, however, for the oldest phases undisturbed culture-layers only made up about 40 m^2. The natural subsoil was reached at the excavation.[25]

Table 3. *Site 7, Øvre Dreggsalmenningen (1989) BRM 298*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Profile/ Strata	Pottery	Other	Dendro	TL	^{14}C			
1, 2, 3, 5, 8/ K19, Layers 17/31, 18		Coherence with horizon 2 material from the Bryggen site?			Highest probability between 820 and 1020.	Begins 2nd quarter of eleventh century Ends?	2	S
1, 8/ Layer 20		Presence of pollen from *centaurea cyanus*				Between the ninth century and the 2nd quarter of eleventh century	1	S

Data based on (Dunlop 1989e; Hjelle 1989)

Dates

Dates from site 8 are based upon pottery, ^{14}C and TL. Golembnik suggests that phase 10/1986 and phase 9/1990 (hereafter 10/9) ended in the middle of the twelfth century. The younger phase 9/8 ends in the second half of the twelfth century and phase 8/7 lasts until the end of the twelfth century. A date for the beginning of the oldest settlement phase has not been proposed. I will attempt to date the beginning of activity at the site.

Phase 10/9 was destroyed by a fire and dated by ^{14}C and TL. The ^{14}C date (1030 - 1190) was taken from charcoal that probably derived from building material (Figure 12), and the TL date (1190 +/-40) derived from material burnt during the fire. The ^{14}C date should thus provide a wide date for the beginning of the phase and construction of the building. The TL date provides a wide dating frame for the time of the fire.[26]

Table 4. *Site 8, Dreggsalmenningen 14-16 (1986/90) BRM 237*

	Archaeological evidence		Natural Scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
1986/9 1990/8	Andenne, Paffrath, Soft Fired Black ware, North French				1160-1270	Begins c 1150 ends c 1170	5	B
1986/10 1990/9				1190 +/-40	1030-1190	Begins c 1100 ends c 1150	4	S
The natural subsoil						Prior to phase1986/10 1990/9	1-3	S

Data based on Golembnik 1986 and 1990

When using the oldest possible date provided the TL date indicates that the fire occurred after c 1150. A date of the end of phase 10/9 to sometime around 'after 1150' is not in conflict with the date suggested by Golembnik for the end of the succeeding phase 9/8 to the second half of the twelfth century. The ^{14}C date gives too wide a frame to elucidate the question og the date of the beginning of phase 10/9.

Before the building in phase 10/9 was constructed, the building site was developed through 'larger preparation of a new building space along the sandy embankment' (which originally made up the site) (Golembnik in prep-a, 8). When the building from phase 10/9 burnt down, 'serious earthwork' was carried out all over the site and new buildings were not built on the same place as in the preceding phase (Golembnik in prep-a, 9). The changed layout of the site from the oldest phase to the second phase on the site may perhaps indicate that phase 10/9 lasted quite some time before it was struck by fire. If we estimate that a timber building lasted 25-50 years if not struck by fire, a maximum period of about 50 years for phase 10/9 could be expected (cf p 60ff). Theoretically, the phase may have started as early as about 1100. With a suggested c 1100-c 1150 date, phase 10/9 does not fit directly into the scheme of horizons proposed here. According to the principles outlined above (p 68ff) The structures in the phase should be used as a source for **horizon 4** and since the phase is not well-dated it is used as a **supplementary** source only. The artefacts found in phase 10/9 are all found in fire-layer 20 and are too young to be used as sources for activity in horizon 4. The artefact material should, therefore, represent **horizon 5** material as **Category II** finds. Since the fire must have occurred between 1150 and the second half of the twelfth century, the artefact material can be used as a **basic** source. The lack of culture-layers or structures associated with **horizons 3-1** is used as a **supplementary** source for these horizons.

The date for the end of phase 9/8 to 'the second half of the twelfth century' also seems plausible according to the ceramic evidence. This gives an approximate dating frame for phase 9/8 to 'after c 1150-c 1170'. This dating frame places phase 9/8 in **horizon 5,** as the phase is well-dated it can be used as a **basic** source.

The botanical investigations in connection with the excavation (Hjelle undated) confirm Golembnik's interpretation that the space along the sandy embankment was prepared thoroughly before construction work began in phase 10/9.

Major features, artefact categories

No culture-layers or structures could be associated with horizons 1-3. In horizon 4/phase 10/9, site 8 was located between 2.5 and 4.5 masl on the western and northern sides of the morainic tongue east of the Veisan inlet. Preparation and levelling of new building land preceded the construction of buildings at the site. Building 158, located on the western and lowest part of the site, was the only preserved structure in horizon 4 (Golembnik in prep-a). On the northern side of the site, where the terrain sloped towards the north as well as towards Veisan, layer 684 was recorded and interpreted as the remains of occasional rather than of continuous activity (Golembnik in prep-b). On the remaining part of the site, the levelling connected with later phases

disturbed the phase 10/9 surface. Three layers have been assigned to the phase, finds from these layers are attributed to horizon 5 as **category II** finds.

In the following horizon 5/phase 9/8, the remains of two buildings, K166, K145/152/157, and a pavement K144/154 were found in the western part of the site. In the middle of the site, four posts, K136, were uncovered. An interpretation of the function of these posts has not been suggested (Golembnik in prep-a), but their presence shows that the area was built-up in this phase. In the eastern part of the site the remains of a building K102/104 were uncovered. The northern part of the site was open (Golembnik in prep-b). Twenty-three layers have been associated with horizon 5/phase 9/8, eleven layers are assigned to artefact **category I** and twelve are assigned to **category II**.

Site 9, Sandbrugaten 5 (1967) BRM 3

The excavation at site 9, Sandbrugaten 5, located about 11 m to the southwest of site 8, was an open area investigation, which covered about 480 m^2. Structures from the site have been presented in an archive report by excavation supervisor Arne J Larsen (Larsen 1967a). In the report, a brief stratigraphical analysis of the structures is presented. No absolute chronology has been suggested for the structures and the artefacts have not been analysed.

Larsen assumed that structures built directly on or dug into the sterile moraine, were the oldest on the site. These structures comprise building 8 and well 1, four buildings: 10, 11, 12 and 13 -, a 16 m long palisade-built fence (Figure 13), and two 2 m x 2 m stone-filled caissons (caissons 1 and 2) (Larsen 1967a, 42). In a previous study I have argued that building 8 and well 1, buildings 10 and 11 and the fence could be contemporary with the oldest structures in phase 10/9 (1986/90) at the neighbouring site 8, Dreggsalmenningen 14-16. I have further argued that buildings 12 and 13 and caissons 1 and 2, could be contemporary with the structures in period 2 at site 6, Bryggen (Hansen 1994b, 44ff). The orientation of the structures and geographical closeness of site 8 and site 9, as well as typological similarities between the structures on site 6 and site 9 were my main arguments.

Dates

I will now evaluate the proposed dates for the lowest/oldest structures at site 9, through the artefact material. The fence that divides the site into two parts, building 8 and well 1 north of the fence, buildings 10, 11, 12, 13, as well as caissons 1 and 2 south of the fence are discussed. Furthermore, building 14 and a number of scattered structures north of the fence are discussed.[27] Figure 14 shows the stratigraphical relationship between structures at the site. As primarily vertical relations between the structures have been documented and only a few horizontal connections can be made between the vertical groups, it is impossible to determine which structures are contemporary based on the structures alone. To get a better understanding of the relative and absolute dating, I have studied pottery and shoes from contexts connected to the structures. An account of the collection and dating of the artefact assemblages is given in Appendix 3. The dates can only be taken as *post quem* dates since we do not know if the finds derive from *in situ* or redeposited layers.

Structures north of the fence

Building 8 and well 1 are the oldest 'regular' buildings/structures, north of the fence. However, underneath the building and in the area north of the fence other structures, were also found, which have not been accounted for in the report. Building 8 and well 1 are contemporary. Pottery in artefact assemblage 2, deposited under building 8, gave a *post quem* date of building 8 and the well to after c 1225. Pottery from assemblage 1 deposited in the well supports this date. In conclusion, building 8 and well 1 are probably later than the twelfth century. Underneath building 8 an assemblage of stones was located (N -11/plan 1 and plan 2), a second assemblage of stones was documented closer to the fence (N -11/plan 1), interpreted by Larsen as a possible pavement (diary p 15). As the two stone assemblages were both embedded in/on top of the natural subsoil, they may have been contemporary and perhaps also part of the same pavement. The pavements can only be dated relatively: the first stone assemblage is older than building 8 and the second assemblage may be contemporary with the first. In conclusion, the area in the northern part of the

Figure 13. *The palisade-built fence at site 9, Sandbrugaten 5. (Negative 67 and 70, photo Arne J Larsen)*

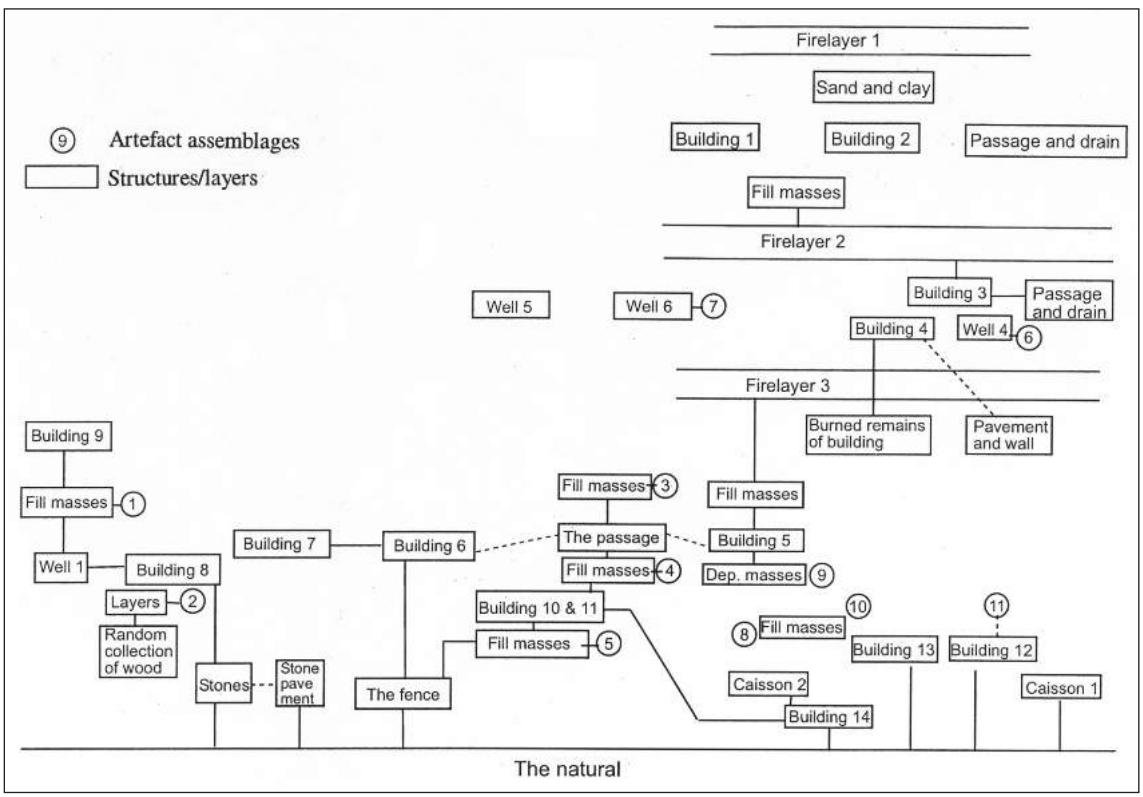

Figure 14. *The stratigraphical relationship between artefact assemblages described in Appendix 3 and major structures and layers at site 9, Sandbrugaten 5*

site appears to have been open without buildings until the thirteenth century, but sections of the area may have been paved at an earlier stage.

The observation that the northern part of the site contained no buildings until after c 1225 is used as a **supplementary** source for horizons **1**

to **5.** Prior to the erection of the building and well, sections of the area north of the fence seem to have been paved. As this data cannot be dated except relatively to sometime before the thirteenth century, I choose to omit the material from the study.

The fence and structures south of the fence

The remains of buildings 10 and 11 and the fence lie stratigraphically below buildings 6 and 7. The orientation of the fence differed from that of buildings 10 and 11. As the fence and the buildings did not overlap, the stratigraphical relationship between the structures is not immediately clear. According to the report, the fence was dug into the sterile moraine and buildings 10 and 11 were partly built upon fill-masses. Some of these masses accumulated on to the fence (N -11/plan 4, mrk 46-49), showing that the fence was constructed before the buildings. Still the fence may have been in use when the buildings were constructed and used, judging by the level of the structures. Some of the masses under buildings 10 and 11 contained artefacts (assemblage 5) dated broadly to somewhere between 1050-1200 on the basis of shoe material. This gives a broad *post quem* date for the erection of buildings 10 and 11. When the fence and buildings 10 and 11 went out of use the constructions were succeeded by buildings 7 and 8 and a passage. Artefacts in assemblage 4 may stem from the layers between buildings 10 and 11 and the passage. The youngest type of pottery in this assemblage dates the passage to 'after 1215/25', showing that the fence and buildings 10 and 11 may have been in use into the thirteenth century.

To sum up, the fence was built before buildings 10 and 11, which were constructed 'after c 1050-1200'. Both the fence and the two buildings may have been in use into the thirteenth century. There is no clear evidence for when the fence was constructed more precisely, except that this happened before buildings 10 and 11 were built. The difference in the orientation of the buildings in relation to the fence may suggest that the fence and the buildings were built according to different plans, indicating that some time passed by between the construction of the fence and the construction of the buildings. I will return to this below.

No artefact assemblages could be found with clear information about their stratigraphical relation to buildings 12, 13, 14 and caissons 1 and 2. Assemblage 10 must, however, have been deposited close to buildings 13, 14 or caisson 2, as these were the only constructions in grid L -11/plan 8. We do not know if the assemblage was contemporary with the structures, since the fill-masses that contained the artefacts may have been deposited after the constructions went out of use. The dating of the material suggests that the assemblage can be dated broadly to between c 1050-1200, indicating that caisson 2 and buildings 13 and 14 were still in use or went out of use during this period.

Assemblage 11 is tentatively dated to after the end of the twelfth century, after c 1200, and was found within the walls of building 12. As the context is somewhat unclear, it is difficult to determine whether the finds belong to layers representing the use of the building or if they stem from fill-masses spread over the area at a later stage. No artefacts could be associated with caisson 1. The artefacts show that buildings 13 and 14 and caisson 2 probably were in use or went out of use between c 1050 and c 1200. Assemblage 11 indicates that building 12 was in use or went out of use after c 1200. The stratigraphical relation between building 14 and caisson 2 shows at least two phases of structures; where building 14 belonged to the older phase and caisson 2 to the younger. When the caisson was built, a slightly new orientation of structures on the site was introduced compared with buildings 10 and 11 as well as building 14. I therefore suggest that buildings 10 and 11 belonged to the 'older phase' along with building 14. As mentioned earlier, buildings 10 and 11 were built upon fill-masses, some of which accumulated onto the fence, and the orientation of the fence differed from that of the buildings. On the basis of all these observations, I suggest that several 'phases' of structures were present in this part of the site: phase (1) the fence, (2) the fill-masses that accumulated onto the fence, (3) buildings 14, 10 and 11, and finally (4) caisson 2.

The two 2 m x 2 m stone-filled caissons at site 9 are identical to those assigned as basic sources for both horizon 4 and horizon 5 at site 6 and for horizon 5 at sites 27 and 28 (cf pages 93ff,

132ff and 135ff). Considering this background, the caissons from site 9 may also have been constructed during **horizon 4** or **horizon 5** and are assigned tentatively to these horizons. Buildings 12-14 were most likely built as cellar buildings, a construction type known perhaps from as early as phase 1.1.2 (horizon 3) and definitely from period 2 (horizon 5) at site 6 (cf p 89ff). As building 14 must be older than caisson 2, assigned to horizons 4 and 5, building 14 may be tentatively assigned to horizon 3. This is not in conflict with a typological date for the building based on material from site 6. Since buildings 10 and 11 have the same orientation as building 14, they are also assigned as sources for **horizon 3**. Buildings 10 and 11 may have been in use into the thirteenth century (cf above), so they are also assigned to **horizons 4** and **5.** Buildings 12 and 13 fit into a building pattern associated with the 2 m x 2 m stone-filled caissons on site 6 in horizons 4 and 5 consequently I assign these buildings to **horizons 4** and **5** along with caissons 1 and 2. The suggested dates are not in conflict with the wide dates provided by the artefact material. Since the dates for the Sandbrugaten 5 structures are indirect, the structures are used as **supplementary** sources.

If we accept as a premise that buildings 10 and 11 were built contemporaneously with building 14 representing horizon 3, and that masses accumulated onto the fence before buildings 10 and 11 were built, then we may assume that some time passed by between the construction of the fence and the construction of buildings 10 and 11. This assumption is also supported by the differing orientation of the buildings versus the fence. Assuming that buildings 10 and 11 represent horizons 3-5 on the site, it is reasonable to let the fence represent horizon 2. The culture-layers which accumulated onto the fence would then belong to horizons 2 or 3. I will elaborate on these presuppositions.

As we have seen, the 16 m long palisade-built fence was constructed before buildings 10 and 11. The fence had the same orientation as the structure in the oldest phase (10/9) at site 8 - the phase was dated tentatively to 1100-1150 and assigned to horizon 4 as a supplementary source (cf p 98ff). In the succeeding phase at site 8 (phase 9/8, horizon 5), the orientation of the structures had changed somewhat and no longer corresponds with the fence at Sandbrugaten 5. This indicates that the fence was constructed in correspondence with the oldest building at Dreggsalmenningen 14-16 or more likely *vice versa* - the building was built in correspondence with the fence. This implies that the fence was older than or at least contemporaneous with the oldest structures at site 8. Typological as well as other factors may point in the same direction: at site 6 palisade-built fences identical to the fence at site 9 were assigned to horizon 2 as a supplementary source (cf p 92ff) the typological coherence between the structures may in itself be an indication that the structures were contemporary. The fences at site 6 were covered by deposits when they went out of use in the following phase at the site, they were thus no more visible. The fact that identical techniques and material were used when building the fences at the two sites, strongly suggest that the fence at site 9 were constructed while the fences at site 6 were still visible in the landscape. Also the fact that the orientation of the fence at site 9 corresponds with the orientation of the transverse fences at site 6, in the sense that it runs parallel to the Vågen shoreline, points towards a connection between the fences. This, seen together with (1) the orientation of structures assigned to horizon 5 at site 8, and (2) the change in the orientation of the structures at site 9, from when the fence was built to when buildings 10 and 11 were constructed, implies that the fence at site 9 may belong to a plan that predates the earliest buildings on the Vågen shoreline. - This plan was not quite satisfactory when the area south of the fence was built on. Although none of these arguments are conclusive, when seen together, they point towards an association of the fence at Sandbrugaten 5 with the fences at site 6 in horizon 2. The fence at site 9 is therefore assigned to **horizon 2.** As the dating material is indirect and to a large extent depends on the indirect date of the fence at site 6, the fence at site 9 is used as a **supplementary** source. As mentioned above this fence may still have been in use until the beginning of the thirteenth century and is also assigned as a source for **horizons 3-5**, again as a **supplementary** source.[28] The culture-layers that accumulated on to the fence are assigned to **horizons 2** or **3** as I cannot determine with any

certainty which horizon it may belong to, thus it serves as a **general background** source only. The lack of structures or culture-layers that could be associated with **horizon 1**, south of the fence is used as a **supplementary** source for horizon 1.

Major features

To sum up, the material from the Sandbrugaten 5 site has been dated through vertical and horizontal links to better dated sources from sites in the vicinity, and can only serve as a supplementary source. No structures or culture-layers could be associated with horizon 1. The palisade fence that ran across the site has been associated with horizon 2. This fence may also have been present in horizons 3-5. Waste-layers deposited on to the fence have been associated with horizons 2 or 3. Buildings 10, 11 and 14 were associated with horizon 3. Building 14 is assumed to have gone out of use in horizon 4 while buildings 10 and 11 may still have been in use. In horizons 4 and 5, two 2 m x 2 m caissons demarcate the presence of two passages. Buildings 12 and 13 are also assigned to horizons 4 and 5. North of the fence a pavement dated to before the first quarter of the thirteenth century was located, however, it is not used further as a source in my study.

Artefact categories

The layers at site 9, Sandbrugaten 5 generally cannot be included as a source since they were not documented in any detail. Only artefacts from assemblage 5 may come from a closed context that can be broadly dated to the period un-

Table 5. *Site 9, Sandbrugaten 5 (1967) BRM 3*

	Archaeological evidence		Dating	Horizon	Source type (B/S/G)
Structures	Pottery	Other			
No buildings before building 8 and well 1	Grimston Decorated ware, Ardenburg, Scarborough II		Building 8 and well 1 constructed after c 1225	1-5	S
Caissons 1 and 2		Shoe material. Same type of structures as structures at sites 6, 28 and 27	Begins 'after 1110' Ends after 1170	4-5	S
Buildings 12-13		Shoe material. Same type of building pattern as at site 6, horizons 4 and 5	Begins 'after 1110' Ends after 1170	4-5	S
Buildings 10 and 11		Shoe material. Stratigraphical relationship to 'the fence'. Same orientation as building 14	Contemporary with building 14(?) Ends after 1170 (after c 1225?)	3-5	S
Culture-layers deposited onto the fence		Stratigraphical relationship to the fence.		2 or 3	S
The fence		Older than buildings 10 and 11. Differs in orientation from buildings 10 and 11. Same orientation as phase 10/9 structures at site 8. Typological and functional coherence with horizon 2 material at site 6	Built in 2nd quarter of eleventh century. Ends in thirteenth century	2-5	S
Culture-layers under buildings 10 and 11		Stratigraphical relationship to buildings 10 and 11 shoe material		3	S
Building 14		Stratigraphical relationship to caisson 2. Same type of structures as structures at site 6.		3	S
'The pavement'		Stratigraphically below building 8, on top of the natural subsoil	Older than building 8	?	G
The natural subsoil south of the fence			Prior to horizon 2	1	S

Data based on Larsen 1967, original documentation and Hansen 1994b

der investigation. The artefacts from assemblage 5 are assigned to **horizon 3** as supplementary sources of **category II** as they are associated with culture-layers immediately below buildings 10 and 11 and we do not know how they were deposited.

Site 10, Sandbrugaten 3 (1953)

Location of the site

A note dated 22/5 1953, probably written by Cato Enger gives us information about observations made at *'Hoteltomten v/Sandbrugaten',* ('the hotel site by Sandbrugaten') (Enger 1953). The observations were most likely made at *Hotel Slottsgården,* today's Dreggen Hotel, which opened in 1956 at Sandbrugaten 3 (cf Hartvedt 1994, 239). This site is situated to the south of site 9.

Dates

Three or four 2 m x 2 m log-built caissons had been picked up from the middle of the site. When Enger arrived one was still *in situ*. The caissons had been preserved at a height of about 1 m and they had been placed directly on the natural sand. From the description it is likely that the caissons are of the same type as those documented at several other sites by the waterfront in the twelfth century. In well-dated contexts all these caissons are assigned to horizon 4 or 5 (site 6, site 28, and site 27). On typological grounds the caissons from site 10 may be assigned to **horizons 4** and **5** as a **supplementary** source and the material cannot elucidate activity on the site prior to horizons 4 or 5.

Location of the structures

The *in situ* caisson was placed in the south-eastern corner of the site, about 8.3 m from the neighbouring house and 8 m from the edge of the pavement in the eastern street (Enger 1953). The 'eastern street' must be Brynjulfgaten, which no longer exists. When placing the caisson according to the description in the note and by the help of an old map showing the area before street regulations in the late 1940s and early 1950s (Bergen 1913-30), it forms a line with the 2 m x 2 m stone-filled caisson 1 at site 9, making the localisation of the caisson at site 10 very convincing. The remaining three or four caissons at site 10 were located in 'the middle of the site'. If the caissons follow the caisson-pattern seen on site 6, they should be placed at a distance of about 6 m from one another along a line running at 90 degrees to the waterfront or along the +/- 0 masl contour line of the natural topography. The 2 m x 2 m caisson at site 9, Sandbrugaten 5 and the *in situ* caisson from site 10 make up the beginning of a row of caissons that ran at 90 degrees to the waterfront.

The +/- 0 contour, which has been reconstructed through data from surrounding sites, runs through the middle of site 10. The location of the remaining caissons at Sandbrugaten 3 is reconstructed using this information.

Site 11, Dreggsalmenningen 20 (1967) BRM 4

The excavation at site 11, Dreggsalmenningen 20, was an open area investigation covering about 740 m^2. Excavation supervisor Arne J Larsen's archive report gives a brief account of the relative chronology for some of the structures (Larsen 1967b). Earlier I have attempted to sort out and date the oldest structures at the site (Hansen 1994b). To go deeper into the question of dating, I have now studied selected artefact assemblages (Appendix 4).

Dates

Structures uncovered down to the moraine are presumed to be the oldest on the site. These structures comprise the remains of two palisade-

Table 6. *Site 10, Sandbrugaten 3 (1953)*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
'Phase'	Pottery	Other	Dendro	TL	^{14}C			
4 or 5 log built caissons		Typological coherence with caissons at site 6, site 28 and site 27, horizon 5					5	S
Plot boundary		Relies on plot identification on site 9					4-5	S

Figure 15. *A palisade-built fence at site 11, Dreggsalmenningen 20. (Negative 154, photo Arne J Larsen)*

built fences (fence 1 and fence 2) (Figure 15), four buildings (4, 8, 9, and 10), and three drains (3-5). All these structures were stratigraphically superposed by fire-layers. The fire-layer above buildings 8, 9 and 10 and fence 1 was described as 'fire-layer 2' (Larsen 1967b). The fire-layers above building 4 and fence 2 were not in direct contact with fire-layer 2. Still, Larsen assumed that these fire-layers also represented fire 2 (Larsen 1967b, 9, 14). Building 12 also belongs to the lowermost documented structures and may likewise have been destroyed in a fire. Figure 16 shows how the structures are related to fire-layer 2 and to the fire which scorched building 12. The two fences divide the site into three plots,[29] 11/A, 11/B and 11/C: buildings 8 and 12 belong to plot 11/C, buildings 4, 9 and 10 and drain 3 and 4 to plot 11/B. No structures have been identified on plot 11/A. Drain 5 replaced fence 2 before fire 2 occurred.

Seven artefact assemblages from the site have been discussed in Appendix 4. These assemblages indicate the date of fire-layer 2, the fire-layer above building 12 and the structures under the fire-layers by providing wide *post quem* dates. The context of the assemblages is generally not well-documented, the dates are thus rather uncertain. First, I will discuss whether the fire-layer above building 12 may be identical with fire 2. Then the construction dates for the structures below fire 2 are discussed.

Fire-layer 2

Pottery in assemblages 1, 3 and 4 date fire-layer 2 to after c 1215/25. Assemblage 7 gives a similar date to after c 1215/25 for the deposition of fill-masses after building 12 burnt down. The fire, which scorched building 12, may also be dated to the years after c 1215/25 and may therefore in all likelyhood be identical with fire 2. Fence 1, fence 2 and buildings 4, 8, 9, 10 and 12 were probably all destroyed in or replaced by other structures after fire 2, dated to after 1215/25. This gives an *ante quem* date for the structures below the fire-layer.

Structures below fire-layer 2

As the stratigraphical relationship and the relative chronology between the structures under fire-layer 2 is not clear, the construction of every single structure should ideally be dated directly. This is not possible on the basis of the documented evidence and other approaches must be sought.

As seen in Figure 16 there were two levels of structures below fire-layer 2: on plot 11/C, buildings 8 and 12 were the only structures below fire 2, they make up one level of structures. On plot 11/B, building 9 was represented by two floor levels, building 10 was torn down and filled-in before fire 2, and drain 3 replaced drain 4. Building 4 existed through the whole of level 1 and 2. Fence 2 between plots 11/B and 11/A was replaced by drain 5 before fire 2. The crucial point here is whether any of the remains from levels 1 and 2 are earlier than c 1170.

Only one artefact assemblage can be related to the structures below fire 2: assemblage 2 that was uncovered under one of the floor levels of building 9 or building 10 on plot B. Whether it belongs to level 1 or 2, is impossible to ascertain. A comb of type D4[30] was found in the assemblage, dating building 9 or building 10 broadly to after 1170/71. This date corresponds with the after c 1215/25 date of fire 2. The comb cannot date other structures on the site because all three plots on the site were not necessarily built upon simultaneously. We therefore have to consider the construction date for the other structures through other means.

It is not clear whether building 4 actually burnt in fire 2, but it predates the fire. Both

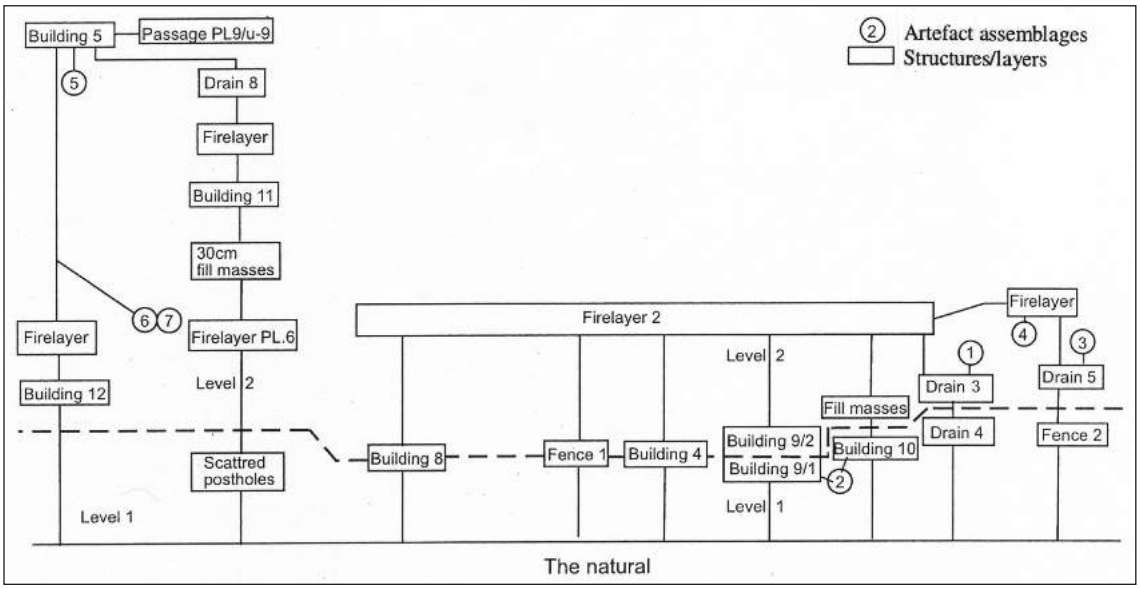

Figure 16. *The stratigraphical relationship between artefact assemblages described in Appendix 4 and the oldest structures and layers at site 11, Dreggsalmenningen 20*

buildings 8 and 12 were scorched by fire and were thus probably still standing when fire 2 occurred 'after c 1215/25'. If the three buildings theoretically had been in use for 25 to 50 years when they were destroyed or went out of use 'after 1215/1225', they may perhaps have been constructed as early as within the period covered by horizon 5 (cf p 60ff). Building 12 was most likely a cellar building. Parallels to the building are found at site 6 probably through the whole of the twelfth century (cf p 92ff and Herteig 1992). The construction date for building 12 therefore cannot be narrowed through analogous material. Neither buildings 4 and 8 can be dated more closely through the available material, nor can the construction date for drains 3 and 4 be determined. Drain 3, however, replaced drain 4, indicating that the drainage function dates back some time. It is not unlikely that drain 3 or
4 were contemporary with building 9 or building 10 that lay adjacent to the drain. Based on the available information, I tentatively suggest that buildings 4, 8, 12 and perhaps also building 9 or building 10 were constructed as early as during the period covered by horizon 5. The drainage function represented by drain 3 or 4 may also go back into horizon 5. The material is, however, poorly dated and is therefore used as a **supplementary** source only for **horizon 5.** No buildings could be associated with the period before horizon 5. This information is used as a **supplementary** source for **horizons 1-4**.

The stratigraphical relationship between fence 1 and 2 and the buildings on site 11 is not documented. At site 9, the palisade-built fence was tentatively assigned to horizon 2. There were no buildings north of the fence until 'after c 1225' and south of the fence culture-layers and buildings were tentatively assigned to horizons 3-5 (cf p 101ff). In other words the buildings at site 9 were probably not constructed as early as the fence on this site. The situation at site 11 may be similar, and we cannot immediately assume that the fences at site 11 were built contemporaneously with the documented buildings on this site. It is thus impossible to determine the date for the construction of the fences through material at site 11 alone, and I shall attempt to link the fences to material from sites in the vicinity.

Taking into consideration that the fences at site 11, site 9 and site 6 were identical as for building techniques and the choice of materials, it seems reasonable to suggest that the fences at the three sites were built contemporaneously. As already pointed out, in the discussion of the palisade-built fence at site 9, the circumstance that the fences at site 6 were covered by deposits in the following

phase furthermore provides a strong argument that the palisade-built fences beyond site 6 were built while the fences at site 6 were still visible in the landscape. On this basis it seems likely that the fences at site 11 were built at the same time as the fences at site 6. As seen above the fences at site 6 are not directly dated, but have been associated with horizon 2 as a supplementary source only. In the discussion of the date of the pit house at site 7, it was argued that the pit-house might well be part of a settlement generally associated with the palisade-bounded plots. This was based on the correspondence between the orientation of the building and the plots at site 11. Based on a ^{14}C date the construction- or activity-phase of the pit-house could not be later than about 1020. Thus, if the association between the pit-house and the fences at site 11 is real, which does not seem far fetched, the date of the pit-house or associated activities supports the idea that the fences at site 11 (and the fences at sites 6 and 9 as well) should be assigned to horizon 2. Accordingly the fences at site 11 are assigned to horizon 2.

Table 7. *Site 11, Dreggsalmenningen 20 (1969) BRM 4*

	Archaeological evidence		Natural Scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
Buildings 4, 8, 12, 9 or 10		Stratigraphical relation to fire-layer 2. Maximum life expectancy of buildings.					5	S
No buildings or culture-layers prior to horizon 5							1-4	S
Fences 1 and 2		Typological resemblance to structures at site 6 and site 9. Same orientation as building at site 7					2-5	S
The natural subsoil						Prior to horizon 2	1	S

Data based on documentation material from the site

Since the fences were still in use when the first buildings were constructed on site 11 they may also represent **horizons 3-5** here. The dating of the material is founded on horizontal links to supplementary sources and is accordingly used as a **supplementary** source only. The lack of material dating back to **horizon 1** is used as a **supplementary** source for this horizon.

Major features, artefact categories

No structures or culture-layers could be associated with horizon 1. In horizon 2, site 11 was located by the Veisan shoreline. Two fences that demarcate plots (11/A, 11/B, and 11/C) were the only structures that could tentatively be assigned to this horizon. In horizons 3 and 4 the situations seem to be the same as in horizon 2. Horizon 5 is represented by structures found on two of the plots: building 4, a drain and possibly also buildings 9 or 10 on plot 11/B and buildings 8 and 12 on plot 11/C. No artefacts have been associated with the structures in horizons 2-5. Activities at the site prior to horizon 2 cannot be elucidated through the material.

Site 12, Dreggsalmenningen 10-12 (1972) BRM 42

Site 12 at Dreggsalmenningen 10-12 covered about 735 m^2, but was only partially investigated archaeologically. A report with a brief description of the archaeological observations but without a stratigraphical analysis or dating is available (Reimers 1972b).

A 2 m x 2 m stone-filled caisson was identified at this site. Based upon the dates of similar caissons at sites 6, 27 and 28, the caisson at site 12 serves as a source for **horizons 4** and **5.** The dating evidence is, however, not satisfactory and the material must be used as a **supplementary** source. No artefacts have been assigned to the caisson. The documented material cannot elucidate activities on the site prior to horizon 4.

Site 13, Dreggsalmenningen 10-16 (1986) BRM 242

The excavation at site 13, Dreggsalmenningen 10-16, was a trench survey with 8 profiles, the natural subsoil was reached during the investiga-

Table 8. *Site 12, Dreggsalmenningen 10-12 (1972) BRM 42*

	Archaeological Evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Profile/Plan	Pottery	Other	Dendro	TL	^{14}C			
KK / I-4, I-5		Typological coherence with site 6				'After 1110' and 1170/71	4-5	S

Data based on Reimers 1972

tion. A report with a stratigraphical analysis and dates is available (Dunlop 1986b).

Dates

In all the phases settlement was destroyed through total or partial fires (Dunlop 1986b). The excavation supervisor Dunlop suggested that the oldest phase 8 was destroyed in the 1198 town fire and the later phases in fires dated to c 1230, 1248 and 1332. The absolute dates were based upon pottery (Dunlop 1986b). However, the ceramic evidence is very sparse: no sherds were found in phase 8. Three sherds of Paffrath derived from phase 7, indicating that tha phase belonged to the twelfth century (Lüdtke 1989, 32). In phases 6 and 5 there were no datable sherds and in phase 4 a sherd of Yorkshire ware suggested a date to after c 1190 (cf Reed 1990, 30).

According to my dating criteria for basic sources, the evidence is not precise enough to give an absolute date of the material. Is it possible to give a tentative date in other ways? The caisson at site 12, assigned to horizons 4 and 5, was situated less than 10 m from the trench. Because of the spatial closeness it might be likely that there was activity at the neighbouring site 13 as well. However as sites 12 and 13 are most likely located on two different plots (as we shall see later on in Chapter 9), the spatial closeness cannot be used as a means of dating. Consequently, the material is omitted from the study.

Site 14, Dreggsalmenningen (1979) BRM 83

The excavation at site 14, Dreggsalmenningen (1979), located between site 13 and site 6, was an open area investigation covering about 288 m^2. The natural subsoil was probably not reached during excavation. A report with a stratigraphical analysis and dating suggestions based on pottery is available (Long and Marstrander 1980).

Two 4 m x 4 m stone-filled caissons represent the oldest documented phase. It is not possible to date the beginning of phase 1 through the material from the site alone. Excavation supervisors Clifford Long and Lyder Marstrander interpreted the two caissons as part of a pier built in connection with the construction of the Church of St Mary (Long and Marstrander 1980, 23). I find this interpretation plausible since the pier is oriented directly towards the church. The standing Church of St Mary was probably under construction from c 1140 (Lidén and Magerøy 1990, 99). It may, however, have had a predecessor, erected as early as c 1100 (Lidén 1993, 74 and cf site 23). Theoretically, the pier may thus have been built as early as c 1100. Elsewhere I have discussed the date of the oldest phases at site 14 (Hansen 1998) and made the case that the oldest phase, phase 1, ended at the same time as the end of period 2 (1170/71) at site 6. This gives a tentative dating frame for phase 1 to between c 1100 and 1170/71, placing phase 1 in horizons 4 and 5. As the beginning of the oldest phase at site 14 cannot be dated through artefacts or natural scientific methods, I will see it in a broader context by evaluating the general patterns in the material (cf p 185ff). The date of the beginning of phase 1 to c 1100 can only be considered as tentative and as a **supplementary** source for **horizon 4**. The date for the end of the phase is more reliable as it is based on the stratigraphical relationship to site 6. Phase 1 may thus be used as a **basic** source for **horizon 5.**

Major features, artefact categories

The material can not elucidate activities on the site prior to horizon 4. In horizons 4 and 5, site 14 was located in open water along the north side of the Vågen Bay, between -2.5 and -3.0 masl (Long and Marstrander 1980, 22). The constructions in phase 1 consist of two 4 m x 4 m stone-filled caissons, interpreted as a pier built for carrying heavy loads (Long and Marstrander 1980, 23). Only one layer has been assigned to phase 1: Layer A 336. This layer, however, has also been assigned to phase 2. Because of the uncertainties

Table 9. *Site 14, Dreggsalmenningen (1979) BRM 83*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
1		Stratigraphical relation to site 6 and relation to St Mary's				between c 1100 and 1170/71	4-5	S, B

Data based on Long 1980 and Hansen 1994b

it will not be included here. Consequently, no artefacts have been assigned to horizon 5.

Site 15, Stallen, Svensgården (1980/82) BRM 90

The excavation at site 15, Stallen, about 50 m east of site 6 was an open area investigation, which covered about 75 m^2 (Top Ark). The natural subsoil was reached during excavation. A report with a stratigraphical analysis and dates based upon pottery and TL is available (Dunlop 1984a).

Dates

The dating of the oldest phase, phase 10, is indirect since the dating material from this phase is not satisfactory. The overlying phases 9 and 8 are dated directly, however. According to Dunlop phase 8 was terminated by a fire, well-dated by pottery, dendrochronology and TL. The fire was identified as the town fire of 1248. The beginning of phase 8 is dated to after c 1220 through Grimston wares deposited in the beginning of the phase. Thus Dunlop assumed that the fire that terminated phase 9 should be dated to c 1220/30. A date for the preceding fire-layer, which marked the end of phase 10, was obtained by 'counting fire layers' and thus assuming that this fire-layer was identical with the known town fire of 1198 (Dunlop 1984a, 34-37; Dunlop and Sigurdsson 1995; Dunlop 1998).

Grimston wares have been produced in different types, with different dates. The 'Grimston Decorated ware',[31] which is characterised by the application of plastic decoration, often of an anthropomorphic character, is traditionally dated to after c 1220 (Jennings and Rogerson 1994). 'Grimston ware', which is plain without elaborate plastic ornaments, is dated from the end of the twelfth century (Reed 1990, 31).

The Grimston ware present in phase 8 at the Stallen site has no plastic ornaments, even though some of the sherds are so large that we would expect ornaments to be visible if they had been present on the vessel. The sherds may therefore be classified as the plain 'Grimston ware' dating from the end of the twelfth century, rather than to the 'Grimston Decorated ware'. Consequently, the beginning of phase 8 and the fire that ended phase 9 may be dated to as early as the beginning of the thirteenth century or the end of the twelfth century. This date suggests that the fire is identical with the town fire of 1198, which according to the written records, reduced all of this part of the town into ashes (Helle 1998, 25-28). Such an interpretation is not in conflict with the ceramic assemblage in phase 9. However, the ceramic material from phase 10 can cannot give a close date for the beginning or end of this phase. Consequently it is tempting yet again to 'count fire-layers' and assume that the fire, which ended the phase, is identical to the major town fire of 1170/71, which preceded the town fire of 1198. At site 6, situated at a distance of about 60-70 m both these fires are also present in the material (cf p 82ff). The phase may, according to this interpretation, be used as a source for **horizon 5.** However, as the material cannot be dated directly it must be considered a **supplementary** source.

An intense deposition of layers initiated phase 10. The contents of these layers indicate that there was settlement in the area by site 15 prior to phase 10 as well (Dunlop 1984a, 46-47). It is not possible to date this activity except as older than horizon 5, the material is therefore used as a **general background** source for horizons 1-4.

Major features, artefact categories

Forty-five layers were associated with the initiating stage of horizon 5/phase 10. The finds from these layers are assigned to horizon 5 as **category II** finds. After the deposition of layers, two or three foundation substructures were built. The phase ended in a fire, which left a thick fire-layer

over most of the site (Dunlop 1984a, 29, 46). Finds from the fire-layer are assigned to **category I**. The structures were interpreted as foundations for buildings or for 'a walkway behind the quay front' (Dunlop 1984a, 46). I find it plausible to assume that part of the site was occupied by a passage. In later phases a passage was situated here and there was continuity from the oldest to the later phases at the site in terms of the orientation and location of structures. It also seemed that the site was located within one plot during all phases (Dunlop 1984a, 54). If the structures in phase 10 were built according to the same building pattern as the following phases 9-1, a passage would generally occupy the westernmost half of the site, the easternmost part would be occupied by a building or a transverse gangway between buildings. The structures at site 15 are therefore reconstructed as a passage and as an undefined built-up area in phase 10.

Site 16, Bryggeparken (1989) BRM 287

At site 16, Bryggeparken, three small areas were investigated: ('plan' 1, 2, 3) covering respectively 7 m^2, 9 m^2, and 18 m^2 (Hansen 1994b, 58) and 13 profiles in trenches. A report with stratigraphical analysis and dates is available (Dunlop 1989a). The phases are dated by pottery. None of the strata can be dated to earlier than c 1170. The natural subsoil was reached in 'plan 1' and profile 12 only. The oldest culture-layers in profile 12 were dated to the fifteenth century (Dunlop 1989a, 20), however, since they were located on top of a bedrock outcrop, they are not used as a source here (cf p 57ff). The oldest layers above the moraine in plan 1 were 'not older than the late twelfth century' dated on the basis of the presence of Low Countries Highly Decorated ware (Dunlop 1989a). Since the lowest culture-layers from plan 1 can be dated, this information is used as a **supplementary** source for **horizons 1 -5**.

Site 17, Nikolaikirkealmenningen (1985) BRM 202

The excavation at site 17, Nikolaikirkealmenningen, was an open area investigation that covered about 10 m^2. A report with a stratigraphical analysis and dates based upon pottery is available (Dunlop 1985a). The natural subsoil was reached and the oldest culture-layers above bedrock could be dated to the middle of the thirteenth cen-

Table 10. *Site 15, Stallen, Svensgården (1981) BRM 90*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
8	Andenne, Cooking pot, Dev Stamford, 'Grimston ware', London area, Miniatures, North French, Paffrath, Pingsdorf, Soft fired Black ware,					Begins after 1198 Ends 1248		
9	Andenne, Cooking pot, London area, Paffrath, Pingsdorf, Soft fired Black ware,					Begins after 1170/71 Ends 1198		
10	Andenne, Cooking pot, Paffrath, Pingsdorf, Shelly ware, Soft fired Black ware,	Relative chronology -'counting' fire-layers and the closeness to site 6				Begins c 1120s Ends 1170/71	5	S
Prior to phase 10		Activity indicated through the presence of redeposited culture-layers in phase 10					1-4?	G

Data based on Dunlop 1984

tury. This material was located in a cleft in the bedrock. It is unlikely that older culture-layers had systematically been cleaned out of the cleft (Dunlop 1985a, 8). Therefore, it seems reliable that this area was not occupied until the middle of the thirteenth century. This information can be used as a **supplementary** source for **horizons 1-5**.

Site 18, Koren-Wibergs Plass (1980) BRM 143

The excavation at site 18, Koren-Wibergs Plass was a trench registration, comprising two profiles. A brief report is available (Myrvoll 1980). The natural subsoil was reached in profile 1. The oldest culture-layer was a fire-layer (5) without any finds. In layer 4 above layer 5 a sherd of Red-slipped Proto-stoneware was found. According to the prevailing date for this ware (Lüdtke 1989, 32), layer 4 must be later than c 1240, indicating that layer 5 may be from the first half of the thirteenth century. The material indicates that the area was not occupied in horizons 1-5. Since the lowermost material can be dated, it can be used as a **supplementary** source for **horizons 1-5**.

Site 19, Wesenbergsmauet (1989) BRM 297

The investigation at site 19, Wesenbergsmauet, was a trench excavation where 13 profiles were studied. A report with a stratigraphical analysis and dates for the later deposits is available (Dunlop 1989d). The oldest layers above the natural subsoil may be dated to the end of the twelfth or the beginning of the thirteenth century on the basis of ceramic material (Dunlop 1989d). The material can therefore be used as a **supplementary** source for **horizons 1-5**.

Site 20, Øvregaten 39 (1981) BRM 94

The excavation at site 20, Øvregaten 39 was an open area investigation, which covered about 70 m^2. The natural subsoil was reached during the excavation. A report with dating suggestions based on pottery is available (Dunlop 1982).

Dates

In his excavation report Dunlop gives no dating suggestions for the oldest phases in the material, phases 9 and 10. Phases 7, 8 and 9 were destroyed in fires. Through the presence of Scarborough II pottery in an occupation/destruction layer in phase 7, Dunlop suggests a date of 1225-1230 for the fire, which destroyed phase 7. On this basis he also suggests that the preceding fire which destroyed phase 8, may be identical to the recorded town fire of 1198. The fire that destroyed phase 9 and marked the beginning of phase 8, has later been interpreted as the recorded town fire in 1170/71 (Dunlop 1998, 135). After the original report was carried out, two ^{14}C dates from phase 10 and layer 147 have been obtained (Dunlop 1982, Dating appendix). Together with the ceramic material they provide new evidence for the absolute chronology of phases 9 and 10, and also help to date of phase 8.

The pottery in phase 8 consists of Paffrath, London Shelly and Developed Stamford wares. These types are found from the middle of the twelfth century (Lüdtke 1989, 32; Reed 1990, 28; Blackmore and Vince 1994, 33). Judged by the pottery alone phase 8 may thus be dated to anywhere in the last half of the twelfth century or later. A ^{14}C date from layer 147, which may be associated with phase 8, implies a somewhat earlier date for the beginning of the phase 8 than the proposed 1170/71 date.

First I will take a closer look at the relationship between layer 147 and phase 8. Layer 147 was one of several layers under fire-layer 149 that were not assigned to a phase in the original report (NV Profile B) (Dunlop 1982, 27). From a stratigraphical point of view, however, the layers under layer 149 should belong to phases 8 and 9, as fire-layer 149 was believed to represent the fire that destroyed phase 8. As mentioned above, phase 9 was also destroyed in a fire, leaving a fire-layer on most of the site. The exact same stratigraphical situation as on the site in general could be found in NV profile B: fire-layer 149, which ended phase 8, was preceded by a fire-layer, fire-layer 40. Considering the similarity between the stratigraphical situations in NV profile B and the main part of the site, it is likely that fire-layer 40 represents the fire that destroyed phase 9. This layer should thus be assigned to phase 9. Layer 147 must belong to the beginning of or to the occupational stage of phase 8, as the layer lies directly on top of fire-layer 40 (NV profile B). The remains of an unnumbered structure between layer 147 and fire-layer 149 indicate that the activities which caused the deposition of layer 147,

were not the last to take place in phase 8. A ^{14}C date from layer 147 should thus provide a date for the earlier part of phase 8 rather than for the destruction of the phase.

The ^{14}C sample from layer 147 was taken from bog myrtle (*Myrica gale*), a shrub which should not be seriously inflicted by 'the old wood' problem. With the highest probability the sample may stem from sometime before 1160 (Figure 17), implying that activity in phase 8 may have started before c 1160. The presence of Developed Stamford ware in layer 70 dates activity in the

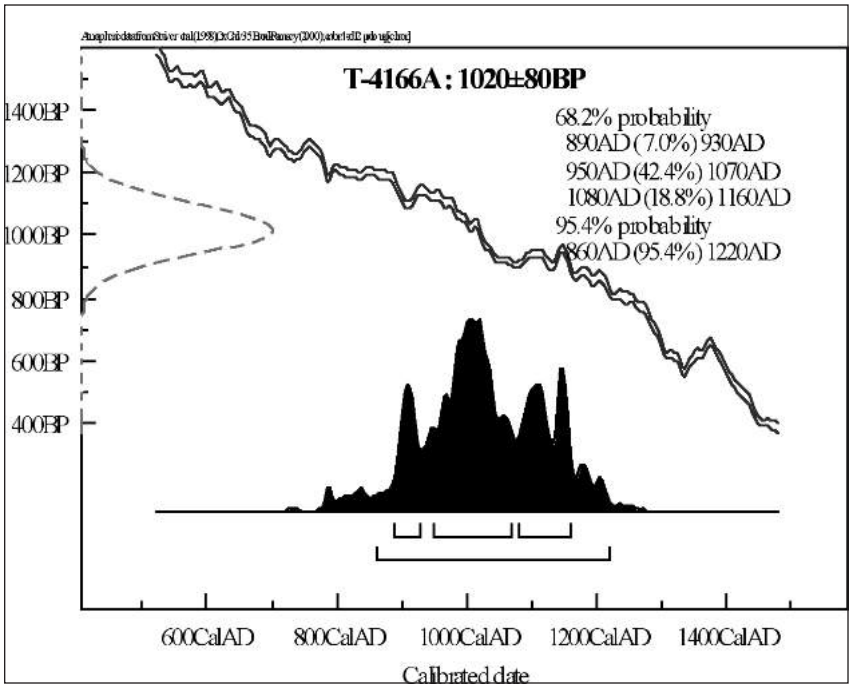

Figure 17. *^{14}C date from layer 147 in phase 8 site 20, Øvregaten 39*

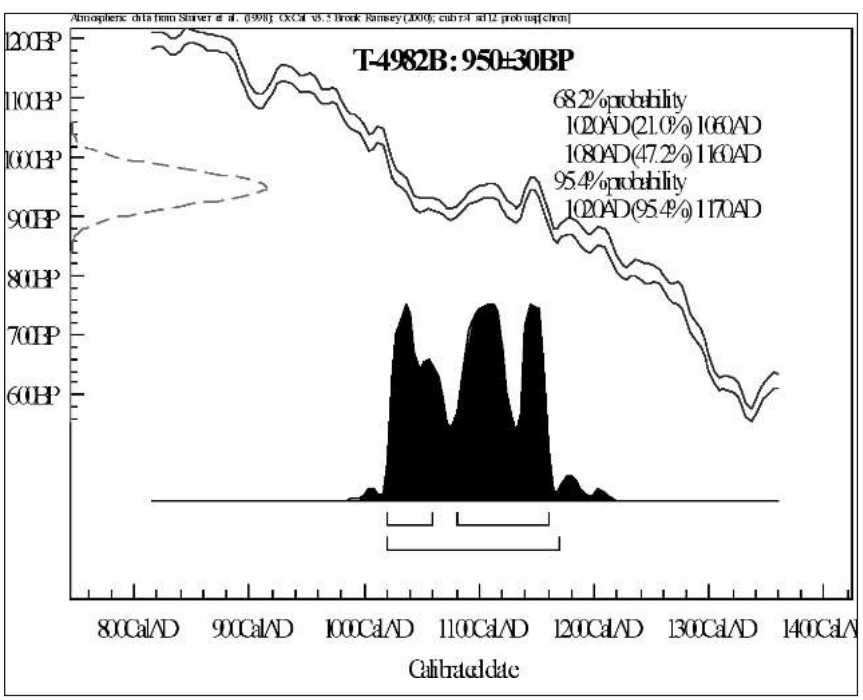

Figure 18. *^{14}C date from layer 24 in phase 10 Øvregaten 39 BRM 94*

beginning of the phase to after c 1150 (cf Reed 1990, 28). Based on the ceramic evidence and the peak of probability for the ^{14}C sample I suggest 1150-1160 as a tentative date of the beginning of phase 8. According to this tentative date, Dunlop's dating of the beginning of phase 8 may be somewhat late. It is in fact more likely that the 1170/71 fire marks the end of phase 8 rather than the beginning. There is no way of documenting this possibility on solid evidence. However, with the present evidence available I find it to be the best suggestion.[32]

If phase 8 began between c 1150 and 1160 this gives a tentative date for the end of phase 9. The scarce ceramic material from phase 9 does not contradict a date of between 1150 and 1160 for the end of phase 9; one sherd of Paffrath ware dates activity in the phase widely to the twelfth century or later (Lüdtke 1989, 32). This leads to the question of when phase 9 began. Data from phase 9 itself does not provide evidence for a date for the beginning of the phase. I will therefore go on to phase 10 and examine the evidence from this phase.

A ^{14}C sample from layer 24 in the construction stage of phase 10 was dated. The sample was taken from twigs so it is probably not inflicted with the 'old wood problem'. Several peaks of probability stand out within two main areas (Figure 18). Since phase 8 most likely started sometime between 1150 and 1160 and phase 9 came in-between, the date of the beginning of phase 10 must be pushed backwards. In fact, the peak between 1080 and 1160 fits well in the sequence of phases and the ^{14}C date gives an indication that the beginning of phase 10 may be placed within this time frame.

The dates provided, however tentative, give a frame of dates for phases 9 and 10. As phase 9 ended in a fire, it is impossible to say how long the phase lasted. The structures in phase 10, however, led a 'natural death', implying that the structures lasted for perhaps 25-50 years before phase 9 was initiated (cf p 60ff). If we add 25-50 years to the ^{14}C date from phase 10, this gives an estimated date for the end of phase 10/beginning of phase 9 to between 1105/1130-1185/1210; the oldest alternative obviously being the most realistic. This is, of course, too wide a date but the available material does not support a firmer date.

In conclusion, as phase 10 with some probability may have started between 1080-1160, preferably in the first part of this time span, the material may perhaps represent **horizon 3**. Phase 8 is dated tentatively to c 1150/1160-c 1170. This makes phase 8 a candidate for **horizon 5,** and phase 9 may therefore be a candidate for **horizon 4**. As the material cannot be dated more precisely the source must be considered as **supplementary**. No structures or culture-layers could be associated with **horizons 1-2** and this information is used as a **supplementary** source for these horizons.

Major features, artefact categories

As we have seen no structures or culture-layers could be associated with horizons 1-2. In horizon 3/phase 10, site 20 was situated between 6.5 and 8.5 masl. Only one construction was assigned to the phase: K21, interpreted as part of a floor. When K21 was constructed, layers 83 and 94 were probably deposited to support and drain K21 (Dunlop 1982, 29-30). These layers are assigned to horizon 3, **category II**. Layer 24 a compact excrement layer was found on top of K21 and was associated with this structure (Dunlop 1982, 29-30). Layer 24 must therefore be assigned to horizon 3, **category I**.

In horizon 4/phase 9 K20 was constructed and was K20 interpreted as part of a building. Layer 63 was laid over the building site before K20 was constructed, while layer 72 was deposited during phase 9. Phase 9 ended in a fire, represented by fire-layers 105 and 40 (Dunlop 1982). As the fire struck between c 1150 and 1160, the material from the occupation and fire-layers is not representative for horizon 4-activity. Accordingly the artefacts from these layers are assigned to horizon 5, **category II** (cf p 68ff).

The structure in horizon 5/phase 8, K23/K25/K26, is interpreted as a building with an internal fireplace, K24, and a drain, K27. Outside the building, K26 is interpreted as a courtyard (Dunlop 1982, 42-43). Eleven layers are associated with the construction and development of the phase 8 structures. These layers are assigned to horizon 5, **category II**. Six layers are associated with activities during the phase, and are assigned to **category I**.

Table 11. *Site 20, Øvregaten 39 (1981) BRM 94*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
8	Dev Stamford				Between 950 and 1160	Begins between 1150 and 1160, ends 1170.	5	S
9						Begins? Ends between 1150 and 1160	4	S
10		'Natural death'			1080-1160?	Begins between 1080 and 1160? Ends 25 to 50 years later	3	S
The natural subsoil						Prior to phase 10	1-2	S

Data based on (Dunlop 1982)

Site 21, Klingesmauet (1989) BRM 299

Dates

During the investigation at site 21, Klingesmauet, 16 profiles were documented. A report with stratigraphical analysis and dates is available (Dunlop 1989f). Botanical material has also been studied in connection with the investigation (Hjelle 1989). The natural subsoil was reached during the excavation. The oldest archaeological deposits, K 39 and associated layers, have been dated by pottery, and ^{14}C. The second phase of structures[33] is dated to 'possibly the later twelfth century'. The first phase of structures was destroyed in a fire, dated to 'sometime in the twelfth century (Dunlop 1989f, 23, 28).

The dating material is very sparse and it is hardly possible to get closer to a firmer date based on the available material. If the second 'phase' was built in the late twelfth century it is, however, tempting to suggest that the first phase may represent the period up to about 1170 and thus may be used as a source in the present study. The ceramic evidence (in phase 1), the youngest type of pottery found being Normandy Gritty ware dating to about 1160/70 in London (Vince 1991, Figure 7), is not in conflict with such a suggestion. Figure 19 shows that the ^{14}C-sample from the first phase may date to sometime between 890 and 1160, with three peaks of probability. We do not know the original context of the wood, but it probably originates from the settlement represented by the first phase and thus dates activities during the phase rather than activities at the end of the phase. The sample was taken from charcoal, and may be inflicted by the 'old wood problem'; we may therefore have to add some years to the maximum age provided. Accordingly the ^{14}C date from the oldest phase is not in conflict with the proposed date.

Based on the available material, and bearing the uncertainties in mind, I suggest that K39 and associated layers can be used as a source for **horizon 5.** As the material is not well-dated it can be used as a **supplementary** source only. The horizon 5 - phase of structures only covered the NE part of the trench (profiles 12-16). The lack of culture-layers or structures associated with **horizons 1-4** in this part of the trench is used as a **supplementary** source for these horizons. In the SW part of the trench (profiles 1-11) the oldest phase of strata above the natural subsoil was dated to 'possibly the late twelfth century' on the basis of pottery (Dunlop 1989f, 28). The lack of culture-layers or structures associated with **horizons 1-5** in the SW part of the trench is used as a **supplementary** source for these horizons.

Major features, artefact categories

Site 21, Klingesmauet was located on the morainic terrace at the foot of Fløjfjellet. The surface of the natural subsoil sloped from a maximum elevation of 14.5 masl down to 7.5 masl towards the SW. No structures or culture-layers were assigned to horizons 1-4. In horizon 5 structures and culture-layers were only recorded in profiles 12 to 16 between the 10 and 15 masl contours. K39, a stone foundation for a building was documented, Dunlop suggests that K39 was a stable or byre. The botanical investigations support this interpretation, but cannot establish whether dung from the building was from cow or horse (Hjelle 1989, 7). According to the location of layers associated with K39, the foundation must have been part of the NE wall of the building

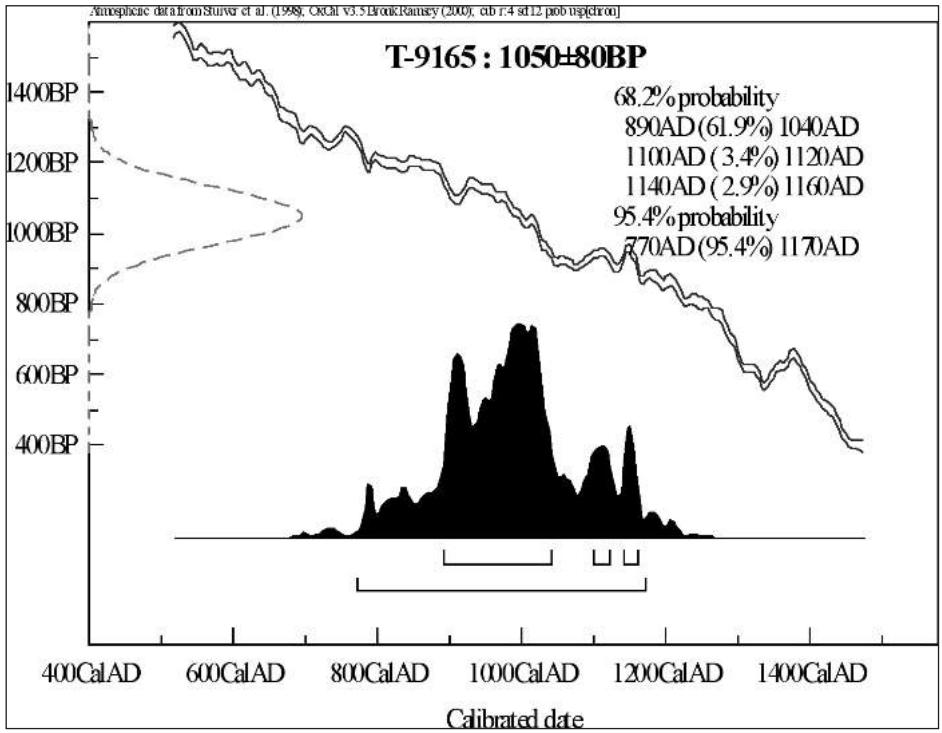

Figure 19. *^{14}C date from layer 65 in the oldest 'phase' at site 21, Klingesmauet*

(Dunlop 1989f, 21, 28). Eight layers were associated with the use of K39, all have been assigned to **category I, horizon 5.**

Site 22, Kroken 3 (1984) BRM 223

The excavation at site 22, Kroken 3, was an open area investigation, which covered 10-20 m^2. The natural subsoil was reached, a report with stratigraphical analysis and dates based upon ceramic material is available and botanical material has also been investigated (Dunlop 1987; Hjelle 1987).

Dates

The oldest phases, phases 17 and 16 are not dated, and the following phases 15 to 13 are only given a wide date to the later twelfth century. Dunlop suggests that phase 12 ended in 1170/71 and phase 11 in 1198 (Dunlop 1987, 52).

The date suggested for the end of phase 12 seems too old when looking at the ceramic material from the older phases. A sherd of York type ware in phase 14 implies activities by the end of the twelfth century, that is after c 1170, according to recent dates for York type wares (Reed 1990, 30; Armstrong, Tomlinson, and Evans 1991). In phase 15 a sherd of North French type

Table 12. *Site 21, Klingesmauet (1990) BRM 299*

	Archaeological evidence		Natural scientific dates			Date	Horizon	Source type (B/S/G)
Profiles	Pottery	Other	Dendro	TL	^{14}C			
Oldest structures and culture-layers in profiles 12-16	Normandy Gritty ware				Between 890 and 1160 + 'own age' of the sample	Broad date before c 1170	5	S
The natural subsoil in profiles 12-16						Prior to horizon 5	1-4	S
The natural subsoil in profiles 1-11						Prior to 'possibly the late twelfth century'	1-5	S

Data based on (Dunlop 1989f)

ware was found. This ware could have reached Bergen shortly before c 1170 as sherds are found in small amounts at the Bryggen site as early as in period 2, which ended about 1170 (Hansen 1998, 114). Consequently, it is likely that phase 15, rather that phase 12 ended about 1170.

In phase 15 only one construction was recorded: a pit K38, perhaps dug to extract sand from the underlying morainic deposits (Dunlop 1987, 54). The phase may have lasted for a short while only, only a few days or weeks perhaps. Also phase 16, represented by a ditch or a drain, signifies a limited use of the area (Dunlop 1987, 54).

There is really no way of dating the end and beginning of phase 16, as there is no dating material. The same applies to phase 17, which had no constructions. Pollen samples (showing an open landscape where grazing took place and grain perhaps was grown) were taken from the phase, but have not been dated (Hjelle 1987, 66). The material from phases 16 and 17 is difficult to fit into the system of horizons and to characterise in terms of land use, whether it was rural or urban cannot be determined. The material is therefore omitted as a source in the present study. As phase 15 probably can be dated to the years around 1170, it belongs to **horizon 5.** I consider the dating satisfactory so the material can be used as a **basic** source. The material prior to phase 15 is omitted from the study.

Major features, artefact categories

As we have seen, only one construction can be contributed to horizon 5/phase 15: this was K38, presumably a sandpit. Two fill-layers were connected to K38. The artefacts from these layers must have been transported to the pit, and should belong to horizon 5, **category II** finds.

Site 23, The Church of St Mary (Mariakirken)

Site 23, The Church of St Mary, has been investigated through building archaeology and style studies. The church is mentioned for the first time in written sources in connection with events that took place in 1183 (Ss 1920, 83; Holtsmark 1961, 117). Masonry studies of the standing building suggest that the twelfth century church was under construction in the period between 1140 and 1180 (Lidén and Magerøy 1990, 99). This makes the church a **basic** source for **horizon 5.** The twelfth century church was a basilica with a square chancel and two towers to the west (Lidén and Magerøy 1980, 11-20). Most of the twelfth century building is incorporated in the standing church.

Underneath the towers of the standing church a foundation wall was recorded in 1974. The wall was primary to the towers and had an orientation different from that of the standing church. According to Lidén and Magerøy, the wall may indicate that another building was erected - or at least initiated here before the construction of the standing Church of St Mary. Soapstone chips in the core of the wall indicate that the building was a church. Furthermore, reused soapstone ashlars in the standing St Mary's may originate from an older building phase (Lidén and Magerøy 1980, 12). Based on these facts and on the fact that the standing St Mary's was initiated later than a number of other churches in the town area, Lidén has suggested that the standing Church of St Mary may have had a predecessor dating back to about 1100 (Lidén 1993, 74). Pilasters in the north aisle are of an older style than those found elsewhere in the church. Lidén suggests that the pilasters may have been formed by the lodge that worked at the Christchurch Cathedral at Holmen (Lidén and Magerøy 1990, 173).

Table 13. *Site 22, Kroken 3 (1985) BRM 223*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
'Phase'	Pottery	Other	Dendro	TL	^{14}C			
14	York Type ware					Ends after the 1180s		
15	North French type ware					Begins and ends about 1170	5	B
16						No data		Omitted

Data based on (Dunlop 1987)

At site 6, which covers the southern part of St Mary's churchyard at different times in history, remains were found that were interpreted tentatively as a passage and assigned to period 2. Three levels of burials were recorded underneath the woodwork (Herteig 1991, 74). If the woodwork was part of the passage between building-rows 3 and 4 at the Bryggen site in period 2, as indicated by Herteig, it may have been constructed as early as the 1120s, which is the date for the beginning of period 2 (Hansen 1998). Stratigraphical evidence shows that the northernmost part of the passage, between rows 3 and 4, was among the first structures to be built on this plot in period 2; a post from building 45 in the preceding period was thus reused in the passage foundations (referred to as 'post 72' in Herteig 1991, 94-97) when the northern part of the passage was repaired. Thus it is likely that this part of the passage may be dated to the early part of period 2, in the 1120s.

If the woodwork is part of the passage, the three levels of burials underneath the woodwork must be older than the early part of period 2. This would suggest that we are dealing with burials predating the standing St Mary's.[34] One way of gathering further insight into this matter is to study the orientation of the graves found respectively under and over the woodwork, as a church and burials associated with the church usually have the same orientation (eg Eide 1974).

The skeletons documented in squares R02 and R03, at site 6, are all of the same orientation as the standing St Mary's, and there is no difference in the orientation of the skeletons on either side of the woodwork. This is a strong indication that the burials are contemporary with the standing Church of St Mary and not with an older church. This may suggest that the woodwork was not really part of the period 2 passage. No direct stratigraphical relation could be documented between the woodwork and the period 2-passage (cf Herteig 1991, 74). Furthermore, the material from this part of the Bryggen site is difficult to interpret, as the stratigraphy/structures in the area have been penetrated by burials again and again. Therefore it is possible that the woodwork was not part of the passage between rows 3 and 4 in period 2, but rather part of a construction in the churchyard itself. The evidence from this part of the Bryggen site is too inflicted with uncertainties to be able to carry the evidence necessary to date the Church of St Mary into the eleventh century.

To conclude it is difficult to 'build' a predecessor to the standing St Mary's on the sparse evidence available. Still, the wall was there along with the ashlars and if they represent an earlier St Mary's, it is too interesting to be ignored. On this basis Lidén's suggestion that St Mary had a predecessor is followed. According to Lidén this 'early St Mary's' might date back to about 1100. The presumed church will be used as a **supplementary** source for **horizon 4**.

The extent of the churchyard towards Vågen is seen at site 6, Bryggen. The burials in squares R02 and R03 must be contemporary with the standing St Mary's and are dated to the twelfth century since they are all stratigraphically below the Church of St Lawrence, mentioned in the written sources for the first time in 1208, (Lidén and Magerøy 1980, 147 with references). The extent of the burials is taken as the delimitation of the churchyard which belonged to the standing St Mary's and it is used as a **basic** source for the extent of the churchyard in **horizon 5.** In an earlier study, the extent of the churchyard towards the west, north and east has been estimated to be 10-20 m from the church building (Hansen 1994b, 72, Figure 16), this extent is used as a **supplementary** source for **horizon 5.** The material cannot elucidate activity on the site prior to horizon 4.

Site 24, The Church of St Peter (Peterskirken)

The Church of St Peter, or rather the churchyard, is first mentioned in the written sources in connection with events in 1183 (Ss 1920, 83; Holtsmark 1961, 117). The church ruin and the churchyard were partly uncovered by Koren-Wiberg in 1920. The building and churchyard wall can be localised through his plans, maps and more recent excavations (Hansen 1994b, 77). The church, measuring 11.9 m x 24-25 m, had a rectangular nave and the chancel was of the same width as the nave. In the 'west front' a late Romanesque/early Gothic portal was documented and loose building stones in early English Gothic style were found in the vicinity. Lidén suggests that the latter may be related to a later rebuild-

ing of the church. The portal is not commented as primary or secondary to the original building (Lidén and Magerøy 1980, 171), but is somewhat too young in style to belong to a church dating to the late twelfth century. Still, Lidén suggests that St Peter's was built between c 1120 and 1180 on the basis of a total view of the sources for the twelfth century churches in Bergen (Lidén and Magerøy 1990, 11; Lidén 1993, 74). I shall to a certain extent follow his proposal, but since there are no concrete sources that tie the church safely to the period before c 1170, the church and the churchyard are used as a **supplementary** source only for **horizon 5**. The material cannot elucidate activities on the site prior to horizon 5.

Site 25, The Church of St Olav on the Hill (Olavskirken på Bakkene)

The Church of St Olav on the Hill is mentioned for the first time in the written sources in connection with events in 1181 (Ss 1920, 57; Holtsmark 1961, 82). According to *Morkinskinna* and *Heimskringla* the church was built by King Harald Gille (Gilchrist) after his victory over King Magnus the Blind in 1134-1135 (Hkr 1893-1901, III 376; Msk 400). All traces of the church were gone in the seventeenth century when Edvard Edvardsen wrote his history of Bergen. The exact location of the church is thus not known. The church may have been a timber building (Lidén and Magerøy 1980, 170).

The church may serve as a **basic** source for **horizon 5** since it was apparently under construction or in use in the years up until 1170. I have discussed the location of the church in detail in a previous study (Hansen 1994b, 81-84) and according to these results, the church is located to the area of Nedre Stølen 6. The location of the church serves as a **supplementary** source for **horizon 5.** The material cannot elucidate activity on the site prior to horizon 5.

The middle town area

Site 26, Finnegården 6a (1981) BRM 104

Dates

The excavation at site 26, Finnegården 6a, was an open area investigation, covering about 40 m^2. The natural subsoil was reached during the excavation. A report from 1982, with supplements from 1983 and 1998, with stratigraphical analysis and dates based upon pottery, TL samples and dendrochronology is available (Dunlop 1982 (1998)).

In 1991 and 1998 new dendro dates were obtained, all from timber with no signs of reuse.[35] Dating results from the dendro material have been integrated in Dunlop's dating framework for the site. Dunlop thus concludes that the oldest phase on the site, phase 12, started c 1110/20, while phase 11 started c 1130 and ended in the 1170/71 fire (Dunlop 1982 (1998)). The four dendro samples from phase 12 were dated to between 1099 and 1103. Since there were no signs of reuse on the dated timbers, the phase may actually have started earlier than proposed by Dunlop, perhaps shortly after 1103. The dated timbers from phase 11 also indicate a slightly earlier start for this phase than proposed by Dunlop; the dates to 1112 and 1118 thus indicate that phase 11 started in the 1120s rather than a decade later as suggested by Dunlop. These dating suggestions are not in conflict with the pottery dates from the site. The ceramic evidence from the site supports Dunlop's date for the end of phase 11 to 1170/71. In conclusion, a date of phase 12 to 'after 1103' - the 1120s and phase 11 to the 1120s -1170/71 seems likely, placing phase 12 in **horizon 4** and phase 11 in **horizon 5.** The material is well-dated and can be used as a **basic** source.

There are some indications that phase 12 did not represent the first settlement at or near the site. Some of the timbers in a triangular log-built and stonefilled caisson (K37) from phase 12 had various notches, apparently without any function in the finds-context. The notches suggest that some of the timbers were reused in the phase 12 context (Dunlop 1982 (1998), 43). A dendro sample from one of the reused timbers was dated in 2001 and showed that the timber had been cut shortly after 1090.[36] The timber may originally have been used in a construction built about 10 years before caisson K37 in phase 12. K37 was built 'after 1102' according to the previously dated samples. The structures from phase 12 were built on a beach deposit with traces of human activities. One of these activities must have been the construction of the phase 12

structures (Dunlop 1982 (1998), 43), but some of the activities may also predate the phase. With the presence of the reused timbers and the possible traces of activities prior to phase 12, the possibility of a settlement phase prior to phase 12 seems plausible.

The lack of *in situ* structures predating phase 12 can be explained by the site's location in the tidal zone close to the original shoreline; on stretches along the Vågen shoreline, with well-dated traces of settlement prior to horizon 4, structures did not extend all the way down to the sea, but were found some 25-30 m from the shoreline (site 6). Hence I suggest that the area in the vicinity of site 26 was occupied prior to phase 12. The dendro date from the reused timber in K37 suggests that activity dates at least to shortly after 1090, thus the pre-phase 12 material can be assigned to **horizon 3**. As the location and the date of the material are not well-founded, the material is used as a **supplementary** source. No structures or culture-layers could be associated with **horizons 1-2**, this information is used as a **supplementary** source for these horizons.

Major features, artefact categories

Before horizon 4, site 26 was located in the tidal zone between about 0 masl and about +1 masl. No structures or culture-layers could be associated with horizons 1 and 2. In horizon 3 the area in the vicinity of site 26 may have been settled. In horizon 4, two constructions (phase 12) were uncovered at the site: in the northern part K37, a triangular stone-filled caisson, and in the southern part K42, interpreted as the foundation of a quay or a building. Only three layers were recognised in phase 12, they were deposited during the phase and can be assigned to horizon 4, **category I**. Phase 11, representing horizon 5, was initiated by a partial demolition of structures from phase 12, followed by intensive layer deposition. This was intended to elevate the ground surface for building. In the northern part of the site K36 was constructed, in the southern part K41, and in between these two constructions K38 was located. The northern and southern parts of the site seem to have been built separately but contemporaneously. K38 may have formed part of a wicker hurdle. K36 and K41 are both interpreted as sub-constructions supporting open areas. Sixteen layers were assigned to phase 11, two layers are assigned to horizon 5, **category I** and 14 to **category II**.

Table 14. *Site 26, Finnegården 6a (1981) BRM 104*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
11	Andenne, Cooking pots, **Developed Stamford**, Humber, London Brown, Paffrath, Pingsdorf, Soft Fired Black ware, York,		1112 **(1118)**			1120s-1170/71	5	B
12			1099, 1100, 1102 **(1103)**			1103/1110-1120s	4	B
Prior to phase 12			**1090** (reused timber in phase 12)			'After 1090-1103/1110'	3	S
The natural subsoil						Prior to horizon 3	1-2	S

Data based on (Dunlop 1982 (1998)) and my own investigations
Dates/pottery in **bold** are the youngest in the construction/phase

Site 27, Finnegården 3a (1982) BRM 110

The excavation at site 27, Finnegården 3a, was an open area investigation that covered about 80 m^2. The site was located 18 m south of site 26. The natural subsoil was reached during the excavation. A report with stratigraphical analysis and preliminary dates based upon pottery is available (Golembnik 1993). Dendro samples have been dated after the report was finished (Golembnik 1993, Appendix III and samples taken by Reim-

ers and myself in 1997/98). My dates here are based upon the dendro samples, pottery from site 27, and dates from the nearby site 26.

Dates

The oldest phase at site 27 is phase 1 where only culture-layers and no structures were found (Golembnik 1993, 8-10). The termination of phase 1 can be dated indirectly by evidence from phase 2: a dendro sample from caisson 53, built in the beginning of phase 2, and dated to 'after 1144'. The dated log[37] showed no signs of reuse and the outer tree rings were intact, thus giving a reliable date for the beginning of phase 2. The end of phase 1 should accordingly be dated prior to c 1144. Finds of Paffrath sherds provide a wide date for activities in phase 1 to the twelfth century or later, without giving a close date for the beginning of the phase. At the nearby site 26, activities may have started 'after 1090'. Because of the closeness of the sites, it is likely that the oldest culture-layers in phase 1 at site 27 may correspond to or result from activities in the phase prior to phase 12 or in phases 12 or 11 at site 26. Phase 1 at site 27 should therefore be dated to between c 1090 and c 1144, and may represent **horizon 3 and horizon 4**. The material in phase 1 is only dated indirectly and can only be considered as a **supplementary** source. In the layers under phase 1, no waste-layers predating this phase were observed (Golembnik 1993, 8). This information is used as a **supplementary** source for **horizons 1** and **2**.

The beginning of phase 2 is dated to 'after 1144'; the beginning of the succeeding phase 3 is, however, dated by 8 dendro samples to as late as 'after 1213'. The samples were all taken from structural elements (Golembnik 1993, Appendix III), and the dates ought to be reliable. The dating frame for phase 2 is accordingly 'after 1144' to c 1213. Phase 2 is sub-divided into six stages.[38] At the beginning of the phase, three caissons supported by levelling layers were built simultaneously. These constructions and layers constitute stages 1-3 in phase 2 (Golembnik 1993, 11-18). From stage 4 the first sherds of 'Grimston ware' appear (Golembnik 1993, Table VII), according to the traditional dating this ware was not produced before the end of the twelfth century (Reed 1990, 31). Stages 4-6 may therefore represent activity at the site from the end of the twelfth or the beginning of the thirteenth century, thus it is likely that stages 1-3 represent the third quarter of the twelfth century. Stages 1-3 are used as a **basic** source for **horizon 5.**

Major features, artefact categories

Site 27 was situated below sea level between about -0.5 and -1.7 masl when the first traces of human activities were accumulated in phase 1. No structures or culture-layers could be assigned to horizons 1 and 2. In horizons 3 and 4, phase 1 layers, that layers representing detritus from construction work on the shore, were deposited perhaps as a deliberate levelling of the area. The initial levelling in phase 1 was followed by six

Table 15. *Site 27, Finnegården 3a (1982) BRM 110*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
2, stages 4-6	Andenne, Grimston, Paffrath, Pingsdorf, London Shelly, Dev Stamford, York					Begins at the end of twelfth c Ends c 1213		
2, stages 1-3	Andenne, Paffrath, Pingsdorf, London Shelly, York		**1144**			Begins after 1144 Ends in late twelfth c	5	B
1	Cooking pot, Paffrath	Closeness to the Finnegården 6a BRM 104 site				Begins after c 1090 Ends c 1144	3-4	S
The natural subsoil						Prior to phase 1	1-2	S

Data based on Golembnik 1993 and my own investigations
Dendro dates in **bold** are the youngest in the construction/phase

layers accumulated during the phase (Golembnik 1993, 9-10). Whether the layers were deposited during horizon 3 or during horizon 4 is unclear. The finds from these layers are therefore assigned as **category II** finds to **horizon 4**. In horizon 5/ phase 2, stages 1-3, three 2 m x 2 m caissons and two mooring posts were constructed supported by 25 levelling layers. Finds from the levelling layers are assigned to horizon 5 **category II**.

Site 28, Rosenkrantzgaten 4 (1978/79 and 1981) BRM 76

The excavations at site 28, Rosenkrantsgaten 4, were carried out in two campaigns, covering altogether about 450 m^2 (Lindh 1979; Ekroll 1981). Only the material from 1978/79 is relevant to my study. A report with an account of the stratigraphical relationship between the buildings is available (Lindh 1979). The level of the natural subsoil was documented during the excavation.

Dates

I have earlier analysed material from site 28 in order to date the oldest phases. Typological resemblance between the structures at site 28/phase 1, site 6, phases 2.1 and 2.2, and the structures at site 27, - and a similar number of phases at the sites, indicated that the structures from phase 1 at site 28 were contemporary with phase 2.1 at site 6 and phase 2 at site 27. However, dendro samples of the structures in phase 1 at site 28 produced dates that were somewhat older than the typological date provided by sites 6 and 27 and prevailing at that time (Hansen 1994b, 51 and Ekskurs 3). As my new evaluation of the oldest material at sites 6 and 27 (cf p 85ff and p 132ff) has provided an earlier date for these phases, the typological date of the structures at site 28 is also older and now corresponds with the dendro date of the phase. Accordingly, phase 1 at site 28 is dated as follows: phase 1 was built in two stages, a stone-layer called A marks the end of the phase (Lindh 1979, 5-9).[39] The beginning of the first stage is dated by dendrochronology to 'after 1128' and the beginning of the second stage is dated to 'after 1141'. The dendro samples were taken from structural elements and seem reliable. I assume that the constructions in phase 1 are representative for the years up until the last quarter of the twelfth century, and probably to the end of the century. The material from phase 1/stages 1 and 2 is therefore used as a **basic** source for **horizon 5**. Thus they may serve as a source for horizon 5. The documented data cannot elucidate activity on the site prior to horizon 5.

Artefact categories

In order to be able to use artefacts from phase 1 as a source for horizon 5, I have identified deposits that ought to belong to the period before 1170. The stone-layer denoted A in the report was deposited at the site when the caissons went out of use (Lindh 1979, 8) and provides a fairly reliable upper limit for artefact assemblages, which may be associated with the period when the caissons were in use. Having studied artefact assemblages associated with the caissons and located under layer A, I have dismissed all assemblages with material too young for a 'pre-1170 context, and I have sorted out the assemblages, which were found on the same level as assemblages with 'post-1170 material'. The remaining artefacts may be identified as probable horizon 5 material and they are assigned to **category II** as they have been deposited in fill-masses.

Major features, artefact categories

The material from the site cannot elucidate activities on the site prior to horizon 5. In the beginning of horizon 5 site 27 was located in the Vågen Bay at about -2.0 masl and about -1.5 masl. Phase 1 at the site was built up in two stages. The first stage comprises caissons 2 and 6, interpreted as the foundation of a pier (Lindh 1979, 7). The pier was probably built shortly 'after 1128'. After the construction of the pier, layers were deposited in the area. Later, 'after 1141' yet another set of caissons was built. One caisson is interpreted as a repair of the stage 1 pier that was in use until the end of the phase. Three other caissons are interpreted as foundations for buildings. Eight mooring posts also belong to the second stage of the phase. Artefacts, assigned to horizon 5 have been identified through their relationship to the structures. All the identified artefacts are assigned to horizon 5 as category II finds as they were deposited in fill-masses.

Table 16. *Site 28, Rosenkrantsgaten 4 (1978/79) BRM 76*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Pottery	Other	Dendro	TL	^{14}C			
1, Stages 1 and 2			1127-**1128** 1137-**1141**			Begins after 1128 Ends after 1141/ Late twelfth c?	5	B

Data based on Hansen 1994b
Dendro dates in **bold** are the youngest in the construction/phase

Site 29, Vetrlidsalmenningen 2, Kjøttbasaren (1996 and 1997) (BRM 490)

Site 29, Vetrlidsalmenningen 2, comprised a number of excavated areas, only the area called "hul 2" (about 4.5 m^2) is relevant in my connection. The oldest documented material in 'hul 2' was phase 6, as the investigation did not proceed beyond this phase and the natural subsoil was not reached. In phase 6 two timber uprights, K9 and K17, were found. They are interpreted as *in situ* poles in a 2 m x 2 m caisson of a type well-documented at many other sites (site 6, 9, 27, 28) In the following phase 7 a redeposited beam was found. This is likely to be from the phase 6 caisson. No dating material was available from phase 6, however the redeposited beam from phase 7 was dendro dated to 'after 1128/29'.[40] On the basis of the parallel material from the neighbouring site 27 Dunlop dates the start of phase 6 to c 1175 (Dunlop 1999). According to the newest dendro dates from site 27, caissons at this site were, however, dated to 'after 1144' (see above), thus making Dunlop's c 1175 date for the beginning of phase 6 somewhat late. The caissons at site 27 have parallels at site 6 and at site 28 where several caissons are dendro dated to the 1120s. A date to 'the 1120s' corresponds very well with the 'after 1128' date provided by the redeposited caisson beam at site 29. I find it highly likely that the caisson in phase 6 at site 29 should be dated to 'after 1128'. The caisson thus represents **horizon 5** at this site. Since the caisson is dated indirectly, through a redeposited timber in the following phase, the caisson is used as a **supplementary** source. There were no artefact finds in phase 6. Layers were not documented in any detail and they are omitted from this study. The material cannot elucidate activity on the site prior to horizon 5.

Site 30, Vetrlidsalmenningen (1991/92) BRM 342

The excavation at site 30, Vetrlidsalmenningen BRM 342, comprised 69 profiles in trenches and two open areas of approximately 4 m^2 ('V3') and 9 m^2 ('V5'). A report for 'V3' with a stratigraphical analysis and dates based upon pottery is available (Hansen 1992). A report for the remaining part of the investigation is in preparation and Dunlop, the excavation supervisor has kindly provided the preliminary manuscript for my disposal. It contains a stratigraphical analysis of strata and dates for stratigraphical sequences in the material are suggested, based upon pottery, ^{14}C, dendrochronology and the stratigraphical relationship to investigations in the vicinity. Botanical material was collected in connection with the investigations but no report is available. The natural subsoil was reached in several profiles and open areas.

Profiles 9-13

In profiles 9-13 (called analytic unit 30/A, cf p 65ff) constructions K26, K27, K28, K34, K41,

Table 17. *Site 29, Vetrlidsalmenningen 2, Kjøttbasaren (1996 and 1997) BRM 490 (NIKU projekt 22321)*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
'Hul 2'	Pottery	Other	Dendro	TL	^{14}C			
Phase 6		Typological coherence with the site 6 period 2.0, site 27 phase 2 and site 28 phase 1 material	Reused beam in following phase: **1128**			Begins after '1128', ends?	5	S

Dendro dates in **bold** are the youngest in the construction/phase

K42, K47, K50, K231 are interpreted as part of a pier and represent the oldest phase of activity here. The post K41 was dated through a combination of ^{14}C and dendrochronology to c 900. There was still bark on the post, indicating that it was *in situ*. The pier was later incorporated in a younger structure (K49/48), interpreted as 'some kind of wall, possibly intended to stop the spreading of dumped layers or even to keep the stream in its channel', this structure presumably burnt at the end of the twelfth century (Dunlop in prep). Judged by the location of caissons assigned to horizon 5 at sites 27, 28, and 29, the shallow bay by site 30 ought to have been almost filled out during horizon 5. It is thus likely that the pier did not function as a pier anymore during horizon 5. Until horizon 4 it may however have been standing freely in the bay. As it did not fall into disrepair, it was probably used as a pier until it was incorporated in the 'wall' structure. Consequently the pier is assigned to **horizons 1-4** as a **basic** source and the wall structure is assigned to **horizon 5** as a **basic** source. Since none of the layers associated with the structures contained artefacts and the analysis of these layers is not yet completed in the report, I have chosen not to include layers from this part of the excavation in my investigation.

Profiles 14-19 and 23
In profiles 14-19 and 23 (analytic unit 30/B) a number of fluvial layers were found above the natural subsoil. They show that a small river had its path here or in the close vicinity. Dunlop divides the earliest material into horizon VIII, phases A, B, and C and suggests c 900-1198 as a dating framework for the layers. Phase A ended in a fire dated to 1198. The fluvial layers contain a number of artefacts that can be used as a source in the present study if we are able to narrow down the dates for the three phases. Accordingly it is important to discuss which layers/phases may represent the period before c 1170 and in turn may serve as a source here. There is hardly any dating evidence, but if as a point of departure phase A ended in the 1198 fire, this provides an upper limit for the date of phases A, B and C. We can assume that the deposition of phase A took 'some time'. A ^{14}C sample[41] taken from nutshells from phase B is dated to between 1030 and 1190. This implies that the upper limit for the date of the phase B material is found before c 1190 and corresponds with the assumption that the deposition of phase A took 'some time'. The ^{14}C date also implies that the date for the deposition of phase B did not go back to the 900s, but may rather be found later 'after c 1030'. This may suggest that phases B and C are representative for our horizons 2 and/or 3 and/or 4 and/or 5. Since it is not possible to specify which of the horizons the material may actually represent, the artefacts from the layers in phase C and B will all be assigned as **category II** finds to **horizon 5** (cf p 68ff). As the dating of the material is weak, the material is used as a **supplementary** source only. The presence of the stream is assigned to horizons **1-5** as a **supplementary** source.

Profiles 26, 27, 28 and 29
In profiles 26, 27, 28 and 29 (analytic unit 30/C) constructions K96, K105, K109, K114, K115 and K124 are interpreted as a bridge over the small river and built about 1150. The material is therefore assigned to **horizon 5.** The bridge is not well-dated and can be used as a **supplementary** source only. It is neither possible to determine how long the bridge was in use, nor to determine which of the associated layers should represent horizon 5. I have chosen not to include layers from this part of the excavation in my investigation. The bridge represented the oldest phase of structures above the natural subsoil. This information is used as a **supplementary** source for **horizons 1-4**.

Profiles 36-40
Profiles 36-40 (analytic unit 30/D) show stratigraphical sequences of pits, layers and a ditch/channel dug into the natural subsoil. The sequences are referred to as A-E. A: The lowermost and oldest structures are three post holes K147-149, all stratigraphically older than 11 layers: B: 519, 522-524, 562, 564-567, 610 and 609. These layers are stratigraphically older than seven pits in sequence C: K139, K154-K158 and K192 and one ditch/channel, K142, which are stratigraphically below sequence D: the pit K167. Sequence E: fire-layer 588/619 covers pit 167. The posts in sequence A are interpreted as part of one structure, the layers in B are interpreted as land clear-

ance and cultivation layers and the pits in C and D are interpreted as sand extraction holes.

Dunlop suggests that E, the fire-layer, may be identical with the 1248 town fire, thus giving an upper date for the sequence. Two ^{14}C dates from sequence C are dated to 980-1160 AD and 1020-1180 AD. A ^{14}C date from one of the eleven layers in sequence B is dated to 1000-1160 AD. The ^{14}C samples are taken from charcoal in fill-masses from the constructions, the context is not clear and the samples may be inflicted by the 'old wood problem'. The wide dates provided may therefore be even wider. Sequence C, pit K158, contained two sherds of Andenne ware and pit K192 one sherd of unknown provenance.[42] Andenne ware is produced from the eleventh century (Reed 1990, 38) and like the ^{14}C dates, the sherds provide a wide date. The fabric of the sherd of unknown provenance is rather hard fired, oxidised and white/grey, and without glaze or paint. Because of the rather hard fired fabric the sherd should be attributed to the twelfth rather than the eleventh century. The ^{14}C dates from sequence C indicate that the structures are most likely from c 1160 or older. The structures in C may, therefore, be later than c 1100 and older than c 1160. The sequence of layers in B may also belong to the twelfth century or they may be older. The three post holes in A can only be dated relatively and are older than the structures in B. They may be contemporary with the pier in profiles 9-12 and activities associated with the pier, but this is only an educated guess. No layers have been associated with the use of the posts and the function of the structures is unclear.

In conclusion: it has not been possible to divide the single structures from sequences A to C into the system of horizons. However, the activities represented in B and C may generally be characterised as extensive land use. In **horizons 4-5** the area around profiles 36-40 was thus characterised by non-intensive land use represented by the structures in sequences B and C. The material can be used as **supplementary** sources only. Before this the posts in sequence A suggest that the area was occupied. The traces of occupation may go back into the eleventh century, representing **horizons 1-3**. Since the material from sequence A is merely dated relatively as older than the material from B-C it is used as a **general background** source. The layers included here are only the artefact-yielding layers since the report does not treat all the layers associated with the structures. Only three layers contained finds, all of which are found in sequence C. The layers may have been transported far by the river before they ended where they were found. Therefore they are assigned to **category II** and treated with the horizon 5 material (cf p 68).

V3

In V3 (analytic unit 30/E) a structure interpreted as a separation basin[43] was the oldest structure above the natural subsoil. The basin seems to have been used and cleaned up in several stages covered by phases 11 to 4. The single phases cannot be dated with any accuracy. However, a wide date of 'after c 1100' for phases 7-4, a wide date of activities in phase 3 to 'after the end of the twelfth/beginning of the thirteenth century', and a tentative date of twelfth century for phases 11- 8 (Hansen 1992), show that the basin was in use for most of the twelfth century. The material can count as a source for **horizons 4** and **5.** Phase 10, basin 1/K208/K214 may represent horizon 4 and the phase 4 basin, K146 may represent horizon 5. As the phases are not securely dated, the material will be used as a **supplementary** source. The lack of culture-layers and structures that could be assigned to **horizons 1-3** is used as a **supplementary** source for these horizons. The layers were transported by water to the site, and they do not reflect the function of the basin, rather activity in the vicinity and they are assigned to category II. Since the phases/layers cannot be dated more precisely I find it reasonable to assign the layers from phases 11-7 to horizon 4/**category II**. Layers from phases 6-4 are assigned to horizon 5/**category II**.

Site 31, Øvregaten/Finnegårdsgaten (1979 and 1980) BRM 86

The excavations at site 31, Øvregaten/Finnegårdsgaten, were carried out in 1979 and 1980, and comprised three profiles at the Kristi Krybbe School (1979) and an open area investigation of about 150 m^2 (1980). A report covers both investigations. Stratigraphical analysis is given for the material from the open area investigation and dates are based on ceramic material. The mate-

Table 18. *Site 30, Vetrlidsalmenningen (1991/92) BRM 342*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Profile: Strata	Pottery	Other	Dendro	TL	^{14}C			
Profiles 9-13: K27/K28/K41/ K42/ K47/K50/K231			C 890		Ca 890-1020	Constructed c 900 In use until end of twelfth c	1-5	B
Profiles 14-19 and 23: layers: 176/188/ 189/190/ 194, 177, 179, 181, 220-223, 238-241, 274-277, 224-232.		Stratigraphical relationship with fire-layer dated to the end of twelfth century.				Representative for the years up to c 1170	5	S
Profiles 26-29: K96/K105/K109/K114/K115/ K124		Stratigraphical relationship with fire-layer dated to the end of twelfth century					5	S
The natural subsoil in profiles 26-29						Prior to horizon 5	1-4	S
Profiles 36-40: K139, K142, K154-158, K192, and cultivation layers: 519, 522-524, 562, 564-567, 609, 610	Andenne, and a possible twelfth century sherd				980-1160 and 1020-1180	Representative for activity from c 1100 to c 1170	4-5	S
Profiles 36-40: K147/ K148/ K149		Stratigraphical relation-ship to twelfth century structures				Representative for activity before c 1100?	1-3	G
Phase 4 basin K146 and artefact-yielding layers from phases 6-4: 292, 294, 314, 316, 324, 332, 334, 335, 338, 348, 350, 356, 378, 428, 429, 456, 457, 572		Stratigraphical relationship to late twelfth/ early thirteenth century structures				Representative for activity in the middle and end of the twelfth century until c 1170	5	S
V3 and profiles 56-57: Phase 10 Basin 1: K208/K214 and artefact-yielding layers from phases 11-7: 297, 300, 331, 462, 490, 507, 612, 613, 616, 786, 791		Stratigraphical relationship to late twelfth/ early thirteenth century structures				Representative for activity in the beginning of the twelfth century	4	S
The natural subsoil in V3 and profiles 56-57:						Prior to c 1100	1-3	S

Data based on (Hansen 1992; Dunlop in prep)

rial from the profiles is only described and not dated (Christensson 1980c). The natural subsoil was reached at both excavations.

The oldest structures and culture-layers from the open area investigation were dated broadly to 1250 (Christensson 1980c, 25). Burials from the Church of St Martin were found in the profiles representing the first activity on this part of the site, and dating from the middle of the thirteenth century at the earliest, according to the date of the church (Lidén and Magerøy 1980; Hansen 1994b). The oldest activity traces were found above morainic masses and information on the lack of occupation can be used as a **supplementary** source for **horizons 1-5**.

Site 32, The Church of St Nicholas (Nikolaikirken)

The Church of St Nicholas is mentioned for the first time in written sources in connection with events in 1160 (Hkr 1893-1901, III 417), the church was also mentioned in written sources in connection with events that took place in 1181 and 1183 (Ss 1920, 54, 83). In 1895 Bendixen investigated parts of the church, thus the location of the church is known. According to

Lidén's analysis of the material, based on stylistic evidence, the church belongs to the same group of buildings as St Mary's and St Cross, and Lidén suggests that St Nicholas's may have been constructed shortly after 1130 (Lidén and Magerøy 1990, 99). This makes the church a **basic** source for **horizon 5.** According to a sixteenth century chronicle, *Bergens Fundas,* the church was founded by King Øystein Magnusson who reigned from 1103 to 1123 (Lidén and Magerøy 1990, 99). St Nicholas's may have been a basilica, a tower to the west was of the same width as the nave (Lidén and Magerøy 1983, 160). The large west tower indicates that the church had a gallery for the church patron (Lidén 1993, 79). This supports the suggested connection between the king and the foundation of the church, and the church may therefore also serve as a source for **horizon 4**, as the written source is remote in time, the church is used as a **supplementary** source for **horizon 4**.

I have earlier discussed the orientation of the church and the location of the churchyard on the background of Bendixen's publication and recent excavations (Hansen 1994b, 72-77), and base my location of the church according to this study. The extent of the churchyard is treated as a **supplementary** source for **horizon 4** and as a **basic** source for **horizon 5.** The material cannot elucidate activities on the site prior to horizon 4.

Site 33, The Church of St Columba (Steinkirken)

It is commonly assumed that *Steinkirken*, (the Stone Church), is identical with the Church of St Columba (Lidén and Magerøy 1983, 139). *Steinkirken* is mentioned for the first time in the written sources in connection with events that took place in 1181 (Ss 1920, 54; Holtsmark 1961, 82). The Church of St Columba is mentioned for the last time in medieval sources in 1427 (Lidén and Magerøy 1983, 139). The exact location of the church is not known. Based on an evaluation of the sources of the twelfth century churches in Bergen Lidén suggests that St Columba's was erected between c 1120 and 1180 (Lidén and Magerøy 1990, 11; Lidén 1993, 74), however, since there are no concrete sources that tie the church to the period before c 1170 I shall use the church as a **supplementary** source only for **horizon 5.** Elsewhere I have discussed the location of St Columba's on the basis of the available written and archaeological sources (Hansen 1994b, 84-87), in the present study the location is based upon this discussion. The church is thus tentatively located to the area around Øvregaten 15-17. The location of the church may be used as a **supplementary** source for **horizon 5.** The material cannot elucidate activity on the site prior to horizon 5.

The southern town area

Site 34, Lille Øvregaten friområde (1994) BRM 465

The excavation at site 34, Lille Øvregaten, was an open area excavation that covered 33 m^2. A report with a stratigraphical analysis and dates based upon pottery and ^{14}C is available. The oldest material, ^{14}C dated to between 795 and 410 BC, is from the late Bronze Age or early Iron Age. There is a break in activities until the oldest medieval remains above the natural subsoil appear, they were dated to the thirteenth century (Hansen 1995b). The lack of structures and culture-layers during **horizons 1-5** is used as a **supplementary** source for these horizons.

Site 35, Korskirken (1984) BRM 200

The excavation at site 35, Korskirken BRM 200, was an open area investigation, covering about 10 m^2 and located to the churchyard of St Cross (site 39). I have discussed the dating of the oldest material from this site in a previous study where I concluded that the oldest deposits (phase 1) above the natural moraine could not represent the twelfth century. The phase was dated to after c 1250 through the presence of Saintonge ware and Proto Stoneware (Hansen 1994, 62-64). The material does not indicate activities in **horizons 1-5**. This information is used as a **supplementary** source for these horizons.

Site 36, Skostredet 10 (1992) BRM 346

The excavation at site 36, Skostredet 10, was an open area investigation, which covered about 160 m^2. No report is available from the excavation. Excavation supervisor Andrzej Golembnik has kindly provided oral information of relevance here (cf Hansen 1994, 65). The site was original-

ly located about 30 m from the northern shore of Vågen at about -1.5 masl close to a riverbed. The oldest phase of structures is dated to the end of the thirteenth century through the preliminary examination of pottery. Prior to phase 1, organic layers were deposited. The layers have not been dated and may thus be from any time before the end of the thirteenth century. According to Golembnik, these deposits must have accumulated over a long time and do not represent an intentional dumping of masses. The layers differ in character from the harbour-related layers, which Golembnik was familiar with from his excavations at site 27 and they did not contain typical harbour related finds, such as rope and ballast stone. His preliminary conclusion is that there was no harbour here before the first constructions were built in phase 1, and that the shore was not used as a waste-dump. This information is used as a **supplementary** source for **horizons 1-5**.

Site 37, Nedre Korskirkealmenning/ Vågsalmenning (1998) BRM 544

The excavation at site 37, Nedre Korskirkealmenning/Vågsalmenning, was an open area and trench investigation. Some of the botanical material is relevant to the present study (Hjelle 1998).

Dates

The relevant botanical sample was taken in a profile about 60 m from the nearest (eleventh century-) shore of Vågen, at a depth of -3.1 masl, corresponding to phase 6 at the site. The lower part of layer 40 contained pollen zone 3a, the upper part of the layer contained pollen zone 3b. The beginning of pollen zone 3b was ^{14}C dated to between AD 810 and 970. As the ^{14}C sample was taken from the beginning of pollen zone 3b, it is likely that the activities represented by pollen zone 3 began earlier and lasted longer than the date implies (Hjelle 1998). The botanical material from pollen zone 3, phase 6, may be used as a source for **horizon 1**. As the material is dated by ^{14}C it may be used as a **supplementary** source. After phase 6 there was a break in the accumulation of layers. The succeeding layer/phase 5 was dated by ^{14}C to between 1295 and 1420. Other sources, however, document that there was activity in the Vågsbunnen area before the end of the thirteenth century. Therefore, the lack of deposits on the site must reflect the deposition- or preservation conditions on the location between phases 6 and 5. The layers above phase 6 are not used as a source in the present study.

General land use reflected in the material

Layer 40, a fast-accumulated marine sediment, consisted of dark brown gyttja with only a small amount of macroscopic material (Hjelle 1998, Section 5).[44] Pollen zones 3a and 3b contained pollen from a variety of grain, herbs and other plants. From the beginning of zone 3b, pollen indicating the import of grain was present in the sample.[45] According to Hjelle the fast accumulation of layer 40 may be explained either as an intensification of agricultural land use or as the deposition of waste in the sea. Due to the presence of import-indicating pollen in zone 3b, she concludes that the layer most likely accumulated as a result of waste-dumping in the sea at some distance from the area of investigation (Hjelle 1998). On this basis Hjelle suggests 'some kind of denser settlement' in the Vågsbunnen area in the Viking period (Hjelle 1998).

The presence of import-indicating pollen in a sample does not in itself illuminate on the history of deposition of a layer. Household waste with or without import-indicating pollen may have been used to manure fields. In Chapter 4 I have argued, on a methodological basis, that deposits, which contain only pollen and no macrofossils, positively identified as remains of human waste, cannot count as sufficient evidence that waste masses were dumped in the close vicinity of a sampling location (cf p 51ff). Accordingly, the deposit at site 37 cannot stand alone as evidence that waste was dumped into the sea in the vicinity of the point of registration. At the nearby site 36, no indications of intentional dumping of masses were found, prior to the oldest archaeological phase dated to the end of the thirteenth century. Site 36 was located at a distance of about 70 m from site 37. The two sites are relatively close to each other, both were located at some distance from the northern shore of Vågen. Altogether then, there are no indications that household waste was thrown into the sea. I find that the question of general land use

cannot be settled through the material from site 37 alone. I will resume this question on a broader basis in Chapter 8.

The presence of pollen-indicating household waste is assigned to **horizon 1** as a **supplementary** source. Data from the site cannot elucidate activity in horizons 2-5.

Table 19. *Site 37, Nedre Korskirkealmenning/Vågsalmenningt (1998) BRM 544*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
'Phase'	Pottery	Other	Dendro	TL	^{14}C			
Layer 40 pollen zone 3					Between 810-970 and somewhat earlier		1	S

Data based on (Hjelle 1998)

Site 38, Domkirkegaten 6 (1987) BRM 245

The excavation at site 38, Domkirkegaten 6, was an open area excavation, which covered about 300 m^2. A report with a stratigraphical analysis and dates is available (Komber, Dunlop, Sigurdsson, and Hjelle 1994). Botanical material was analysed in connection with the investigations (Hjelle 1994). The natural subsoil was reached at the site.

Dates

The archaeological phases are dated through a combination of pottery, ^{14}C and dendrochronology (Komber, Dunlop, Sigurdsson, and Hjelle 1994). The oldest activity phase at site 38 was phase 10, dendro samples from phases 9 and 10 provide a date of 'after 1128' to 'after 1160' for phase 10 (cf data in Komber, Dunlop, Sigurdsson, and Hjelle 1994, 112). Phase 10 thus corresponds to **horizon 5.** Since the archaeological material is well-dated, it can be used as a **basic** source.

The botanical material from layers below the oldest regular culture-layers in phase 10 was not dated, except relatively to the oldest phase in the archaeological material (Komber, Dunlop, Sigurdsson, and Hjelle 1994). Pollen in the samples may, however, provide a wide date for some of the deposits predating phase 10. The relevant pollen samples were taken from several layers: 508, 507 and 463, 508 being the oldest, and 463 the youngest stratigraphically. In layer 463, pollen of the import-indicating weed *Centaurea cyanus* was present. This may indicate that layers from the stratigraphical level of 463 until phase 10 are from the ninth century or younger, but older than phase 10. Layer 463 was a marine sediment of naturally deposited gravel with a few wood chips, the material also comprised import-indicating pollen. According to Hjelle, the presence of import-indicating pollen may reflect a change in activities and the establishment of a denser settlement in the area (Hjelle 1994, 160, 161, 164, 167). From my point of view the material from site 38 is insufficient as evidence that household waste was dumped into the sea in the vicinity of the site, and as evidence of a settlement in the vicinity of the site (p 51ff). The material may just as well represent cultivation, where human waste was used to fertilise fields, near the site. In which case the waste indicated through the import-indicating pollen may have come from a settlement nearly anywhere in the Bergen area. Since the character of the general land use reflected in layer 463 is ambiguous, and the date provided by the pollen is so wide (horizon 1-4), I choose to omit the material as a source for the character of activities at the site during horizons 1-4. The lack of settlement at the site prior to horizon 5 is, however, used as a **supplementary** source for **horizons 1-4**.

Major features, artefact categories

In horizons 1-4, prior to phase 10, and in horizon 5, phase 10, site 36 was located in the beach zone between +/-0 and 1 masl. In horizons 1-4, the area was not settled. In horizon 5 a small square log built caisson and several posts were located about 5-10 m from the normal high tide (Komber, Dunlop, Sigurdsson, and Hjelle 1994, 72). The excavation supervisor Jochen Komber suggests that the caisson was part of a building and that five of the posts made up a quay front. The remaining structures are interpreted as the foundation of a counterbalanced hoist (Komb-

er, Dunlop, Sigurdsson, and Hjelle 1994, 214). Three layers were assigned to horizon 5; (phase 10) layer 421 was deposited first before any constructions were built and was probably deposited when levelling of the area started in order to raise it above spring tide or storms (Komber, Dunlop, Sigurdsson, and Hjelle 1994, 71). Since we do not know where the artefacts in layer 421 derive from, they are assigned as **category II** finds to horizon 5. During phase 10, layers 420 and 470 were deposited. Layer 420 is thought to derive from the use of the construction represented by the small log-built caisson (K311). Since Layers 420 and 470 are deposited *in situ,* artefacts from these layers are assigned as **category I** finds to horizon 5.

The extent of the churchyard is not known in spite of later investigations in the vicinity of the church (Hansen 1994b, 81). The material cannot elucidate activity on the site prior to horizon 5.

Site 40, The Church of St Cross (Korskirken)

The Church of St Cross was mentioned for the first time in written sources in connection with events, which took place in 1181 (Ss 1920, 54; Holtsmark 1961, 82). Based on masonry studies Lidén has suggested that the twelfth century church was completed before 1160. He suggests, with some reservations, that the construction of St Cross may have begun before the construction of the standing Church of St Mary, initiated around 1140 (Lidén and Magerøy 1990, 99).

Table 20. *Site 38, Domkirkegaten 6 (1987) BRM 245*

	Archaeological evidence		Natural scientific dates			Dating	Horizon	Source type (B/S/G)
Phase	Youngest pottery types present	Other	Dendro	TL	^{14}C			
9	Dev Stamford		1115 **(1154-1157)**			'after 1158'-early thirteenth c		
10	Andenne	Single comb	**1128**			'after 1128'-'c 1158'	5	B
Before 10, no settlement		Pollen of *centaurea cyanus*				After ninth century before 'c 1128'	1-4	S

Data based on Komber *et al* 1994
Dendro dates in **bold** are the youngest in the construction/phase

Site 39, The Church of St Olav in Vågsbotn (Olavskirken i Vågsbotn)

The Church of St Olav in Vågsbotn was first mentioned in the written sources in connection with events in 1181 (Ss 1920, 54; Holtsmark 1961, 81). The church has been investigated by Lidén who has also analysed evidence from earlier investigations performed by Blix in the 1880s (Lidén and Magerøy 1983). Based upon style, among other *cyma reversa* mouldings that have parallels in St Mary's and St Cross, the twelfth century church may have been built between c 1120 and 1180 (Lidén 1993, 74). This makes St Olav's a **basic** source for **horizon 5.** The twelfth century church had a rectangular nave and the chancel was narrower than the nave. The west tower was also narrower than the nave. The twelfth century St Olav's is incorporated in today's Cathedral church.

The Church of St Cross can accordingly be used as a **basic** source for **horizon 5.**

The twelfth century church was a rectangular building, the chancel was of the same width as the nave, which had no aisles. The twelfth century building is incorporated in the choir and nave of the standing church (Lidén and Magerøy 1983, 112). The extent of the twelfth century churchyard is not known, but the burial ground did not continue so far north as to site 35, Korskirken (1984) BRM 200 until after c 1230-40 (Hansen 1994b, 71). The material cannot elucidate activity on the site prior to horizon 5.

The Nordnes and Nonneseter areas

Site 41, Rådstuplass 2-3, 'Vestlandsbanken' (1963) BRM 20

The excavations at site 41, Rådstuplass 2-3 was an open area excavation that covered about 550 m^2. Judged by the ceramic evidence, the oldest structures above the natural subsoil date from the fifteenth or sixteenth centuries (Site documentation, Rådstuplass 2-3 BRM 20). This information is used as a **supplementary** source for **horizons 1-5**.

Site 42, Nygaten 2 (1991) BRM 333

The excavations at site 42, Nygaten 2, was an open area investigation, covering about 770 m^2. Large parts of the site were disturbed by modern activities. The oldest culture-layers above the natural subsoil can be dated to the end of the sixteenth century on the basis of pottery (Site documentation, Nygaten 2 BRM 333). This information is used as a **supplementary** source for **horizons 1-5**.

Site 43, The Munkeliv Benedictine Abbey with the Church of St Michael (Munkeliv kloster)

According to the written sources the Benedictine abbey of Munkeliv was founded by King Øystein Magnusson (1103-1122) (MHN 64; Hkr 1893-1901, III 284p; Msk 352; Ågr 94), historians seem to agree on this point (Helle 1982, 137-139). On stylistic grounds Lidén also finds it likely that the church building may date back to the 1120s (Lidén and Magerøy 1990, 73-87). The Abbey of Munkeliv may be used as a **basic** source for **horizons 4** and **5.**

The location of the church and churchyard is well known through Nicolaysen's excavations in the 1860s and observations in connection with construction work. The twelfth century church was a long church with an apsidal chancel at the east, it was about 35 m long and about 14 m wide (Lidén and Magerøy 1980, 150-151). The location of the church and the churchyard is used as a **basic** source for **horizons 4** and **5.** Munkebryggen, a quay on the southern shore of Vågen, belonged to the abbey. The exact location of the quay is not known, but it is not unreasonable to assume that it was placed on the Vågen shoreline close to the abbey. I have not tried to localise the quay in more detail. The material cannot elucidate activity in the area before horizon 4.

Site 44, St John's Augustinian Abbey (Jonskloster)

The date of the foundation of the Augustinian Abbey of St John is not known. Lidén has argued that the abbey was founded in the 1150s as this coincides with the establishment of chapters connected to the cathedrals in Norway (Lidén and Magerøy 1980, 142). Information in the written records also implies that the abbey was founded in the 1150s (Helle 1982, 6, 142). Stylistic details on building stones from the church demonstrate building activity on the monument in the 1180-90s (Lidén and Magerøy 1980, 143). This, however, is not incompatible with an earlier foundation of the abbey. It is not unusual that after the foundation of an abbey, the construction of buildings was carried out over a long period of time (cf Eide 1986; Hommedal 1987). Based on implications in the written sources the abbey of St John may be used as a **basic** source for **horizon 5.** St John's was located on the Nordnes peninsula. Church-foundations were located in connection with groundwork in 1895: The church tower was found in the area around Fortunen 2, other foundations were found at Strandgaten 10-12. The churchyard was located north and east of the church, and burials have been found on several occasions (Lidén and Magerøy 1980, 142-144). The location of the abbey thus seems certain and may be used as a **basic** source for **horizon 5.** Since the buildings, which represent the period covered by horizon 5, are not known, only the approximate area covered by the later monument is used as an illustration of the abbey. Jonsbryggen, a pier/quay belonged to the abbey. The location of the quay is not known. Most likely it was placed on the Vågen shoreline close to the abbey (cf Helle 1982, 290). A specific localisation of the quay is not attempted. The material cannot elucidate activity in the area prior to horizon 5.

Site 45, The Church of All Saints (Alle Helgens Kirke)

The Church of All Saints is first mentioned in the written sources in connection with events in 1181 (Ss 53). Based on an evaluation of the

Table 21. *Site number, street address/monument, museum number*

Site number	Street address/monument	Year of investigation	Museum number/project number
Site 1	Koengen	1986	Botanical investigation in Veisan by Kari Loe Hjelle
Site 2	The Christchurch Cathedral	1929-	
Site 3	Christchurch minor		
Site 4	The Church of the Apostles		
Site 5	Øystein Magnusson's hall at Holmen		
Site 6	Bryggen	1955-1979	BRM 0
Site 7	Øvre Dreggsalmenningen	1989	BRM 298
Site 8	Dreggsalmenningen 14-16	1986 and 1990	BRM 237
Site 9	Sandbrugaten 5	1967	BRM 3
Site 10	Sandbrugaten 3	1953	
Site 11	Dreggsalmenningen 20	1967	BRM 4
Site 12	Dreggsalmenningen 10-12	1972	BRM 42
Site 13	Dreggsalmenningen 10-16	1986	BRM 242
Site 14	Dreggsalmenningen	1979	BRM 83
Site 15	Stallen Svensgården	1980 and 1982	BRM 90
Site 16	Bryggeparken	1989	BRM 287
Site 17	Nikoliakirkealmenningen	1985	BRM 202
Site 18	Koren-Wibergs Plass	1980	BRM 143
Site 19	Wesenbergsmauet	1989	BRM 297
Site 20	Øvregaten 39	1981	BRM 94
Site 21	Klingesmauet	1989	BRM 299
Site 22	Kroken 3	1984	BRM 223
Site 23	The Church of St Mary		
Site 24	The Church of St Peter		
Site 25	The Church of St Olav on the Hill		
Site 26	Finnegården 6a	1981	BRM 104
Site 27	Finnegården 3a	1982	BRM 110
Site 28	Rosenkrantzgaten 4	1978/79 and 1981	BRM 76
Site 29	Vetrlidsalmenningen 2 Kjøttbasaren	1996/97	BRM 490
Site 30	Vetrlidsalmenningen	1991/92	BRM 342
Site 31	Øvregaten/Finnegårdsgaten	1979/80	BRM 86
Site 32	The Church of St Nicholas		
Site 33	The Church of St Columba		
Site 34	Lille Øvregaten friområde	1994	BRM 465
Site 35	Korskirken	1984	BRM 200
Site 36	Skostredet 10	1992	BRM 346
Site 37	Nedre Korskirkealmenning/Vågsalmenning	1998	BRM 544
Site 38	Domkirkegaten 6	1987	BRM 245
Site 39	The Church of St Olav in Vågsbunnen		
Site 40	The Church of St Cross		
Site 41	Rådstuplass 2-3 'Vestlandsbanken'	1963	BRM 20
Site 42	Nygaten 2	1991	BRM 333
Site 43	The Munkeliv Benedictine Abbey with the Church of St Michael		
Site 44	St John's Augustinian Abbey		
Site 45	The Church of All Saints		
Site 46	The Nonneseter convent		

twelfth century churches in Bergen, Lidén suggests a c 1120-1180 date for the church (Lidén 1993). However since there is no concrete evidence that plases the church before 1170, I will use the church as a **supplemantary** source only for **horizon 5.** The exact layout, size or location of the church is not known. The church may initially have been built in wood (Lidén and Magerøy 1990, 35). Part of a stone wall behind Magistratbygningen may have been part of the hospital that was connected to the church in 1276. A wooden drain ^{14}C dated to between 1300-1390, found during a trench excavation at Allehelgensgate 3-5, may also belong to the hospital (Hansen 1994a). The ^{14}C date shows that the drain most likely stems from the hospital, as no other traces of occupation have been traced in the vicinity of the site at for instance site 41 and site 42. Accordingly, the Church of All Saints is placed in the area around Magistratbygningen and Allehelgensgate 3-5. The location of the church may be used as a **supplementary** source

for **horizon 5** since the exact location of the monument is not known. The material cannot elucidate activity in the area prior to horizon 5.

Site 46, The Nonneseter convent (Nonneseter Kloster)

'Nonneseter' is mentioned in the written sources in connection with events that occurred in 1134/35 (Hkr 1893-1901, III 326; Msk 400), historians seem to agree that the name of the convent was used anachronistically (eg Helle 1982, 6). On the basis of stylistic studies of the vault in the surviving west tower, Lidén argues that it cannot be dismissed that the church at Nonneseter was under construction in 1135 (Lidén and Magerøy 1990). The convent was most likely founded at the latest c 1150 (Helle 1982, 141) and may serve as a **basic** source for **horizon 5.**

The convent was located by the northern shore of Alrekstadvågen. The twelfth century church had a rectangular layout, the west tower is still standing. The church was 11-11.5 m wide and about 33-34 m long, including the tower (Lidén and Magerøy 1990, 46). The churchyard was located on the north side of the church, to the south of the church the remaining part of the convent was found (Lidén and Magerøy 1980, 167-68). The location of the convent may be used as a **basic** source for **horizon 5.** The material cannot elucidate activity in the area prior to horizon 5.

The spatial and temporal distribution of the sources

The temporal distribution

Table 22 presents sources assigned to the horizons according to source categories. The number or 'extent' of the sources cannot be quantified or measured exactly, because on some sites parts of the material have been considered as a basic source, whereas other parts have been considered as supplementary or general background sources. The sites and the material also vary in size.

The proportion of basic sources becomes smaller the further we go back in time and the reliability of the material as sources for the horizons is proportionally reduced. Likewise the number of sources that reflect activity decreases the further we go back in time, probably also reflecting a smaller scale of activities.

The sources for horizon 1 are all but one supplementary or general background sources. The supplementary sources are based on ^{14}C dates or the presence of pollen, these dating methods provide wide dating ranges within which activity most likely took place in the Bergen area. I will have to carry along the chronological uncertainties inherent in the material when analysing and discussing it as a backdrop for the younger horizons.

Most of the sources that have been assigned to horizons 2 and 3 are classified as supplementary and in many cases structures and culture-layers within each site have been dated tentatively to the horizon, taking into use patterns in the material from the individual site or from sites in the close vicinity. Attempts have thus been made to make vertical as well as horizontal links between the undated sources and directly dated sources. I will reiterate how central structures in horizon 2 were assigned to this horizon (cf Figure 20).

Only two structures were dated directly to horizon 2, these are the jetty at site 6, dendro dated to shortly 'after 1029' (B) and the site 7 pit-house that, according to the highest peaks of probability for a ^{14}C date, may have been constructed in the years about 1020 or earlier. In addition two posts in building 66, probably derived from reused timbers, were dated to respectively sometime 'after 1024' and 'after 1040' and may thus indicate activity in the Gullskogården area, at site 6, in horizon 2.

Having shown through vertical links to younger phases that there must be a certain time depth in the materials from sites 6 and site 9 and that palisade-built fences make up the oldest phases at sites 6, 9 and perhaps also at site 11, I argued that the fences at the three sites were built contemporaneously. The fences were built using the same technique and materials, hence the fact that the fences at site 6 were covered by fill-masses and were no longer visible in the phase succeeding that of the fences at this site, strongly suggests that the fences at sites 9 and 11 were built while the fences at site 6 were still visible. This implies that the fences at site 9 and site 11 were built contemporaneously with the site 6 fences.

Table 22. *The temporal distribution of sources for horizons 1-5*

	Basic sources	Supplementary sources (activity/cultivation)	Supplementary sources (no documented activity)	General background sources
Horizon 5 (1120s-c1170)	21	15	11	1
Horizon 4 (c 1100-1120s)	9	12	14	2
Horizon 3 (c 1070-c 1100)	4	6	16	3
Horizon 2 (c 1020/30-1070)	2	5	16	3
Horizon 1 (c 800-c 1020/30)	1	4	20	1

Attempts were then made to link the fences to the directly dated jetty and pit-house assigned to horizon 2. At site 6 and site 11 the fences clearly demarcated plots. The pit-house was located closely to the plots at site 11 and was of the same orientation as the plots. This was seen as an indication that the plots and the building might be contemporary. And since the building was probably built before or about 1020 (S), this would indicate that the plots were laid out before or about this time. At site 6 a horizontal link was made between the jetty (B) and the fences/plots when arguing that if a third plot existed east of plot 6/C, and this plot was of the same width as plot 6/C, the jetty would run straight up to the eastern corner of this plot, thus linking the jetty with the plots, and suggesting that the structures were contemporary, that is from shortly 'after 1029'. The reused timbers found in horizon 5 indicated that there was activity in the general area during horizon 2 as well.

The supplementary sources assigned to horizon 3 at sites 6 and 9 in the northern town area have been dated indirectly to this horizon through vertical links to well-dated material from horizon 4 and through vertical links to the sources that were assigned to horizon 2. The indirect date for the structures at site 6 was supported by a post dendro dated to shortly 'after 1069', but assigned to the horizon as a supplementary source only, because the question of reuse could not be settled for the post. It is quite certain that there was activity in the northern town area during horizon 3, but it cannot be ascertained that absolutely all structures assigned to horizon 3 have in fact been rightfully assigned to the horizon. This is especially relevant for the structures at site 9, as they were dated typologically through structure types that have wide dates at site 6.

In the middle town area, activity (beyond site 30) was only associated with sites 26 and 27, the date of activity on site 27 is interrelated with site 26 (cf 60ff), so I shall not go further into site 27 here. The notion of activity at or about site 26 prior to horizon 4 was based on the presence of dendro dated, reused wood in horizon 4. I find it hard to explain how this wood ended up at the site in horizon 4 if it did not originate from activity in the vicinity at an earlier stage (horizon 3).

In Chapter 9, the plots and plot systems in the town area are going to be identified, visualised through the Visual Impact Analysis (cf p 56ff) and discussed. If the vertical and horizontal patterns drawn upon when assigning the sources for horizon 2 are strengthened by patterns emerging when we move out from the micro scale of the single sites and their close vicinities this may strengthen the reliability of my assignment of structures to horizon 2. This in turn may also strengthen the assignment of structures to horizon 3, as the lower time limit for activities in the Bergen area and the general time depth of the Bergen material will be further elucidated. The question of chronology will be resumed in Chapter 9 (p 183ff).

As far as horizons 4 and 5 are concerned the proportion of basic sources is more satisfactory and the sources provide a reliable basis for interpretations.

The spatial distribution

The relevant sites cover most of the Bergen area but to a varying degree. Figure 22 shows a map of all investigated areas and monuments that serve as sources for Bergen before c 1170. The early archaeological investigations carried out at Holmen only focused on the monumental architecture of the area. With the exception of

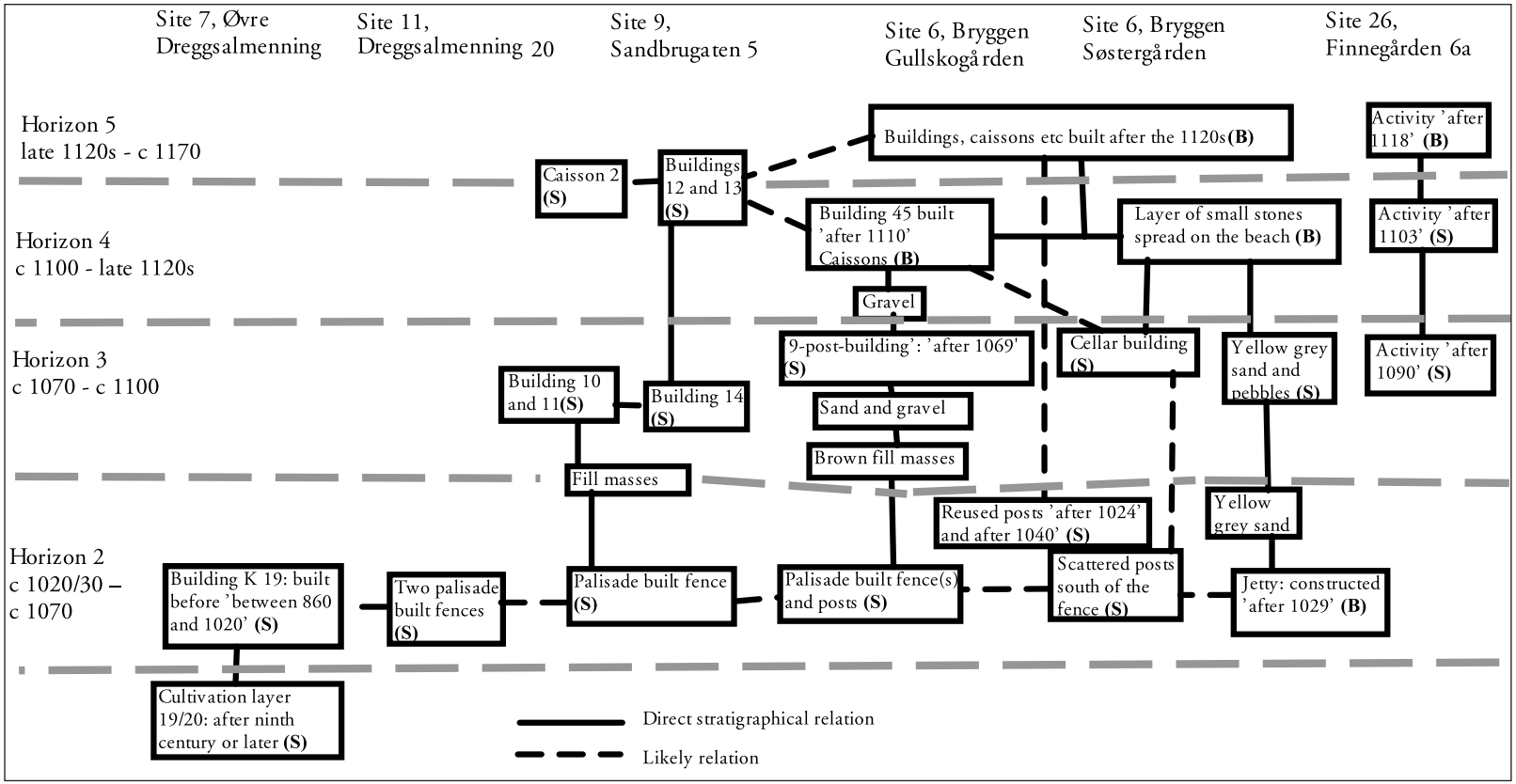

Figure 20. *The vertical and horizontal relationships between central structures assigned to horizons 2-5*

remains of monumental architecture no culture-layers or structures predating c 1200 have been documented here in the early years of research (Dunlop 1996a). Investigations in recent years have not produced culture-layers older than the fifteenth century (Dunlop 1996a) and my survey of artefacts from the area has not produced finds that may predate c 1170 (cf p 46). This must in part be explained as the result of the destruction of the older strata caused by more recent activities; there certainly must have been activity also beyond the actual monuments at Holmen before the fifteenth century. Altogether investigations beyond the monuments cannot provide sources for activity at Holmen in the period under research here. Since the excavations at Holmen are not relevant as sources in the study, only monuments are shown on the maps.

The northern town area is best covered by investigations. There is rarely more than 50 m between the sites, and as a rough estimate about 13000 m^2 and 77 profiles in trenches have been investigated over the years. This comprises some 16 % of the area between the 15 and 0 masl contours, excluding the profiles in trenches. In comparison, the rough estimates for the middle and southern town areas are 580 m^2 and 72 profiles amounting to about 3 % of the building land between the 25 masl and 0 masl contours in the middle town area, and 1344 m^2 amounting to about 5 % of the building land between the 15 masl and 0 masl contours in the southern town area. The numbers in square metres include churches and churchyards, where these are located, but not trench investigations or sites below the 0 masl contour. The figures are only interesting to a certain extent, as the number of investigated square metres or cubic metres or profiles in trenches is not directly proportional to the level of insight achieved. The investigations differ in the detail of information provided, due to the different methods applied. Recent smaller open area- and trench investigations with long profiles that 'cross section' the town area, supply relatively broad information about an area in spite of the relatively few square or cubic metres excavated. The map shows that most of the excavated sites are located close to the waterfront, and several are below 0 masl in the period under investigation. Investigations located above the tidal zone and in the higher parts of the town area are thus relatively few and activities here must be studied through other sites and sources.

The northern town area must be considered well covered by excavations, though the area just above the tidal zone could be covered better. Most of the larger sites were excavated before 1979 and some even before 1955, with a loss of important details as a consequence. The middle town area is represented by fewer investigations. The sites are spread out and comprise long profiles that cross-section the sloping terrain from the foot of Fløyfjellet to the waterfront. Furthermore, most of the secular sites were excavated after 1979 and refined methods of analysis were applied, these factors may to some extent outweigh the low number of sites. In the southern town area investigations are scarce. We have no sites from the area west of the Church of St Cross (site 40) and the two largest sites are either below sea level or in the tidal zone. However, the sites have been investigated in recent years through detailed methods of analysis including botanical studies of the layers, which to some extent compensates for the scarcity of sites.

The Nordnes and Nonneseter areas have been investigated through a number of larger and smaller excavations I have only included a few 'secular' sites here (sites 41 and 42) to show that the secular parts of the early and high medieval town did not extend into these areas. Only the monastic and ecclesiastic institutions here are relevant as sources for early Bergen.

The representativity of the artefact and ecofact material

Altogether nearly ten thousand (9798) artefacts have been assigned to the period before c 1170. In addition, botanical and osteological sources have been associated with the period under investigation. Table 23 shows the number of artefacts in horizons 2-5 divided into source and artefact categories. Table 24 shows the distribution of relevant data from botanical investigations. All the artefacts and ecofacts stem from basic or supplementary sources and none can be associated directly with the monumental sites. Every fragment of an artefact is counted as one artefact unless the fragments are obviously part of the same object. A comb may thus consist of many frag-

ments but only counts as one artefact, whereas a sherd of pottery counts as one artefact. I have not made special attempts to refit fragments. Pollen and macrofossils are not quantified and merely the presence of ecofacts relevant as a source for the subjects under discussion will be dealt with.

Table 23. *The number of artefacts assigned to horizons 2-5 (N=9798)*

Horizon	Source category	Artefact category	Number of artefacts
2	S	II	1
3	S	I	3
3	S	II	18
4	B	I	51
4	B	II	90
4	S	II	115
5	B	I	2677
5	B	II	6707
5	S	I	6
5	S	II	130

B = basic source, S = supplementary source

Table 24. *Relevant botanical sources*

Site/plot/unit	Horizon	Ecofacts
Site 1, Koengen	1	Pollen, macrofossils
Site 6 Bryggen	3-4	Pollen
Site 7, Øvre Dreggsalmenningen	2	Pollen
Site 37, Nedre Korskirkealmenning	1	Pollen
Site 38, Domkirkegaten 6	1-4	Pollen
Site 21, Klingesmauet	5	Pollen

The tables show that there is a large difference in the number of artefacts and ecofacts assigned to the four find-yielding horizons and hardly any finds can be assigned to the oldest horizons. Several factors influence the representativity of the material - in relation to what was once in use - and in relation to the number of artefacts preserved in the ground. I will therefore elaborate upon this.

Artefacts ended up in the culture-layers when lost or thrown out as garbage or when lost or left behind during for instance a fire. Some were probably reused again and again and large quantities of organic material must have ended up as firewood or were destroyed during fires. The selection of items preserved in the ground is thus not representative in a one to one relationship of what was actually in use. Organic material that burns is probably underrepresented in relation to items of stone and pottery, for example. Also metal objects may be underrepresented; they may have been reused or melted down, and are preserved relatively badly in the ground. Such circumstances should be common for all the sites. Ideally, the variety of organic versus mineral and metal finds that ended up in the ground should thus be comparable from site to site.

The local conditions for the preservation of organic material and metals on each site depend on the topographical location of the site and the character of the culture-layers. In the period under investigation most of the artefact producing sites are located close to the waterfront, a few are located at the foot of Fløyfjellet. The artefact-yielding sites are almost all located on dry land - the layers were not really waterlogged - and the topographical location of the sites is thus rather homogeneous. Also the composition of the culture-layers from site to site is rather uniform through the horizons under study. The deposits are characterised by a variety of mineral layers with large drainage capacity and rather thin organic layers. The conditions for the preservation of metals and organic materials are not optimal, but this relates to all the sites and the number of items preserved in the ground should thus ideally be comparable from site to site.

If conditions were ideal, the number and variety of artefacts and ecofacts from the sites should be comparable between the sites. However, special problems inherent in the material influence the number of artefacts and ecofacts that may serve as sources here. These problems are related to the selection of artefacts that were collected during excavation, to the number of artefacts that could be identified by me as sources for the horizons on each site, and to the number of artefacts I retrieved in the museum storerooms. These special problems must be considered when deciding how to study the sources.

Tables 25-28 show the approximate finds-frequency per excavated m^2 at find-yielding analytic units in horizons 1-5.[46] As seen in the tables there is a large variety in the number of artefacts per square metre on the artefact-yielding plots or units. Some of the differences may reflect a

varying intensity or character of activities on the plots/units, however, the varying documentation methods and also the principles for collecting the osteological and botanical material (other than pollen) must account for the real large differences in the finds-frequency within each horizon on the sites.

In some parts of site 6, culture-layers other than fire-layers were removed by machine and basically only structures were recorded (plot 6/F). In the areas of plots 6/E, 6/F and 6/G the level below horizon 5 was not thoroughly excavated (cf p 85ff). At site 15 and at site 20 culture-layers were partly removed by machine so that only profiles and 'pockets' of culture-layers could be investigated thoroughly. Trench excavations generally produce few finds, which is a problem inherent in this excavation method.

Table 25. *Horizon 2 (c 1020/30-c 1070) approximate number of artefacts per excavated m² at the artefact-yielding unit (N=1)*

Analytic unit horizon 2 approximate excavated area	Artefacts category I and II total	Artefacts per m² excavated
Site 7, Øvre Dreggsalmenningen (trench)	1	**

** An estimate has not been made for trench excavations

Table 26. *Horizon 3 (c 1070-c 1100), approximate number of artefacts per excavated m² at the artefact-yielding plot/unit (N=21)*

Plot/unit horizon 3 approximate excavated area	Artefacts category I and II total	Artefacts per m2 excavated
Site 9, Sandbrugaten 5 and site 10, Sandbrugaten 3 plot 9-10/B (c 320 m²)	18	0.05
Site 20, Øvregaten 39 unit 20/A (c 70 m²)	3	0.04

'All' artefacts have been collected systematically at all the sites excavated from 1955 and after (except at site 10), however, there has been a development in defining an artefact that is worthwhile to be documented; slag is thus one source group that has not been collected systematically during excavations before 1980. Waste from bone, antler, horn working is also a group of materials that probably was not collected so systematically until after 1980. Neither ecofacts have been collected or studied systematically. The osteological material sometimes figures in the finds-catalogues (eg sites 26 and 27), but according to varying principles, while botanical material is rarely recorded in the catalogues. All these methodological circumstances influence the find frequency per excavated square metre considerably.

As mentioned earlier the documentation method applied at several large sites excavated before 1980 has not allowed me to relate artefacts to the horizons, although the presence of various structures indicates activities. At site 6 the area that was later used as a burial ground for the Church of St Mary, that is the north-easternmost parts of plots 6/B and 6/C, the documentation of finds-context has been difficult to handle. This may probably account for the lack of artefacts assigned to horizons 2 and 3 from this area. At sites 9, 10 and 11, I was not able to relate any artefacts to horizon 5. At site 28 it has only been possible to assign a few finds to horizon 5. It is likely that the artefacts that could be assigned to the horizons represent a random selection of what was retrieved during excavations. Consequently, even though I was only able to identify a fraction of the finds that were retrieved during excavation, the identified finds should represent an unbiased selection.

In the archives I have not been able to retrieve all the artefacts that were recorded in the databases. However, many were described, drawn or otherwise documented so that they could still be included in the study. Only in the cases where slag and possible waste from antler, bone or horn working was listed and not retrieved did the 'loss' of finds present a real problem. This is discussed in the studies of these artefact groups in Chapter 11.

To sum up, the representativity of the material concerning the variety of what was once in use and of what was preserved in the ground should be regarded as fairly comparable from site to site in the early period of the town's history. In terms of the finds-frequency from site to site within the horizons there are, however, so many methodological circumstances involved that a quantitative analysis of the material across the find-bearing plots/sites will not be possible. Instead a qualitative, contextual and spatial approach will be applied (cf p 71ff).

Table 27. *Horizon 4 (c 1100-1120s), approximate number of artefacts per excavated m² at the 7 artefact-yielding plots/units (N=252)*

Plot/unit horizon 4 approximate excavated area	Artefacts category I and II total	Artefacts per m² excavated
Site 6, Bryggen plot 06/B (c 480 m²)	45	0.09
Site 6, Bryggen plot 06/C (c 440 m²)	28	0.05
Site 6, Bryggen plot 06/D (c 250 m²)	3	0.01
Site 26, Finnegården 6a plot 26/A (c 17 m²)	28	1.64
Site 26, Finnegården 6a and site 27, Finnegården 3a plot 26-27/B (c 43 m²)	28	0.64
Site 26, Finnegården 6a and site 27, Finnegården 3a plot 26-27/B-C (c 26 m²)*	50	1.92
Site 27, Finnegården 3a plot 27/C (c 34 m²)	52	1.52
Site 30, Vetrlidsalmenningen unit 30/E (c 4 m²)	18	4.5

* Artefacts from an area covering about 26 m² are assigned to plot B or C

Table 28. *Horizon 5 (1120s-c 1170), approximate number of artefacts per excavated m² at the 24 artefact-yielding plots/units (N=9100)*

Plot/unit horizon 5 approximate excavated area	Artefacts category I and II total	Artefacts per m² excavated
Site 6, Bryggen plot 06/A (c 72 m²)	2	0.02
Site 6, Bryggen plot 06/B (c 480 m²)	717	1.48
Site 6, Bryggen plot 06/C (c 440 m²)	2084	4.75
Site 6, Bryggen plot 06/D (c 250 m²)	3144	12.55
Site 6, Bryggen plot 06/E (c 218 m²)	973	4.45
Site 6, Bryggen plot 06/F (c 200 m²)	187	0.93
Site 6, Bryggen plot 06/G (c 150 m²)	905	5.93
Site 8, Dreggsalmenningen 14-16 plot 08/A (c 17 m²)	13	0.75
Site 8, Dreggsalmenningen 14-16 unit 08/B (c 17 m²)	51	2.99
Site 8, Dreggsalmenningen 14-16 unit 08/D (c 3 m²)	19	6.33
Site 15, Stallen Svensgården and site 16, Bryggeparken plot 15-16/A (c 82 m²)	24	0.28
Site 20, Øvregaten 39 unit 20/A (c 70 m²)	43	0.61
Site 21, Klingesmauet unit 21/A (trench)	2	**
Site 22, Kroken 3, unit 22/A (c 10 m²)	13	1.30
Site 26, Finnegården 6a plot 26/A (c 17 m²)	245	14.40
Site 26, Finnegården 6a and 27, Finnegården 3a plot 26-27/B (c 43 m²)	149	3.45
Site 26, Finnegården 6a and site 27, Finnegården 3a plot 26-27/B-C (c 26 m²)*	229	8.80
Site 27, Finnegården 3a plot 27/C (c 34 m²)	132	3.88
Site 28, Rosenkrantzgaten 4 plot 28/B (c 137 m²)	56	0.40
Site 28, Rosenkrantzgaten 4 plot 28/C (c 60 m²)	30	0.50
Site 30, Vetrlidsalmenningen unit 30/A (trench)	1	**
Site 30, Vetrlidsalmenningen unit 30/B (trench)	23	**
Site 30, Vetrlidsalmenningen unit 30/D (trench)	6	**
Site 30, Vetrlidsalmenningen unit 30/E (c 4 m²)	35	8.75
Site 38, Domkirkegaten 6 unit 38/A (c 286 m²)	17	0.05

* Artefacts from an area covering about 26 m² are assigned to plot B or C

** An estimate has not been made for trench excavations

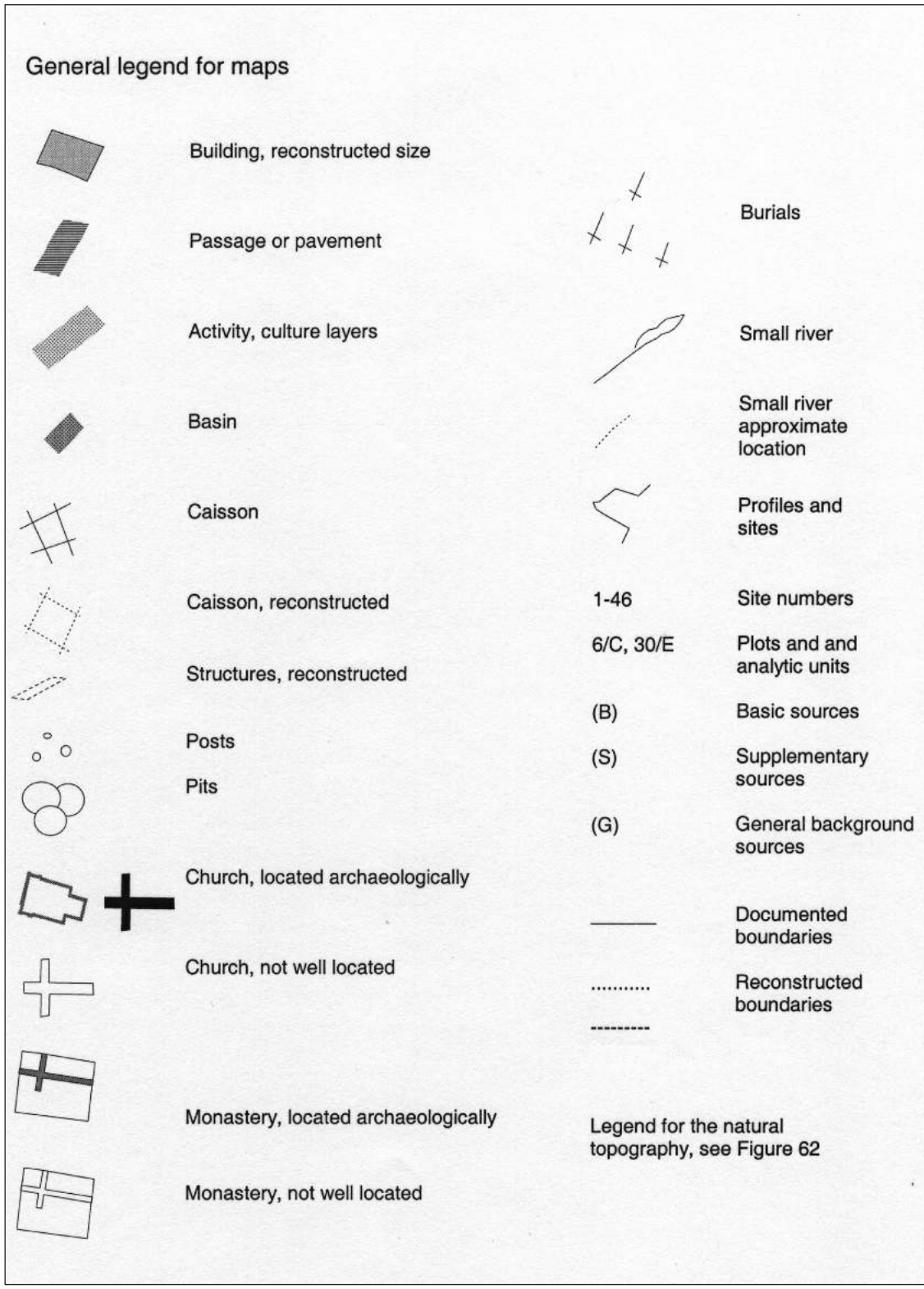

Figure 21. *General legend for maps*

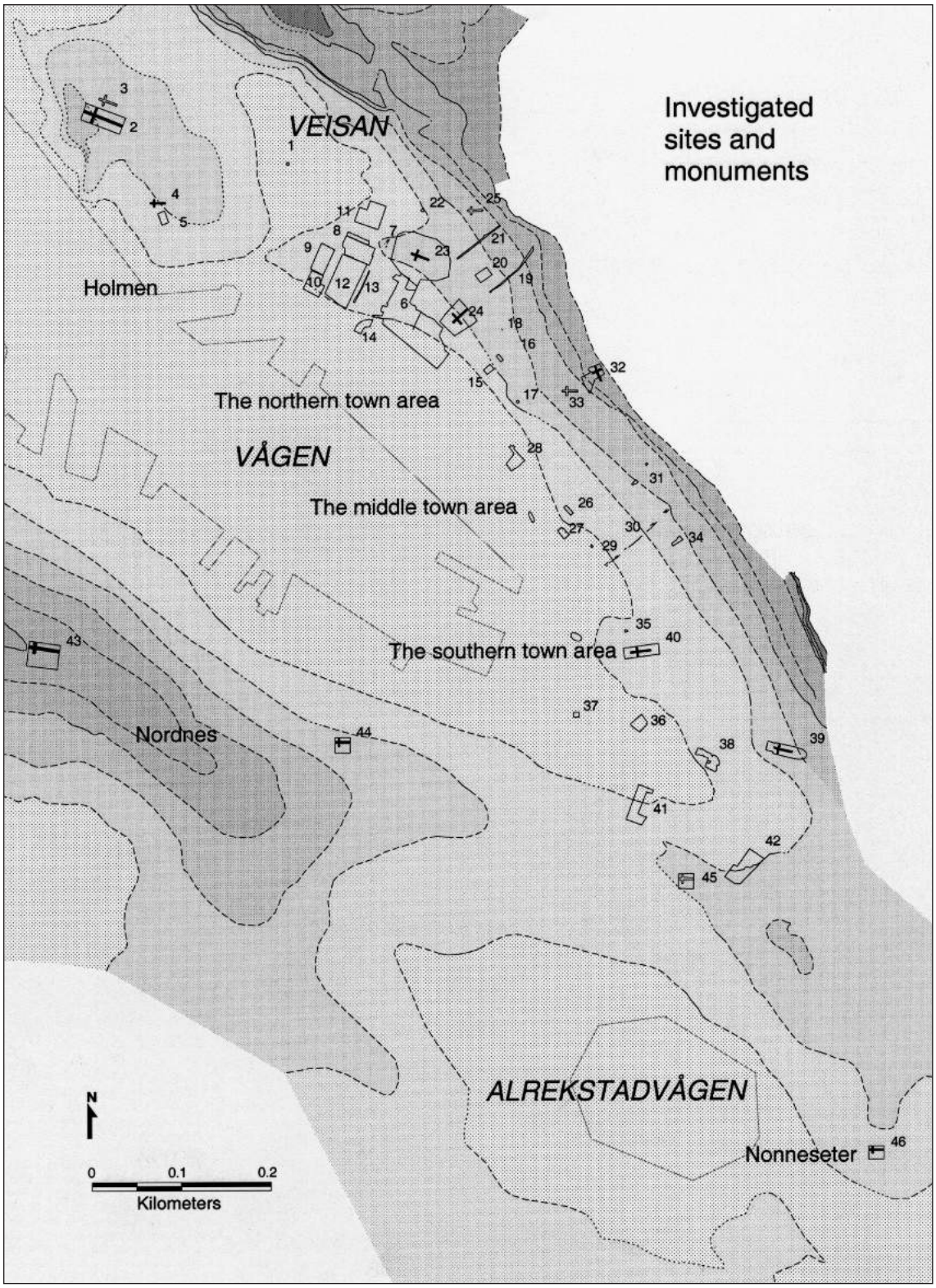

Figure 22. *Investigated sites and monuments*

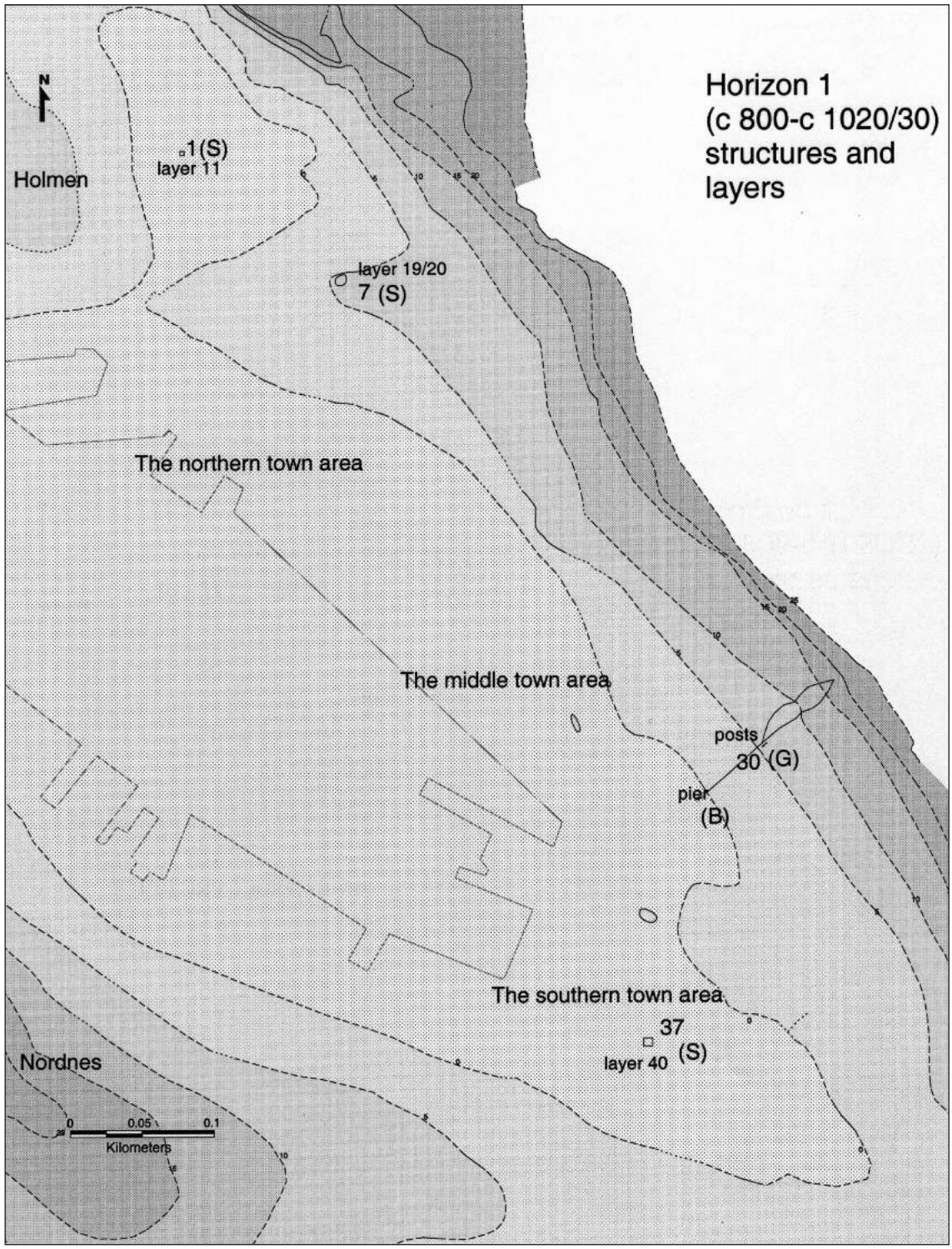

Figure 23. *Structures and layers assigned to horizon 1 (c 800-c 1020/30)*

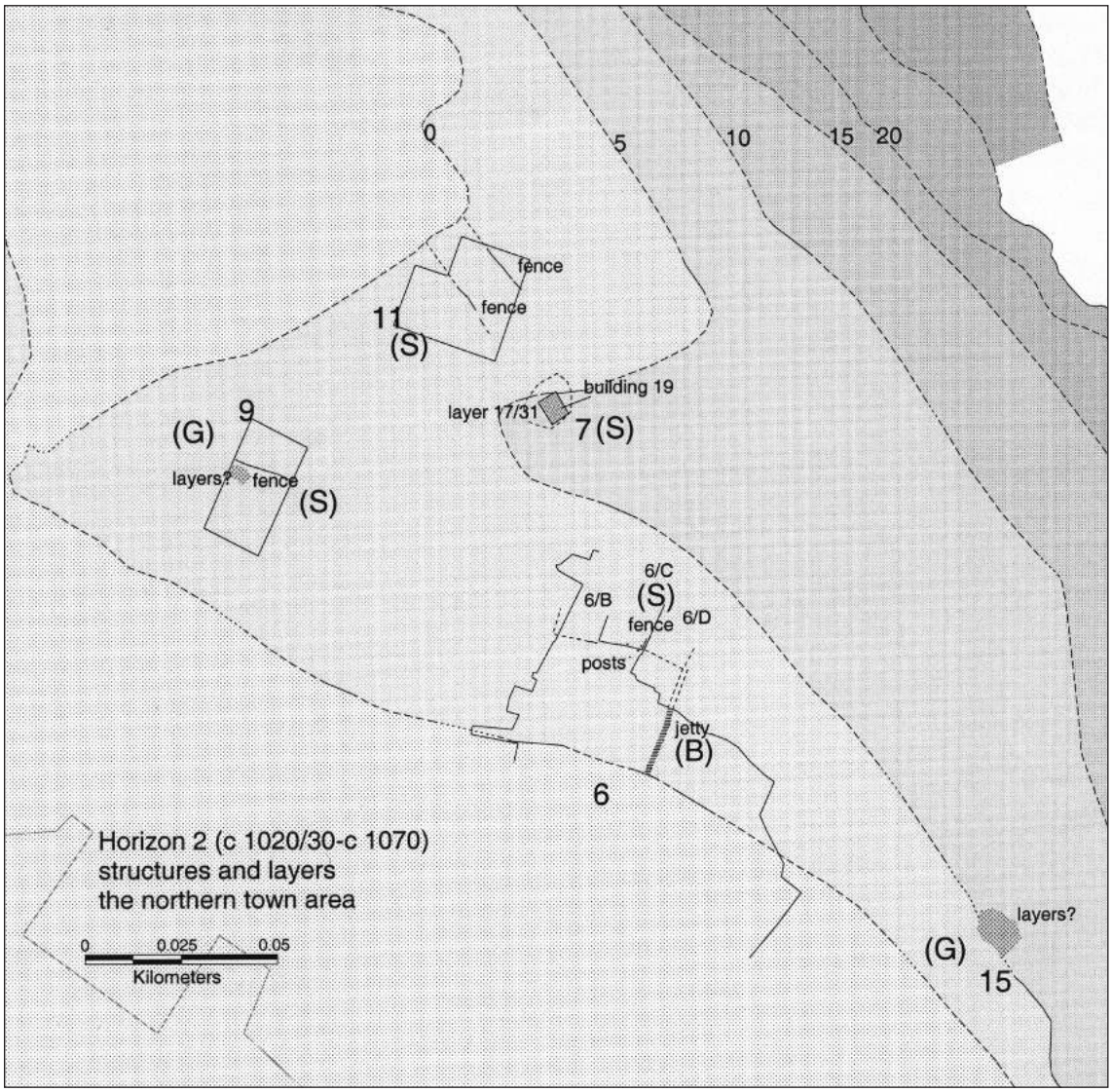

Figure 24 a. *Structures and layers assigned to horizon 2 (c 1020/30-c 1070), the northern town area*

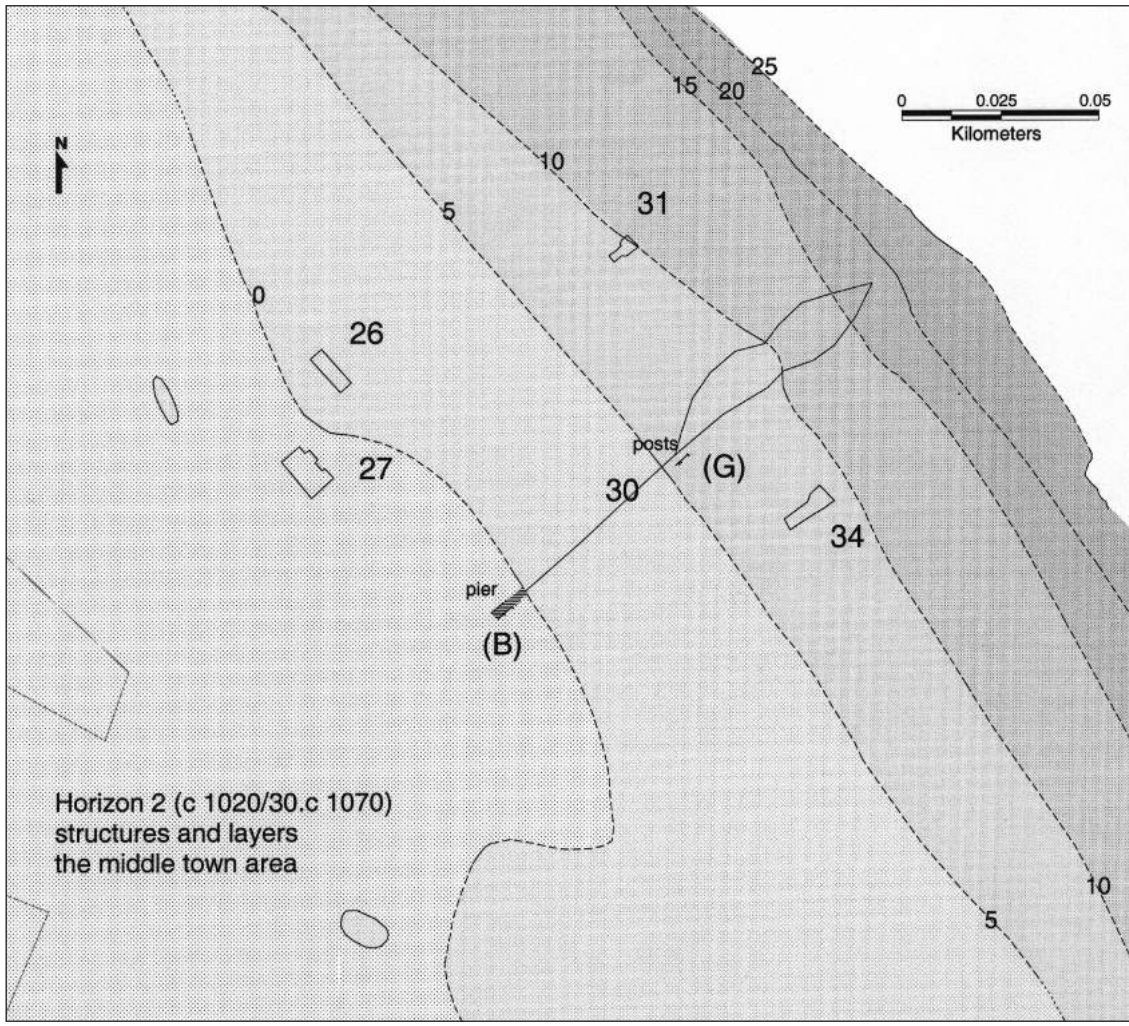

Figure 24 b. *Structures and layers assigned to horizon 2 (c 1020/30-c 1070), the middle town area*

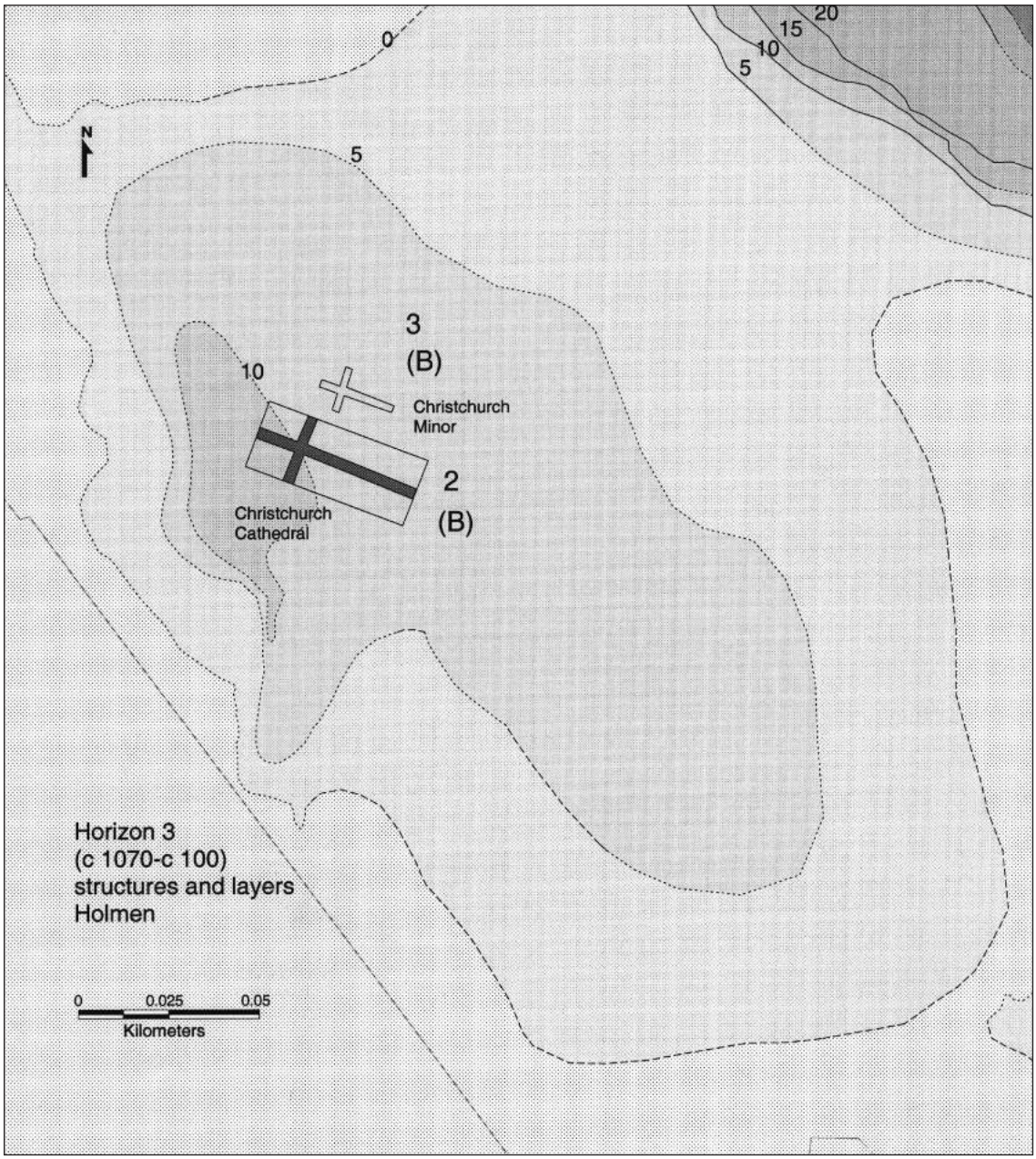

Figure 25 a. *Structures and layers assigned to horizon 3 (c 1070-c 1100), Holmen*

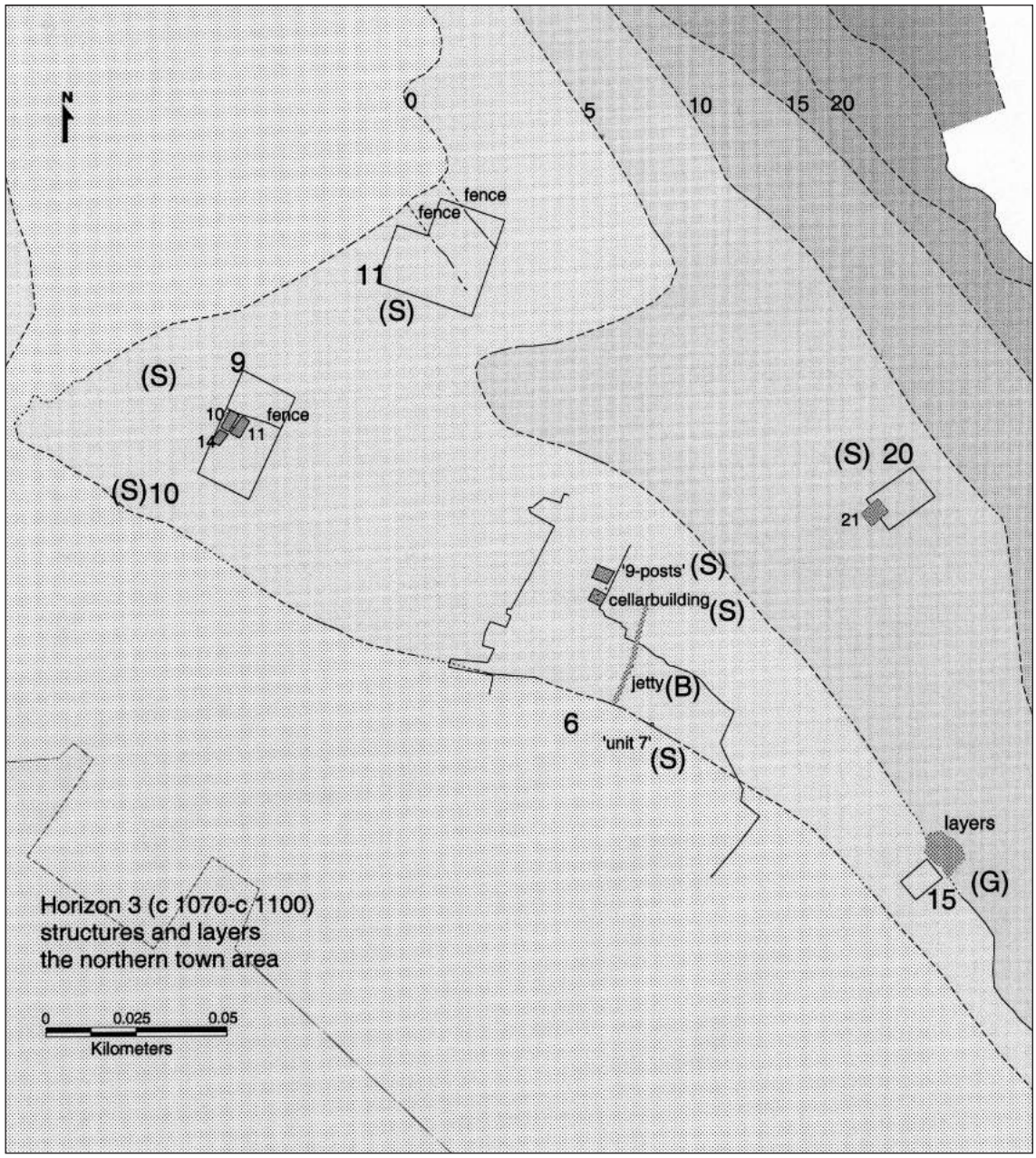

Figure 25 b. *Structures and layers assigned to horizon 3 (c 1070-c 1100), the northern town area*

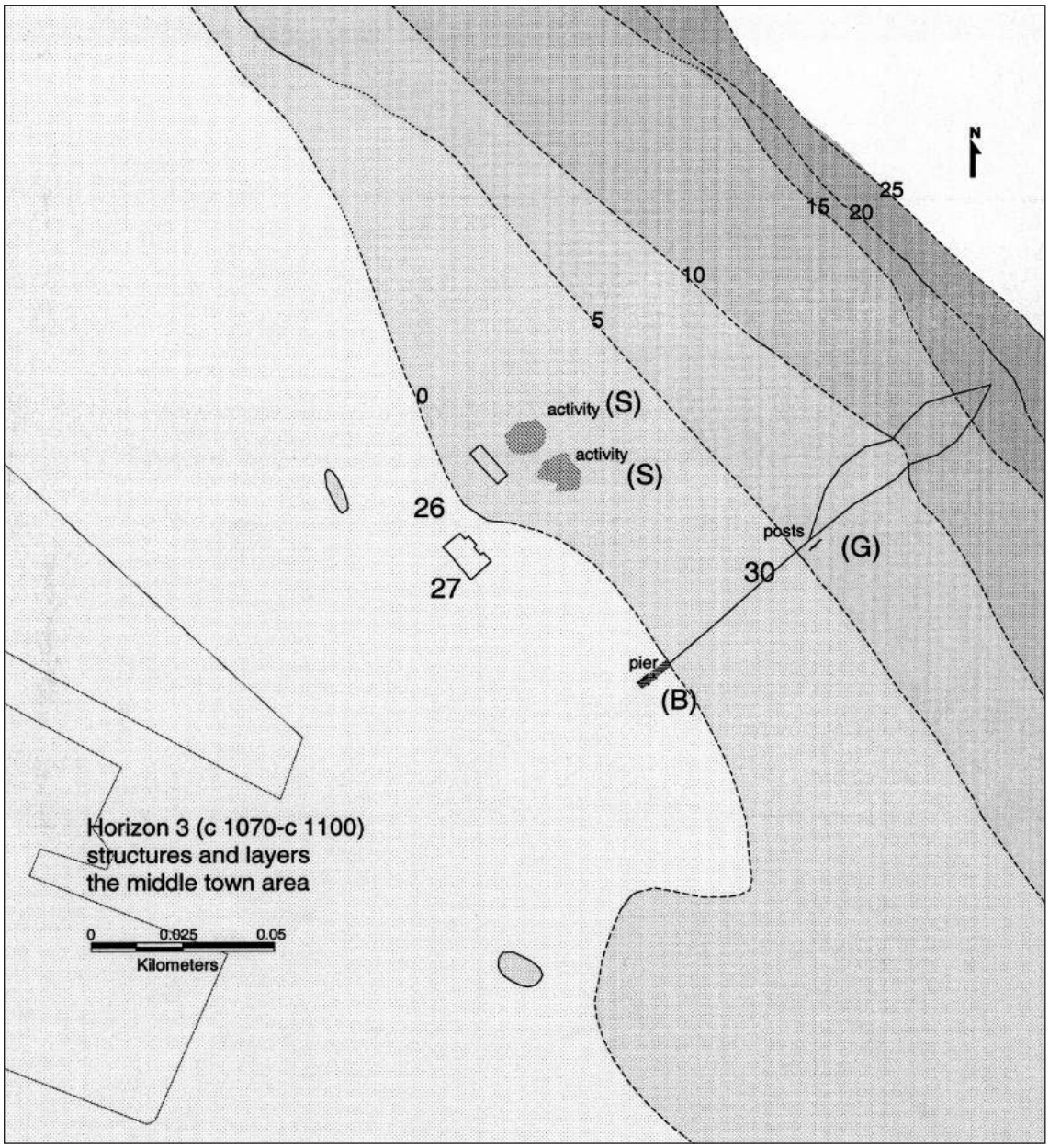

Figure 25 c. *Structures and layers assigned to horizon 3 (c 1070-c 1100), the middle town area*

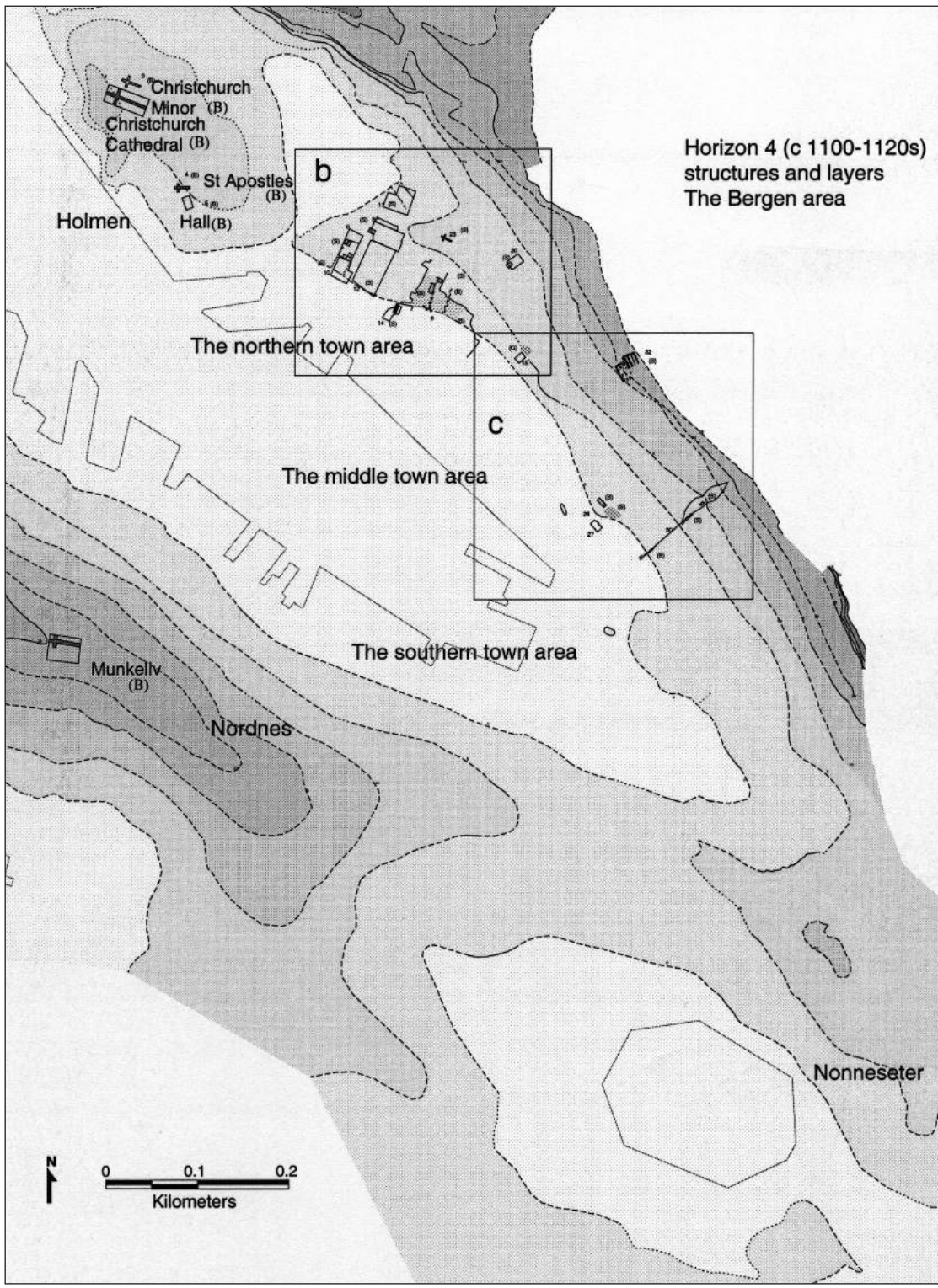

Figure 26 a. *Structures and layers assigned to horizon 4 (c 1100-c 1120s)*

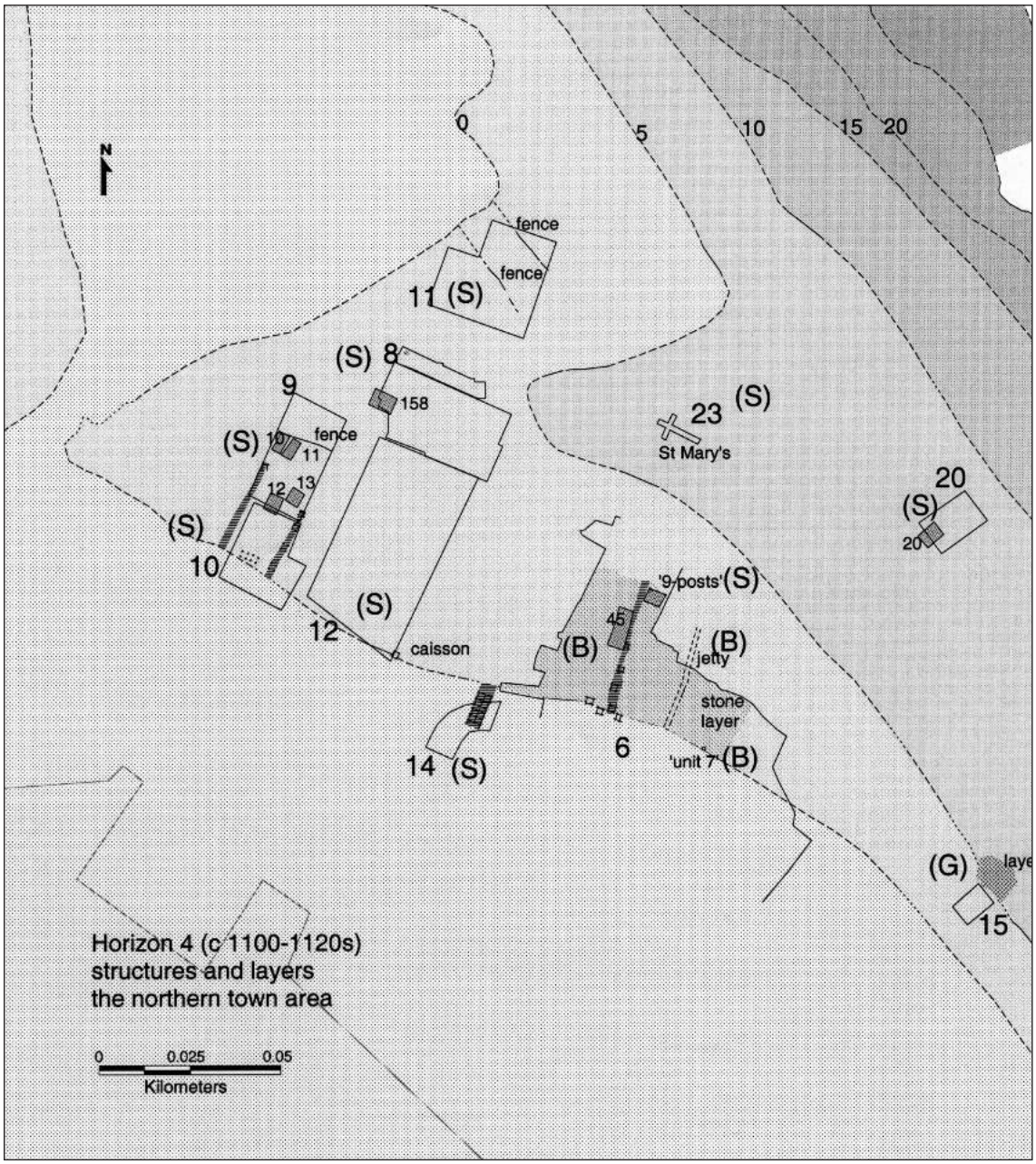

Figure 26 b. *Structures and layers assigned to horizon 4 (c 1100-c 1120s), the northern town area*

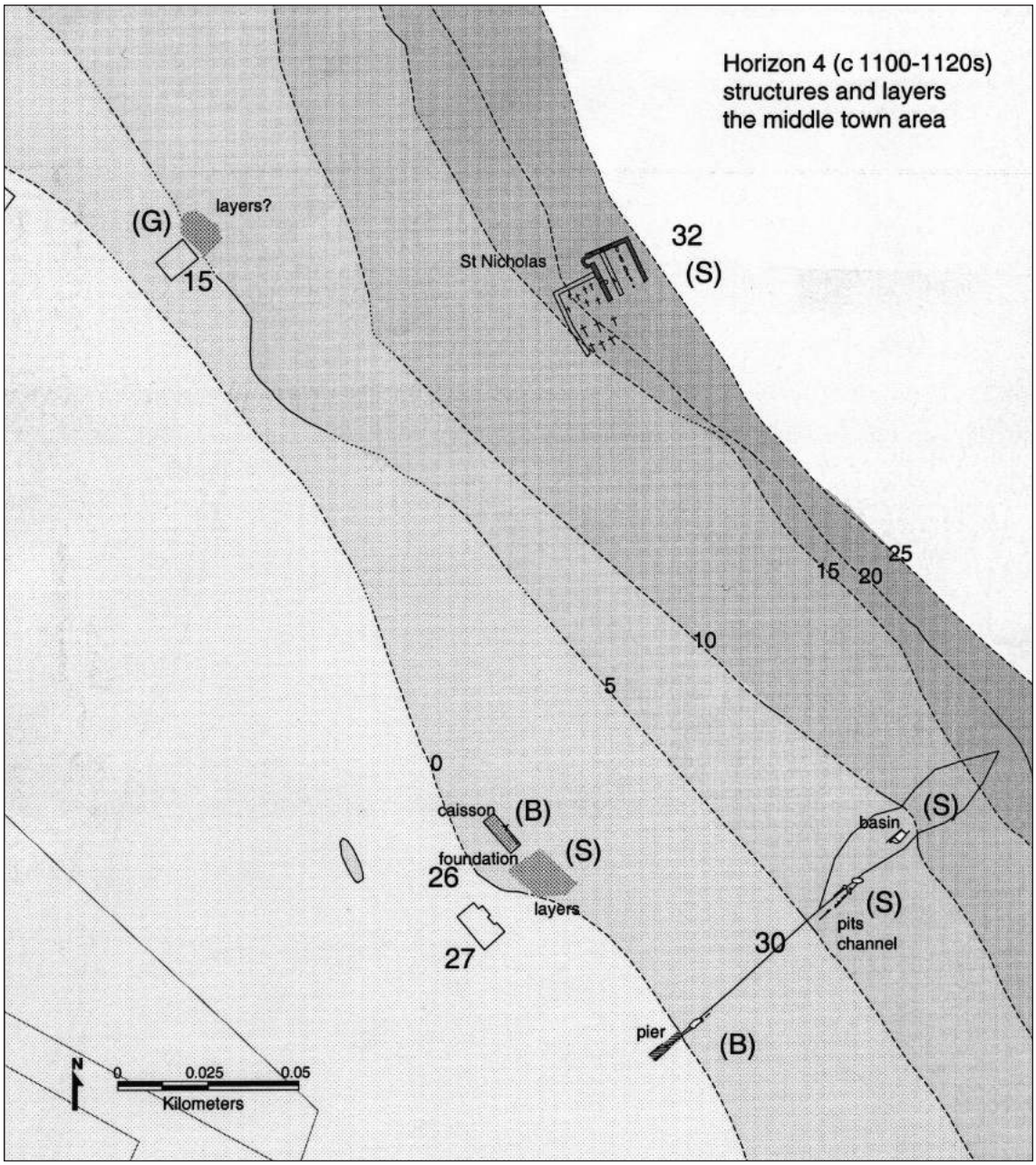

Figure 26 c. *Structures and layers assigned to horizon 4 (c 1100-c 1120s), the middle town area*

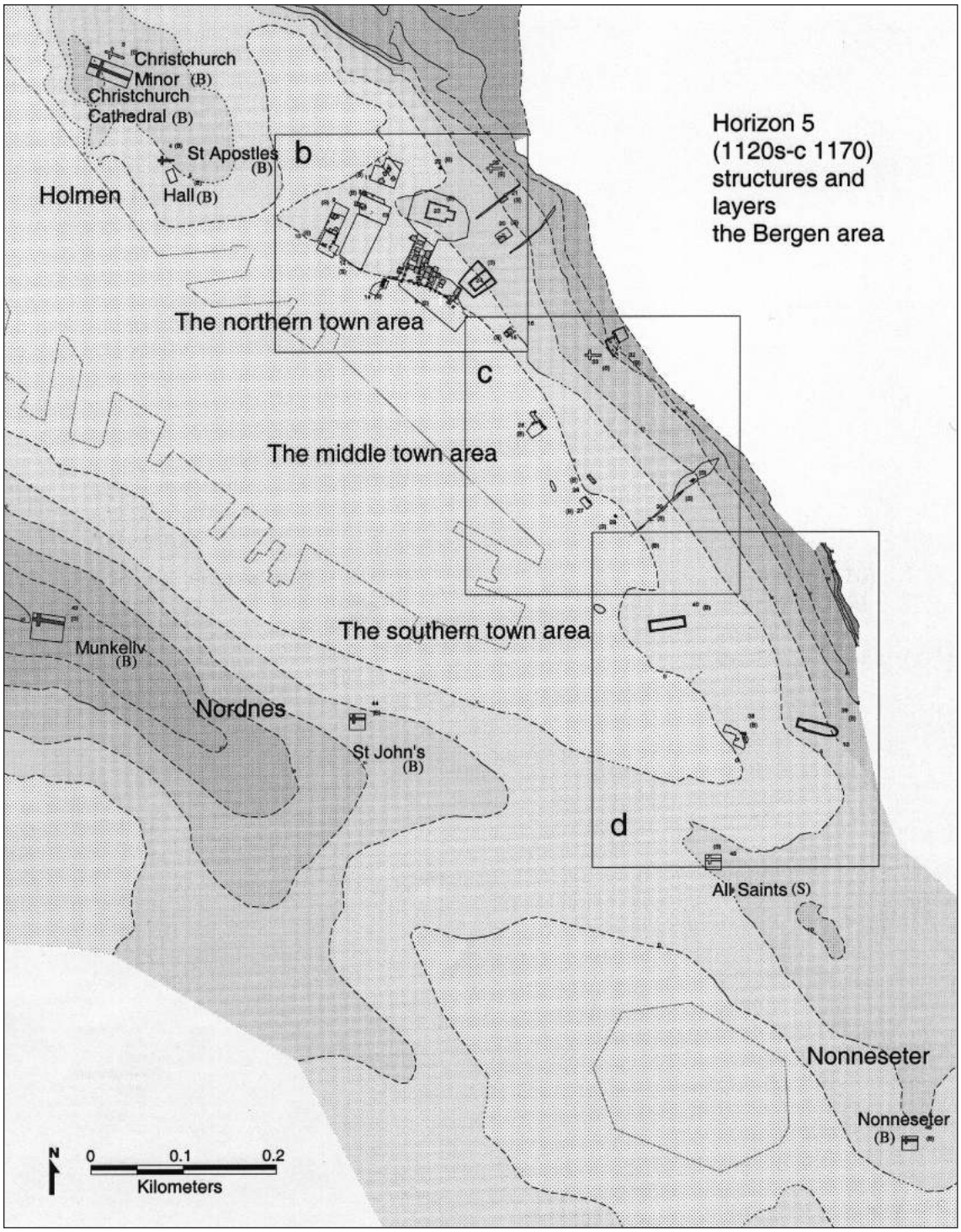

Figure 27 a. *Structures and layers assigned to horizon 5 (1120s-c 1170)*

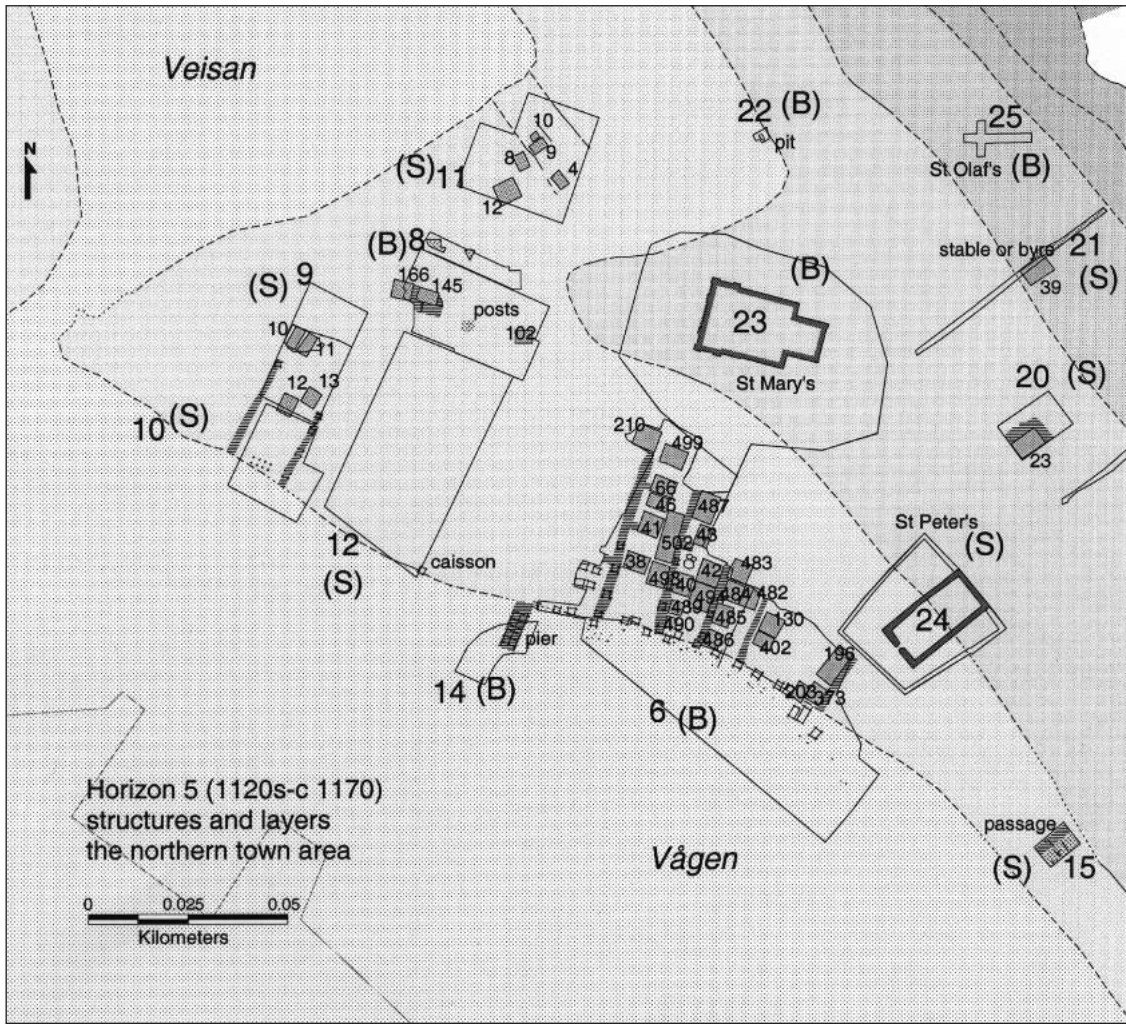

Figure 27 b. *Structures and layers assigned to horizon 5 (c 1120s-c 1170), the northern town area*

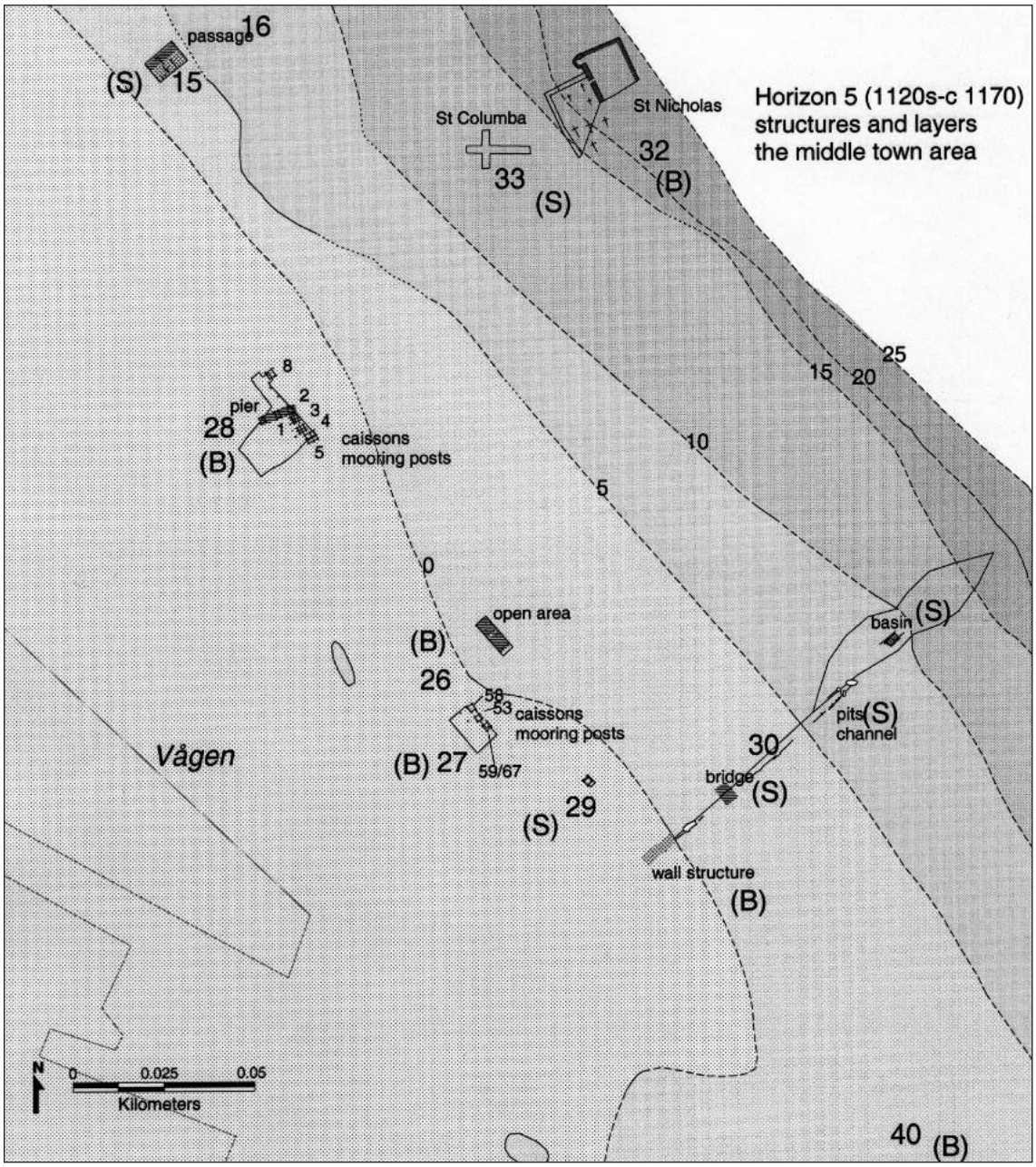

Figure 27 c. *Structures and layers assigned to horizon 5 (c 1120s-c 1170), the middle town area*

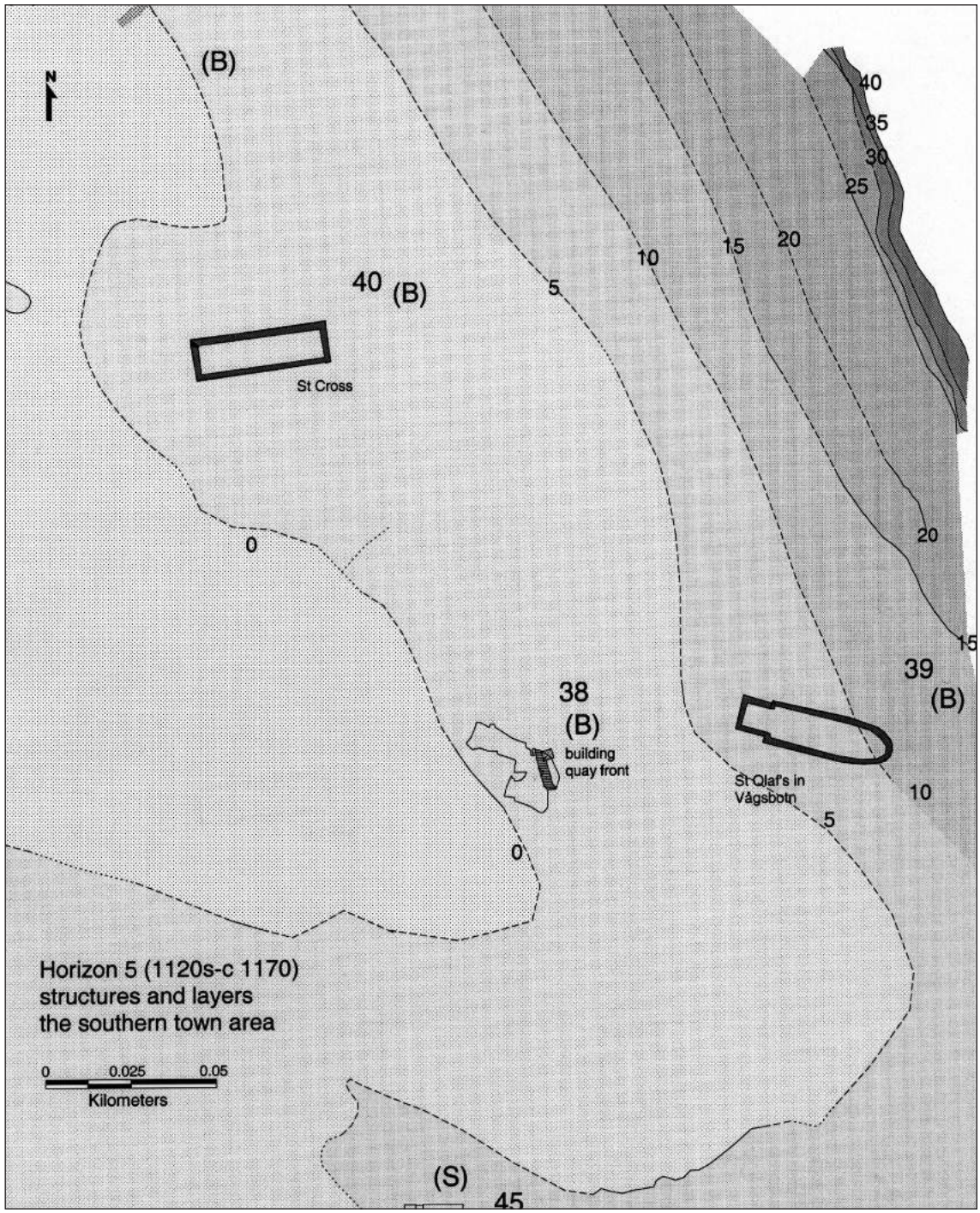

Figure 27 d. *Structures and layers assigned to horizon 5 (c 1120s-c 1170), the southern town area*

PART II

MAJOR INITIATIVES AND DAILY ACTIVITIES IN EARLY BERGEN

Having singled out the available sources of relevance to the period from the ninth century to c 1170, I will now analyse and discuss the sources across the sites in six part-studies and under six themes. Only sites where sources for the respective themes are available are included in the studies, written sources are discussed when relevant. In order to keep in touch with the uncertainties inherent in the material, structures and layers are referred to as basic (B), supplementary (S) or general background sources (G). The specific methodological approaches are accounted for theme by theme.

8 HORIZON 1 (C 800-C 1020/30), A BACKDROP

In this study I will investigate where activity was located on the northern shore of Vågen from about the ninth century up to c 1020/30 and discuss how this activity may be characterised in terms of general land use and in terms of urban versus non-urban settlement. The material from horizon 1 is sparse and the analysis is mainly going to serve as a backdrop to horizons 2-5. I will discuss data geographically going from northwest to southeast as well as chronologically.

Location and general land use

Material that could be assigned to horizon 1 has been documented only at a few sites along the northern shore of Vågen (cf Figure 23). In the northwesternmost area in the Veisan inlet, organic layers from site 1 (S) contained household waste dumped in the close vicinity. The layers were ^{14}C dated within the time frames 780-790 or 810-1000 and contained both pollen and macrofossils among others wood-chips, latrine, kitchen and brewery refuse and dung. The pollen spectre showed pollen from plants which did not grow in western Norway at the time of deposition (Hjelle 1986, 55, 58) (cf p 78ff).

Can the settlement that produced the waste be located more precisely? Being situated close to the registration point, the Holmen area northwest of Veisan may be a possible location for a settlement. However the archaeological sites at Holmen cannot elucidate the period covered by horizon 1 (cf p 157). Large parts of the south and eastern shore of Veisan have been investigated archaeologically (cf p 157 and Figure 22) but no *in situ* traces of occupation older than horizon 2 have been identified here. The terrain north of Veisan seems to have been too steep to be attractive as building land if other possibilities were open. By the process of elimination, it seems unlikely that the eastern and northern shores hosted a settlement during horizon 1. To summarise, this leaves Holmen as a likely location for a settlement. The possibility of some kind of settlement at Holmen broadly dated to the ninth or tenth centuries cannot be excluded but is not substantiated through the existing archaeological material.

In the northern town area only one site produced relevant material for horizon 1. At site 7 (S) a cultivation layer dated tentatively to sometime between the ninth century and the first decades of the eleventh century was recorded (cf p 95). Pollen in the layer indicated meadow vegetation at the site and wheat- or barley growing or settlement in the vicinity. Import indicating pollen

signifying household waste was also found. The pollen must apparently have been transported to site 7 from a settlement in the vicinity. As accounted for in Chapter 7 (p 157 and Figure 22) the northern town area is fairly well covered by archaeological sites. Since no settlement traces could be assigned to horizon 1 here, I find it probable that the settlement reflected indirectly in the material from site 7 was not located in the northern town area. A possible explanation for the presence of pollen indicating household waste at site 7 can be that surface water which had been in contact with fields fertilised with household waste, transported the pollen to site 7. In that case, the material from site 7 would not only indicate meadows at the site itself, but also fields in the close vicinity. The latter would not have been recorded archaeologically without botanical investigations, which have been carried out in only a few places. Based on the available data - however vague - I suggest that the general land use at site 7 may reflect meadows at site 7 and fields fertilised by household waste in the vicinity.

At site 37 (S) a layer, ^{14}C dated to almost the same period as the site 1-deposits in Veisan: 810-970, accumulated in the sea. The layer contained import-indicating pollen probably signifying household waste. As shown in Chapter 7 there were no macrofossils to tie the point of deposition of the household waste closely to site 37 and there were no indications that household waste was dumped in the sea at the neighbouring site 36. There are thus no indications in the material from site 37 or its close vicinities that the waste producing settlement was located close to site 37. As accounted for in Chapter 7 (p 157 and Figure 22) the sources for activity in the southern town area are few and far between. Still the fact that no traces of occupation dated to the period before horizon 5 were found at any of the well-documented sites may be a slight indication that the pollen from site 37 did not originate at a settlement in this area. The pollen, along with other household waste may rather have been spread on arable fields somewhere in the Bergen area, and may have been washed into the Vågen with the surface water. Thus the pollen would reflect agricultural activities in the catchment area of streams leading to the Vågen Bay, rather than a settlement in the vicinity of site 37.

The traces of land use discussed so far all stem from supplementary sources, as they were all dated by broad ^{14}C dates or the presence of *Centaurea cyanus*. It is not possible to determine whether the activities indicated at the sites were contemporary in a narrow sense. The sources are, however, not interrelated. As they all indicate activity in the Bergen area during horizon 1, the general tendency that activities of various kinds were carried out during the wide period represented by horizon 1, ought to be reliable.

At site 30 an approximately 2 m wide pier (B) (analytic unit 30/A) was found, extending into the water of the original small bay and built about 900 (B). Three posts (G) in unit 30/D interpreted as part of one structure were constructed further up on the shore contemporary with or perhaps somewhat later than the pier. No layers have been associated with the use of the posts so it is difficult to decide their function more precisely, but the posts do possibly indicate some kind of settlement here (cf p 138ff). The jetty is considered a reliable source for horizon 1, whereas the assignment of the posts to horizon 1 is not well-founded.

Urban or non-urban?

On the basis of the available botanical and archaeological material, can we determine whether the settlement traces found in Veisan and in the middle town area were urban or non-urban?

The 'Holmen settlement'

Kari Loe Hjelle has discussed the material from site 1 in relation to the structural and functional urban criteria presented by Helle and Nedkvitne (1977) (cf p 20). She concludes that the anticipated settlement by Veisan was probably more concentrated than rural settlements around Bergen, and it was permanent in character. Furthermore she argues that pollen indicating import of grain implies international trade and a central place for the trading of goods, and indirectly indicates that specialised economic activities were carried out. Accordingly, the settlement may fulfil the functional and structural criteria for a town (Hjelle 1986, 61-62). Hjelle does not

explicitly define the settlement at Holmen as a town, but claims that: '...as so far as one can tie the medieval deposits to the definition of a town one can tie the Viking Age deposits to the same definition' (Hjelle 1986, 62) (my translation).

Her conclusions are based on two main arguments. As the botanical material, dated to the Viking Age, reflects the same activity as layers dated to the twelfth or thirteenth centuries when Bergen was definitely urban, the waste-layers from the Viking Age may also represent non-agrarian activities of a more permanent character (Hjelle 1986, 55-57, 61-62). The actual material, however, comprises only a few layers of little volume and the material can hardly count as being representative for neither twelfth nor thirteenth century 'urban activity' nor 'Viking Age activity' as such. Hjelle's second argument is based on the premise that waste was not thrown into the sea on a rural site as it could be used as fertiliser on the arable land, thus waste thrown into the sea indirectly reflects mentalities or strategies of a non-rural population. As this premise also relates to other investigations, and frequently has been used in the debate of early urbanisation in Bergen (cf p 51ff) I will discuss the material behind the premise.

A central question is the nature of the ordinary farm, which the premise refers to. According to Hjelle, botanical investigations in several agricultural areas have not produced waste-layers deposited in basins, the investigation of the Viking age and medieval farm at Lurekalven serves as her main example (Hjelle 1986, 56-57). Investigations of sediments in the Kaasa Bay close to the Viking Age and medieval farm at Høybøen, on the island of Sotra, showed no deposits comparable with those in Bergen (Krzywinski 1991). Based on material from these sites it is concluded that in rural areas waste was not dumped in the sea but used on the fields as fertiliser (Hjelle 1986, 56; Krzywinski 1991, 148). A crucial question is then whether these farms are comparable to a possible farm near Vågen Bay.

Lurekalven and Høybøen were located in the outer coastal district west of Bergen, Lurekalven on a small island. Soil was a scarse ressource here and the *'Plaggenboden'* land use, where all waste was used as fertiliser, was typical for farms in coastal areas west of Bergen in the Viking and Middle Ages (Kaland 1979; Krzywinski and Kaland 1984). In contrast, 'Bergen' is located further inland by the inner fjords and connected to a wide valley. Grass from meadows, not heather was the main fodder here (cf Kaland 1979; Hjelle 1994, 164). The outer coastal district heathland farms may therefore not serve as satisfactory parallels to a possible farm in the Bergen area and do not provide sufficient basis for the premise that waste thrown into the sea indirectly reflects a denser population than was normal for an ordinary farm. On the basis of the material from site 1 alone we cannot determine whether the possible settlement at Holmen was denser in structure than settlements in comparable areas.

Hjelle concludes that specialised trading activities were carried out in the settlement. This conclusion is based on pollen indicating the presence of grain grown outside Norway and the notion that the settlement was denser in structure than settlements in the surrounding area. As we have seen, the latter notion is not strong, leaving us with the import-indicating pollen. The presence of pollen of foreign origin may not necessarily count as evidence of an economy different from that of a Viking Age rural settlement. Trading connections of a more limited scale and within a non-urban sphere may well have been found in the period represented by horizon 1. The import of grain in itself is not dependent on an urban structure and arguments based on the import-indicating pollen are thus not conclusive.

In conclusion, I find that Helle and Nedkvitnes structural and functional criteria for the settlement to qualify as a town cannot be tested satisfactorily, and we cannot determine whether the botanical traces from Veisan signify an urban or non-urban settlement on the basis of the material from site 1 alone. Excavations of Kaupang in Vestfold, Birka and Haitabu have shown that crafts were important activities in these Viking Age towns and waste and blanks from the fabrication of combs, glass beads and metal jewellery are common find groups here. In connection with these towns large burial grounds have also been identified (eg Ambrosiani and Clarke 1995 (1991)). The survey of stray finds and finds from regular excavations from the Bergen area have

not produced any crafts indicating artefacts that can be dated to the Viking Age. The use of data *ex silentio* is problematic from a methodological point of view, the lack of finds may be explained with references to a lack of investigations in relevant areas and methodology and such references are certainly relevant for the Holmen area. Still, this lack of finds may also be a slight indication that no Viking Age urban settlement resembling those at Kaupang, Birka and Haitabu was located to the Holmen area during horizon 1.

Looking at the material from site 1 in isolation, one might suggest that the waste-layers did not stem from a settlement on land but from a 'household on a boat' instead. The waste-layers might have been deposited in the Veisan from boats anchoring for the night in the sheltered inlet. The activity traces could then be explained as originating from a much used anchorage place, for instance used by travellers on their way up or down the coast. Such places have been found in numbers along the Danish and Swedish coasts (eg Callmer 1991; Ulriksen 1998), however, the activity traces from site 1 cannot, however, be seen in isolation, and the anchorage place theory does not explain to how household waste signified by import-indicating pollen apparently ended up in other places in the Bergen area (cf sites 7 and 37).

I have made the case that the deposits from site 7 and site 37 may indirectly reflect agricultural activities in the Bergen area. If we accept this, it follows logically that the agricultural activities were conducted from a settlement that had access to imported grain, and the settlement associated with Veisan and tentatively located to Holmen springs to mind. Although our sources are limited, they may, when seen together, suggest that the culture-layers found in Veisan reflect a settlement where agrarian activities were carried out, perhaps located at Holmen and with fields in the Bergen area. The settlement apparently had international contacts and imported grain perhaps as early as in the ninth century.

As we have seen earlier, researchers have, with the place name Bjorgvin as a point of departure, discussed the presence of a farm with this name in the Bergen area (Lorentzen 1952, 43-44, with references; Herteig 1969, 129-134, with references). Based upon topographical data, place names and the study of boundaries between farms in the vicinity of Bergen, Helle has suggested that the Bjorgvin farm was located in the area around Vågen, the farm may have been as large as the royal estate at Alrekstad and may have been royal property (Helle 1982, 71-85). The Bjorgvin name may, according to the philologist D A Seip, belong to a group of vin- names, which had already been introduced at the beginning of the Viking Age (c 800) (Helle 1982, 85). Such a date is not inconsistent with the wide dates provided in the botanical material. It is tempting to suggest that the proposed settlement at Holmen was identical with the supposed Bjorgvin farm. Until more firm archaeological evidence is available from the area, however, this proposal must be considered merely as a hypothesis.

The Pier at site 30

How does the pier and possibly also the posts at site 30 add to this picture? As the pier (30/A) is probably not older than c 900, it appears to be younger than the material discussed so far. Due to the broad dates and the general character of the activities represented by the botanical material, it cannot be excluded that the structures at site 30 and the suggested settlement at Holmen were also in use at the same time.

The pier itself must have functioned as a landing-place for goods and people carried by boat, and the possible post-construction further up the beach could have been almost anything, perhaps a shed or a boathouse. The general character of the activity is difficult to grasp the structures being few in number and no layers having been documented in connection with the structures. Although the profiles of site 30 stretched as a cross-section of the sloping terrain from the foot of Fløyfjellet in the west to the shore of Vågen in the east (cf p 138ff), there are no traces of contemporary structures or culture-layers in the remaining units at the site. Likewise there was no evidence of activity in the period covered by horizon 1 neither at site 34 about 30 m to the south of the site 30 trenches, at site 31 to the west nor at sites 26 and 27, located about 79 m from the trenches of site 30. The pier and the post-construction at site 30 were apparently not

part of a densely built-up settlement in horizon 1. The pier was located about 350 m east of Holmen with ample possibilities for a much closer landing-place for the suggested Holmen settlement.

As we have seen, the royal estate at Alrekstad was located about 2 km south of the mouth of Vågen above Alrekstadvågen Bay, the later Store Lungegårdsvann. The royal estate must have had a landing-place for goods and people and with enough space for boathouses. The location of this landing-place has been discussed over the years. Alrekstadvågen, the closest alternative to Alrekstad has been considered a less likely candidate than the Vågen Bay (Koren-Wiberg 1921, 21; Lorentzen 1952, 47; Herteig 1969, 134-136; Helle 1982, 74-75), because the Alrekstadvågen Bay is more likely to freeze in the winter than Vågen. Furthermore, Alrekstadvågen is less accessible by larger boats than Vågen (Herteig 1969, 134-136; Helle 1982, 74-75) and harder to defend and escape from than Vågen (Herteig 1969, 136). Both the Holmen area (Koren-Wiberg 1921) and Vågsbunnen close to the later Church of St Cross have been suggested as possible locations for the landing-place (Lorentzen 1952; Herteig 1969; Helle 1982).

The Norwegian kings often frequented Alrekstad and other west Norwegian farms from King Harald Hårfagre and onwards (Hkr 1893-1901, I 155, 161; Helle 1982, 72) and Alrekstad may thus have been a royal estate already by the end of the ninth century. This date is not in conflict with the archaeological date of the pier. Since the area around Vågen was most likely owned by the king before a town emerged here (Helle 1982, 71-85 with references) it is possible that Alrekstad was free to establish a landing-place within the Vågen area. These circumstances do not prove that the pier and associated structures at site 30 represent a landing-place connected to Alrekstad, but they certainly do not contradict such an interpretation.

Conclusions

To conclude, there are no traces of occupation that can count as concluding evidence of an urban settlement in horizon 1. The pier at Vetrlidsalmenningen was not part of a wider built-up area. The finds from Veisan are best explained as representing a settlement where agricultural activities were carried out, it may have been located at Holmen and probably had fields in the Bergen aera.

9 PLOTS AND PLOT SYSTEMS IN THE TOWN AREA

In this chapter I will first identify boundaries through the sources that have been assigned to horizons 2 to 5 with varying certainty. If the boundaries form systems this may strengthen my assignment of the material as sources for the respective horizons. I will therefore discuss whether plot systems were present in the town area from horizon 2 to horizon 5. Having discerned two different plot systems, I will evaluate central dates that apply to the sources from horizons 2 and 3. Finally areas included in the plot systems discerned are tentatively reconstructed.

Plot boundaries

Plots in early Bergen are identified through the presence of one or more of the following boundary indicators (cf Schia 1987a; Christophersen and Nordeide 1994, 122-123):

- Palisade fences
- Systematic difference between culture-layers deposited on each side of an 'invisible' line
- Systematic coherence in the orientation of structures on each side of an 'invisible' line
- Wall alignments
- Churchyards
- Shorelines
- Eavesdrops

And 'diagnostic' structures:

- The double tenement building pattern

The boundary indicators are most applicable on the larger sites where a broad view of the built-up area can be achieved and where the settlement was densely built. At smaller sites I will use the presence of 'diagnostic' structures as an additional means to identify boundaries and plots. The characteristic 2 m x 2 m caissons found at many sites are such structures. At site 6 the building

pattern, usually referred to as the double tenement system, was identified in horizons 4 and 5. The typical building pattern on a plot in this system is characterised by two rows of buildings, a passage, and eavesdrops that run at 90 degrees to the Vågen waterfront. The passage is most often located between the buildings along the middle axis of the tenement (Herteig 1985, 11) and the eavesdrops demarcate the lengthwise plot boundaries towards neighbouring tenements. Some 'double tenements' consist of only one row of buildings (Herteig 1985, 11), but when referring to the typical double tenement layout in this study, it consists of two rows of buildings flanked by eavesdrops that demarcate plot boundaries. At site 6, passages assigned to horizons 4 and 5 were clearly founded on 2 m x 2 m stone-filled caissons. Such caissons also indicate the waterfront extension of the built-up area. At larger sites where such caissons are present they are always associated with passages that run between building rows or they demarcate the waterfront extension of the plot. This caisson type thus appears to be 'diagnostic' for the 'double tenement' building pattern and associated plots. When similar caissons are found on other and smaller waterfront sites, they most likely signify a tenement pattern similar to that at site 6 in horizons 4 and 5. At smaller sites where only 2 m x 2 m stone-filled caissons have been identified the location of plot boundaries may be reconstructed by projecting the location of eavesdrops in phases following the 'caisson phase', because the location of eavesdrops appear to be very stable in areas where this pattern has been studied in detail (cf Moldung 2000).

Except for palisade fences, the boundary indicators all depend on observable patterns of constructions or culture-layers, this presents a problem at small sites and when only a few structures or culture-layers can be observed. In such cases, conditions that are specific for the single site have been considered when identifying plots. The identified plots and - where plots could not be identified - the analytic units are labelled according to principles outlined above (cf p 65ff).

Plot boundaries are plotted onto maps on Figure 28 to Figure 32 according to their dates. Boundaries identified according to the boundary indicators outlined above are drawn in a solid line on the maps, and boundaries that are identified through conditions specific to the single site are drawn in a dotted line. Boundaries outside the sites are reconstructed in a broken line.

Horizon 2 (c 1020/30-c 1070)

In horizon 2, plot boundaries were identified at three sites. These are in the northern town area only (Figure 28). The boundaries were all demarcated by palisade fences. At site 6 a fence (S) formed the boundaries of a plot (Herteig 1991, 97) labelled 6/C. Another palisade fence (S) may indicate a second plot (6/B) west of plot 6/C. If there was a third plot as well - east of the well-defined plot - a jetty (B) would run straight towards the eastern corner of this plot, providing the plot was of the same width as plot 6/C. On this basis a hypothetical plot 6/D has been reconstructed on a preliminary basis (cf p 89ff).

The plots cannot have extended all the way down to the Vågen shoreline as the fences of plots 6/B and 6/C towards Vågen ran parallel to the shoreline, delimiting the plots from the shore. The jetty that may have run from the hypothetical plot 6/D to the shoreline and a few scattered posts in front of plot 6/C were also assigned to horizon 2. All in all the fences that ran parallel to the Vågen shoreline appear to have marked the extent of the built-up area towards the shore. The end of plot 6/C towards Vågen was 11.6 m wide, the length up the morainic slope is unknown.

At site 9, a palisade fence that ran parallel to the Vågen shoreline, divided the site into northern and southern parts. The area north of the fence is labelled plot 9/A. There are no indications that the fence formed the transverse southern end of plots in the same way as the southernmost palisade fence at site 6.

Two palisade fences (S) clearly divided site 11 into three plots, 11/A, 11/B, and 11/C, that ran at 90 degrees to the Veisan shoreline. Only the size of plot 11/B could be measured. The plot most likely extended to the Veisan shoreline, where it was about 11.6 m wide by the reconstructed shoreline. The plot was approximately 12.1 m wide about 15 m from the shoreline. How far the plot extended up the morainic slope is unknown, the pit-house at site 7 (S) had the same

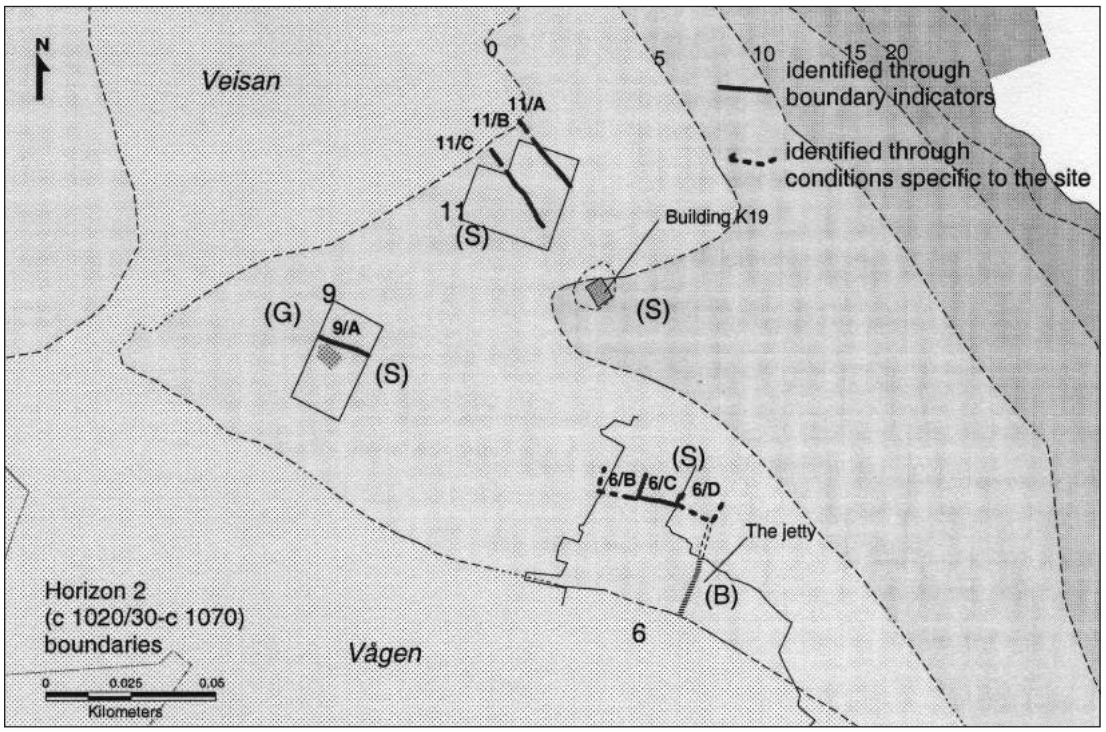

Figure 28. *Boundaries identified in sources assigned to horizon 2 (c 1020/30-c 1070)*

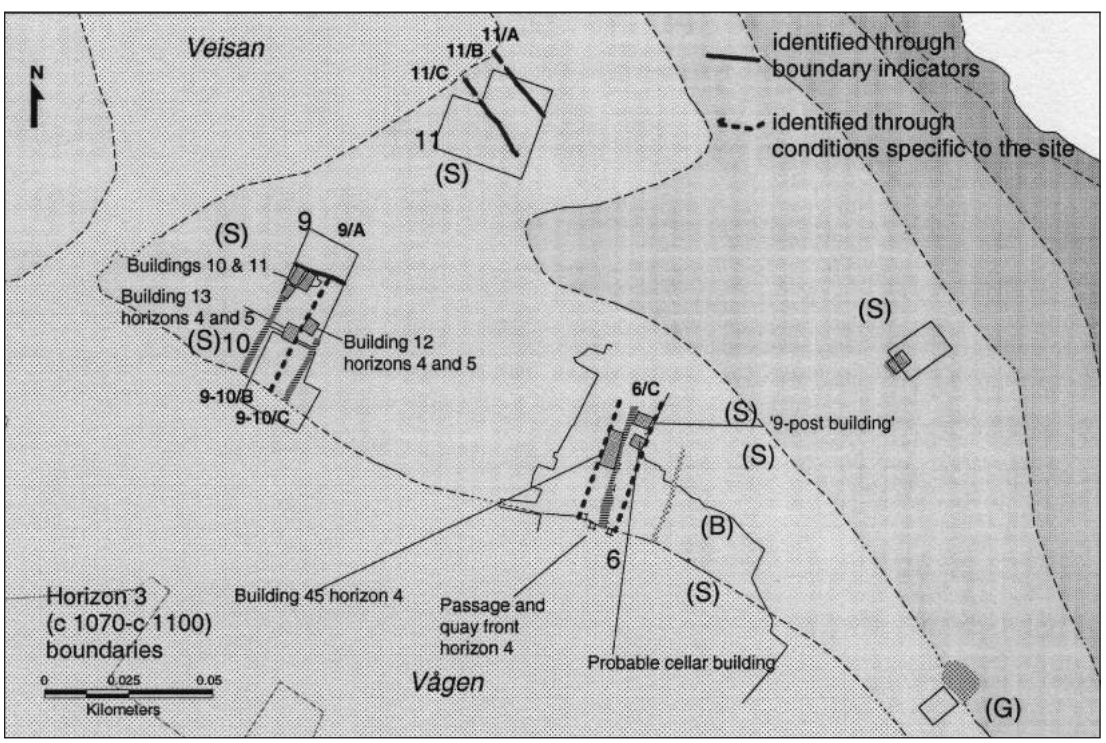

Figure 29. *Boundaries identified in sources assigned to horizon 3 (c 1070-c 1100)*

orientation as the plots at site 11. If the pit-house was located on plot 11/B, the plot could be 55-60 m long.

Horizon 3 (c 1070-c 1100)

In horizon 3, boundaries were also identified in the northern town area only (Figure 29). The palisade fences from horizon 2 at site 11 were also assigned to horizon 3 (S) and plots 11/A. 11/B, and 11/C are reconstructed. At site 6, there were no longer clear boundary indicators. Only two buildings, the '9-post building' (S) and the 'possible cellar building' (S) were assigned tentatively to horizon 3 at site 6. Culture-layers have not been documented in such detail that any boundaries can be identified. Still, for several reasons, it is likely that the two buildings were related to a defined plot. First of all the location of the two buildings was related to the plot size from the previous horizon 2 plot (6/C) furthermore the width of this plot was still respected in the succeeding horizons 4 and 5. Such continuity in the location of boundaries can hardly be a coincidence. Therefore plot 6/C is reconstructed in horizon 3 as well. The plot ran at 90 degrees to the Vågen shoreline in horizon 3. At site 9, boundaries in the area south of the fence may be reconstructed in horizon 3 by looking at patterns in the younger material. South of the palisade fence the building pattern on site 9, in horizons 4 and 5, was parallel to that at site 6 in horizons 4 and 5; the double tenement system had been introduced. This is shown by passages founded on 2 m x 2 m stone-filled caissons (S) and flanked by buildings (S). Two passages are reconstructed on the basis of the caissons. According to the number of passages two plots are reconstructed in the southern part of the site in horizons 4 and 5, they are labelled 9-10/B and 9-10/C (see below). Returning to horizon 3, the eastern wall extension of buildings 10 and 11 (S) is in line with the reconstructed boundary between plots 9-10/B and 9-10/C in horizons 4 and 5, implying that the plots in horizons 4 and 5 were structured by a plot-system that already existed in horizon 3. Hence plots 9-10/B and 9-10/C are reconstructed in horizon 3 as well.

At site 10, 2 m x 2 m stone-filled caissons (S) indicate that site 10, in horizon 4, was built up according to the double tenement system. By projecting the boundaries from horizons 3 to 5 at site 9 onto site 10 the water bound extensions of the plots identified at site 9 emerge. The plots at sites 9 and 10 are labelled 9-10/B and 9-10/C. Based on the reconstruction of the natural topography the plots were about 38 m long, they ran at 90 degrees to the Vågen shoreline.

Horizon 4 (c 1100-1120s)

At site 11, the boundaries (S) from horizon 3 continued in horizon 4 (Figure 30). At site 6, building 45 (B), a passage and a quay front (B), and perhaps the 9-post building (S), formed a double tenement that conformed to the width of plot 6/C from horizon 2, plot 6/C is reconstructed in horizon 4 as well. At site 8, the oldest traces of occupation were assigned to horizon 4 (S) but boundaries cannot be identified in the phases predating c 1170. In the succeeding phases, however, when structures are better preserved, a systematic difference in the orientation of structures in the northern, western and eastern parts of the site can be observed clearly. The topographical conditions as well as the building pattern indicate four plots. As the oldest material at site 8 serves as a source (S) to horizon 4, I find it likely that the area was divided into plots already in this horizon. I will return to the location of the boundaries below.

At site 14, a pier (S), interpreted as the seaward extension of a street, also formed boundaries in the landscape. The pier/street was about 4 m wide and ran at 90 degrees to the waterfront, it probably extended up the morainic slope. The area is labelled plot 14/A.

In horizon 4, the boundaries of a plot for the presumed early St Mary's (site 23) in the northern town area are too uncertain to be used as a boundary indicator. In the middle town area, the wall around the churchyard of the Church of St Nicholas (S) (site 32) denotes the plot for this church. Other plot boundaries could not be identified in horizon 4.

Horizon 5 (1120s-c 1170)

In horizon 5, there was continuity in the location of the boundaries from horizon 4. In addition, site 6 was now clearly divided into several

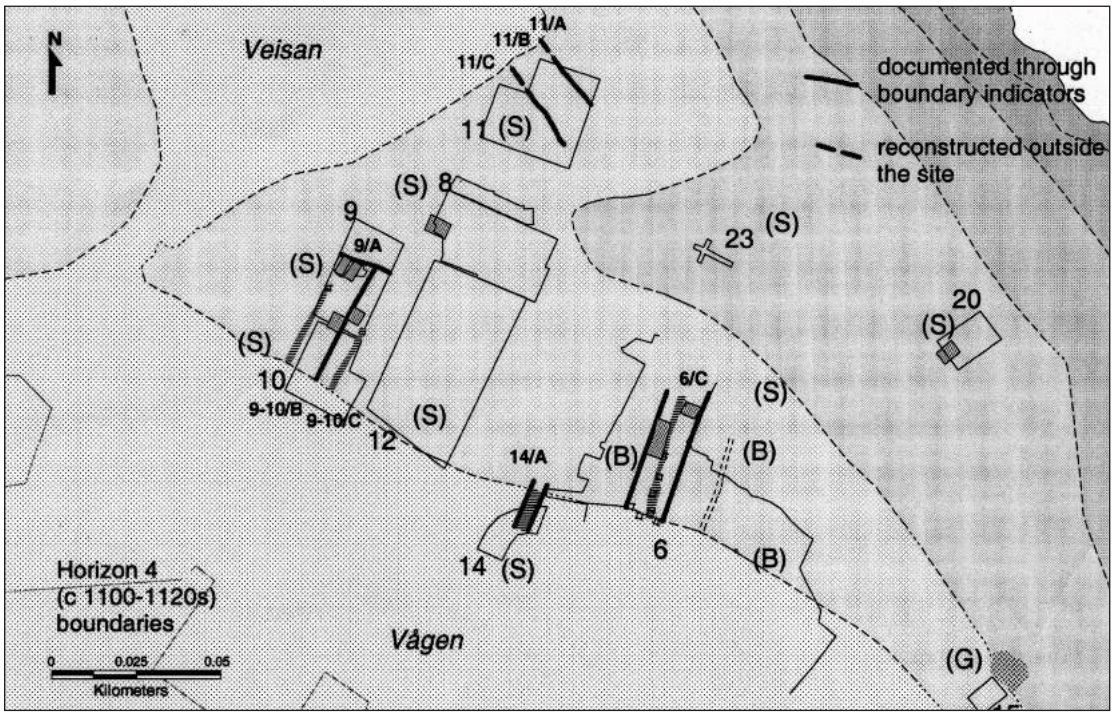

Figure 30. *Boundaries identified in sources assigned to horizon 4 (c 1100-1120s)*

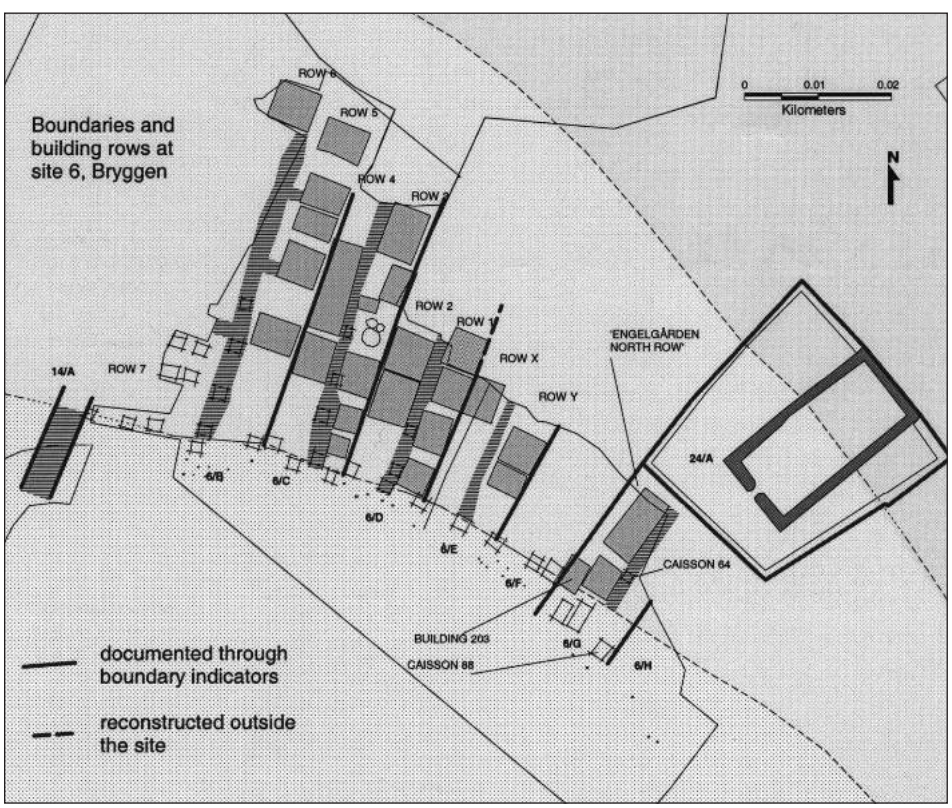

Figure 31. *Boundaries and building rows at site 6, Bryggen. (Modified from Herteig 1991, Plate 14 and 1990, Figure 85, Figure 56)*

plots that ran at 90 degrees to the Vågen shoreline (Figure 31). 'Building rows 4 and 3'[47] in the Gullskogården excavation area make up plot 6/C still with the same width as the 6/C plot from horizon 2. To the east of 6/C, building rows 2 and 1, also in the Gullskogården area, now clearly make up a plot. The eastern boundary of this plot coincides excactly with the eastern boundary of the hypothetical plot 6/D assigned to horizon 2, and with the location of the jetty from horizon 2. The horizon 5 plot is also labelled 6/D. Building row X and row Y in the Søstergården excavation area make up plot 6/E. Plots 6/C, 6/D, and 6/E were occupied by two rows of buildings and a passage that ran between the building-pairs, they thus make up typical double tenements with eavesdrops and wall alignments indicating the boundaries between plots. In the remaining parts of the site the layout of the structures is not immediately clear and boundaries will have to be discussed on a broader basis. The 'Engelgården north row' made up the westernmost building row and caisson 64 was part of the foundation for a passage in the area that I suggest makes up plot 6/G. If we prolong the alignment of the westernmost wall around St Peter's churchyard (site 24) towards the waterfront, it would coincide with the westernmost extension of building 203 in the 'Engelgården north row', and thus form the westernmost boundary of plot 6/G. The eastern boundary of plot 6/G is less clear. However, if we prolong the easternmost alignment of caisson 88 as the eastern boundary, enough space is left between this boundary and the passage for a second building row. The plot would then also represent a typical double tenement. On this basis the eastern boundary of plot 6/G is reconstructed. East of 6/G, labelled 6/H, there are indications that the area was occupied. The eastern limit of this plot cannot be determined through the material from site 6 alone and will be discussed on a broader basis below in the analysis of plot systems. The area between plot 6/E and 6/G belonged partly to the Søstergården excavation area and partly to the Engelgården excavation area. This plot, labelled 6/F, is defined by the boundaries of plots 6/E and 6/G.

In the Gullskogården area, west of plot 6/C, building rows 5 and 6 and their common passage have been interpreted as a wide double tenement by Herteig. Furthermore, row 7 has been suggested as the easternmost row of another double tenement west of rows 6 and 5 (Herteig 1991, 108ff). This interpretation does not leave room for the street (14/A) that was located west of site 6 at site 14, the area may therefore have been organised in a different way from that suggested. I will discuss this on a broader basis when analysing plots and plot systems below.

At site 11 yet a boundary may be localised through the wall alignment of building 12 (S) towards the area southwest of the site, this plot is labelled 11/D (Figure 32). The Church of St Peter (S) (site 24) may now have been located away from the waterfront and surrounded by the walls of the churchyard (S). The plot of the Church of St Peter is labelled 24/A. The presence of a 2 m x 2 m caisson (S) at site 12 indicates that this area was characterised by the double tenement building layout and thus divided into plots. At site 15 a passage (S), has been assigned to horizon 5. There was continuity in the orientation and location of structures, from the oldest to the youngest phases documented at this site, so I assume that the site was located within one plot. If the plot was of about the same length as the plots at site 6, site 16 would be part of the plot at site 15, the plot is therefore labelled 15-16/A. At site 21, the oldest structures and culture-layers were assigned to horizon 5 (S). The structures and associated layers were limited to the north-eastern half of the trench. The north-eastern part of the trench is labelled unit 21/A, the south-western part is labelled unit 21/B.

The extent of the burials at St Mary's churchyard, documented at site 6, indicates the southern boundary of the churchyard (plot 23/A). Towards the other three sides of the church, the churchyard has been estimated to be 10-20 m wide (S). At the remaining sites in the northern town area, plot boundaries cannot be identified in horizon 5. The material from these sites is treated within analytic units.

In the middle town area several plot boundaries can be identified, in addition to the plot of St Nicholas (B) (plot 32/A) (Figure 32). The western and eastern parts of site 26 were built

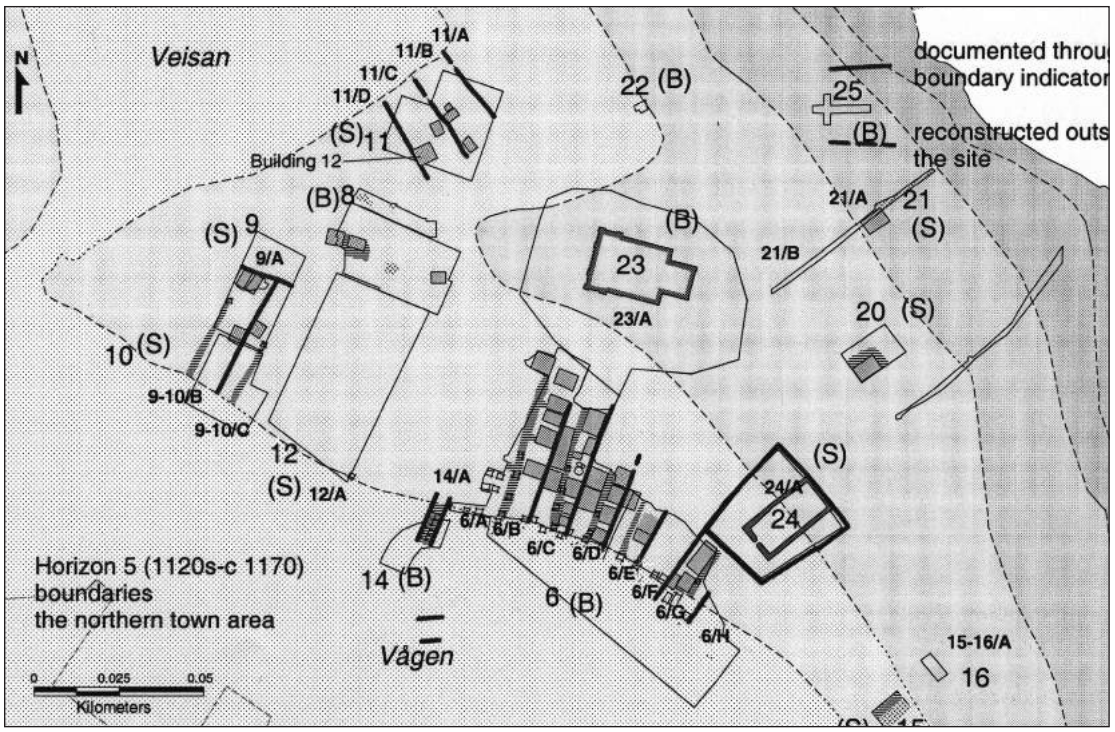

Figure 32a. *Boundaries identified in sources assigned to horizon 5 (1120s-c 1170)*

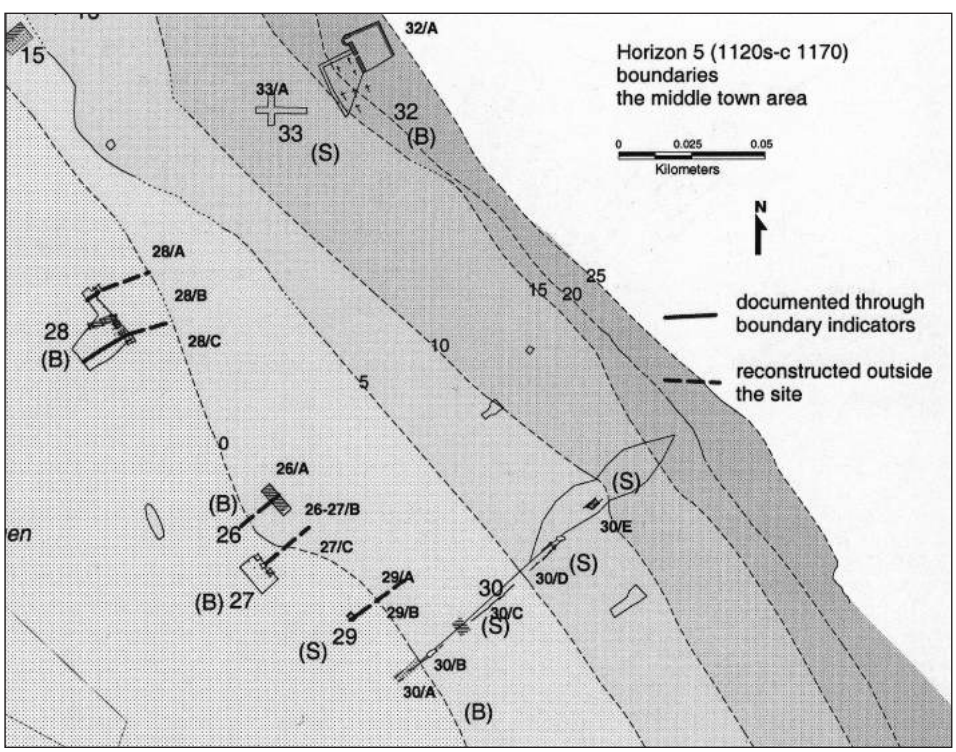

Figure 32b. *Boundaries identified in sources assigned to horizon 5 (1120s-c 1170)*

separately (B) in horizon 5 and an eavesdrop ran between the two parts in the immediately following phases, where the preservation of structures was better. It is therefore likely that the two parts of the site belonged to two separate plots, they are labelled 26/A and 26-27/B (see also below).

At site 27, three 2 m x 2 m stone-filled caissons (B) indicate that the site was built up in a 'double tenement' layout. In phases 3 and 4, that followed the phase that represents horizon 5, the excavated site was divided into two plots, the boundary being indicated by an eavesdrop (Golembnik 1993, Figures 21, 31). The plot boundary from these phases is projected onto horizon 5. The westernmost plot at the site is identical to plot B at site 26. The common plot on the two Finnegården sites is labelled 26-27/B, and the westernmost plot at site 27 is labelled 27/C.

At site 28, seven 2 m x 2 m caissons (B) indicate that the double tenement building pattern was also established here and that the site was divided into plots. The presence of this building pattern in the succeeding phases supports this interpretation (cf Lindh 1979, figures). The position of eavesdrops in phase 2 at the site implies the presence of three plots at the site. In horizon 5 a pier built on three of the caissons was the forerunner for a passage on the middle plot. It cannot be determined if there were any plots here earlier than horizon 5, as activity on the site prior to horizon 5 cannot be elucidated through the available sources. The plots are labelled 28/A, 28/B, and 28/C.

Site 29 was probably characterised by the double tenement system in horizon 5, indicated by a 2 m x 2 m stone-filled caisson (S). Using material from earlier phases and boundary indicators similar to those used in the present study, Dunlop has reconstructed a boundary between two tenements across this caisson (Dunlop 1999, Figure 22). Two plots have thus been identified, labelled 29/A and 29/B.

I have identified boundaries using the sources that were assigned to the horizons with varying certainty. I will now attempt to discern patterns in the material through a broad spatial analysis of the sources and discuss whether the plots were laid out according to overall systems.

One or several plot systems?

By the term plot system I refer to the overall principles of how the plots were laid out. These principles may have been based on (1) the standard used when dividing areas into plots and on (2) the relation to the shorelines of Veisan and Vågen. In order to determine whether more systems are present in the material from horizon 2 to horizon 5, I will start out by studying the system(s) of the plots in the northern town area, as plots have been assigned to horizons 2, 3, 4 and 5 here.

In horizon 2 the identified plots were related to the shorelines of Veisan and Vågen in two different ways. While plots 11/A, 11/B, and 11/C at site 11 most likely extended down to the Veisan shoreline, plots 6/B and 6/C along the Vågen waterfront did not extend to the shoreline, but were bounded by fences about 30 m further up the beach instead. The fence at site 9 was also withdrawn from the Vågen waterfront, running parallel to the shoreline about 38 m further up the beach. The two horizon 2 plots that can be measured were of almost exactly the same width (see Table 29 for measures of the plots in the town area). These circumstances suggest that the plots were laid out according to the same standard - and in a system that was directed towards Veisan rather than Vågen.

In horizon 3, plots 11/A, 11/B, and 11/C were still oriented towards the Veisan shoreline. Along Vågen, however, the beach was now divided into plots that extended down to the Vågen shoreline. The change is well-documented especially at site 6 as the lengthwise boundaries were respected, whereas the crosswise were not. This may indicate that the Veisan focused system of plots from horizon 2 was replaced by a new system in horizon 3, a system that was directed towards both the Vågen and Veisan shores.

In horizons 4 and 5, the plot boundaries showed continuity in the location from horizon 3 and extended down to the shores of either Veisan or Vågen. In conclusion, the northern town area appears to include two plot systems: a Veisan-bound system probably introduced during horizon 2, rearranged into the Veisan and Vågen-bound system probably introduced during horizon 3 and maintained during horizons 4 and 5.

In the middle town area the first clear plot boundaries appear along Vågen in horizon 5. The settlement may, however, go back to horizon 3 according to a supplementary source from site 26. Is it possible that plots were laid out in the middle town area before horizon 5 in spite of the lack of clear boundary indicators in the material? The lack of identified boundaries at the middle town area sites before horizon 5 may partly be explained by the topographical location of the sites in the Vågen Bay or on the waterfront. Only site 26 is located above +/-0 masl before horizon 5 and the size of this site, covering only 40 m^2, may explain the lack of clear boundaries here.

I find it likely that people who settled in the Bergen area in horizon 3 would settle on land that was divided into plots. First of all, because the northern town area was clearly divided into a plot system in horizon 3, the conception of such a division existed in Bergen when the middle town area was occupied - probably in horizon 3 (S). Furthermore, the king seems to have owned the land in the Bergen area before the town was established (cf Helle 1982, 77-79 with references). Based on this, I find it unlikely that new townspeople could settle anywhere they pleased upon arrival. So if people occupied the area by site 26 as early as during horizon 3 it is reasonable to suggest that boundaries were laid out in the middle town area as far back as in horizon 3, even though it has not been recorded directly this early.

The plots that were identified along Vågen in the middle town area, from horizon 5, all extended down to the Vågen waterfront. In this sense the plot system seems to correspond to the system from the northern town area in horizon 3. The standard or measures of the plots in the two town areas, however, diverge. Although most of the measures are approximate, as they are partly based on the reconstruction of the natural topography and the varying accuracy of the documentation, they clearly indicate different plot sizes as far as width is concerned (Table 29). In the northern town area the widths of the plots that could be measured do not change from horizon 2 through horizon 5, in fact they are close to identical. Excluding plot 24/A (St Peter's churchyard), the plot width in the northern town area ranges from 10.0 m to 13.0 m (depending on where the measurements are taken), with an average of 11.7 m.

If, hypothetically, the northern town area plots were laid out according to a system where about 11.5 m was the standard width for a 'model plot' - the width of 23.3 m for the seawards boundary of St Peter's churchyard (site 24) would fit into such a system by spanning the width of two 'model plots'. The distance of about 24 m between the eastern side of the pier/ street (14/A) at site 14 and the western boundary of plot 6/C at site 6 also corresponds well with a system characterised by about 11.5 m wide plots. On this basis I suggest that the northern town area was divided into plots according to a system based on a standard of a 'model plot' about 11.5 m in width.

In the middle town area, only the widths of two plots, 28/B and 26-27/B, could be measured with some accuracy (cf Table 29). With an average width of approximately 17.25 m, both were considerably wider than those that could be measured in the northern town area. Does this show that the middle town area was divided into plots according to a different system than those in the northern town area?[48] Or are the apparently wider plots in the middle town area just an irregularity in the same overall horizon 3 system, implying that the width of plots is secondary to the relation of plots to the Vågen shoreline?

I find it likely that all the plots that extended to the Vågen waterfront may have been part of the same overall system. Because if the middle town area plots date back to horizon 3, as argued above, and if we accept as a premise that there was a change of plot systems from horizon 2 to horizon 3 in the northern town area, it seems unreasonable that two different systems were introduced in the town area at the same time.

How can the difference of width measures in the middle town area versus those of the northern town area then be explained? Again, if we accept that the northern town area had already been divided into approximately 11.5 m wide plots at an earlier stage, a probable explanation for the difference in width can be that the about 11.5 m standard and the physical location of the lengthwise boundaries structured the system that was introduced in the northern area in horizon 3. In

Table 29. *Plots where the length or width can be measured, horizons 2-5*

Plot/	11/B	11/C	9/B	9/C	6/C	6/D	6/E	6/F	6/G	6/H	24/A	28/B	26-27/B
	Northern town area											Middle town area	
Horizon	2-5	5	4-5	4-5	2-5	5	5	5	5	5	5	5	5
Width by the shore	11.6	11.0			11.7	11.7	11.3	10.0	12.0			18.8	15.7
Width about 15 m from the shore	12.1	12.1			11.8	12.5	13.0	12.0	11.9		23.3		
Width at the land-side end of plot									11.9		32.0		
Length	>55.0-60.0		38.0	38.0					19.0	14.5	32.0		

the middle town area, however, no older system existed when plots were to be laid out during horizon 3 and the width of plots could be determined without consideration of an older system.

To sum up, I have argued that two plot systems existed from horizon 2 to horizon 5. According to this the oldest system was established in the northern town area during horizon 2 and consisted of approximately 11.5 m wide 'model plots'. These plots extended down to the Veisan shoreline but not to the Vågen shoreline. I regard this as an indication that this system was directed towards the Veisan inlet rather than towards Vågen. A new plot system was probably introduced in the northern and middle town areas, during horizon 3 and maintained through horizon 5. Within this system the plots towards Vågen extended all the way to the waterfront. This plot system was thus more oriented towards Vågen Bay than the older system. In the northern town area, the plot width and the location of lengthwise boundaries were probably structured by the older system where the 'model plot' was about 11.5 m wide. In the middle town area, plots were laid out according to the same system in terms of the focus on Vågen Bay, but the width of the plots diverged from those of the northern town area.

Evaluation of the plot systems discerned and central dates of sources assigned to horizons 2 and 3

The existence of plots in the northern and middle town areas has been shown through respectively fourteen and five well-identified boundaries. There should thus be no doubt that boundaries existed in these town areas in the period under study. Patterns formed by the well-identified plots and discerned through a broad spatial analysis of the sources give the suggested plot systems a reliable empirical basis. Uncertainties concerning the plots and plot systems discerned should thus be more attached to the chronology of the structures than to the factual existence of boundaries and systems.

The sources from horizons 2 and 3 were tentatively assigned to these horizons through patterns in the material on the single sites and their close vicinities. How do the suggested plot systems coincide with these patterns? And can the patterns discerned through the broad view of the sources strengthen the initial assignment of the rather poorly dated material to horizons 2 and 3?

The palisade fences at sites 9 and 11 were thought to be contemporary with the palisade fences at site 6 on the basis of a number of circumstances (cf the discussions on pages 89ff, 103ff, 110ff, and 155ff). Above it has now been shown that the widths of plots 11/B and 6/C were almost identical, this is yet another circumstance supporting the hypothesis that the palisade

fences and associated plots were laid out contemporaneously. Furthermore it is shown through boundary indicators and diagnostic structures, to a large extent based on basic sources, that the widths of the palisade-bounded plots at site 6 were respected in the succeeding horizons, and that the plots identified in the northern town area altogether seem to be part of a general system where approximately 11.5 m may have been the width of the 'model plot'. This also supports the hypothesis that the palisade fences at sites 6, 9 and 11 were constructed contemporaneously. In this respect the patterns discerned through the broad spatial analysis lends support to the suggested contemporaneity of the fences.

The palisade fences and associated plots 6/B and 6/C at site 6 were tentatively assigned to horizon 2 amongst other things through the horizontal link made between the well-dated jetty, assigned to horizon 2 and a hypothetical plot 6/D east of plot 6/C. When the area covered by the hypothetical plot 6/D was built on in horizon 5, a factual plot 6/D is clearly discerned in the material. The location of the horizon 2 jetty corresponds exactly to the eastern boundary of this plot. This co-location of the jetty and the boundary is hardly a coincidence and I consider this a strong indication that the jetty from horizon 2 actually did lead up to a plot in horizon 2. The hypothetical plot 6/D assigned to horizon 2 is thus close to being established. This strengthens the horizontal link made between the well-dated jetty and the palisade-bounded plots at site 6, and thus supports the assignment of the palisade-built fences to horizon 2. This also strengthens my general assignment of sources from sites 6 and 9 to horizon 3, as the suggested time depth of the material from these sites is better established.

This in turn strengthens my suggestion that one and the same plot system was introduced in the northern and middle town areas during horizon 3; this suggestion, is mainly based on the premise that the change of systems seen in the northern town area took place during horizon 3.

All in all it seems that the patterns discerned in the material when carrying out a broad spatial analysis support my initial assignment of central sources in the northern town area to horizons 2 and 3. This does not mean that the sources for horizons 2 and 3 are now well-dated or that the last word is said on the matter. However, at the present stage of research, the dates presented here represent an alternative that does not involve too many unlikely 'coincidences'. Thus I maintain the dates suggested in Chapter 7, bearing in mind the uncertainties inherent in the material in the following analyses.

The extent of the two plot systems

The horizon 3 system

I will first reconstruct the area covered by the horizon 3 system, because the reconstruction of the extent of the horizon 2 system must be based on what can be inferred from the horizon 3 system. Judging by the identified boundaries, the length of the plots seems to have varied, so I have not tried to reconstruct the plots in their full length.

Figure 33 shows the suggested reconstruction of the horizon 3 system. In the northern town area, the building land between St Peter's churchyard (plot 24/A) from horizon 5 and plot 15-16/A conform to the approximately 11.5 m 'model plot' system when dividing the distance between St Peter's churchyard's easternmost boundary and the passage at plot 15-16/A by 11.5. The same applies to the area between plot 6/C and the eastern boundary of the pier/street 14/A.

The stretch of land between the western limit of the pier/street and the western boundary of plot 9-10/C is more complicated. A reconstruction of the plots in this area depends on whether or not one includes the pier/street (14/A), which is assigned to horizon 4 (S), as an original part of the horizon 3 system. The area south of the fence at site 9 may have been divided into plots during horizon 3 (S) and was thus, probably, included in the horizon 3 system from the beginning. If the street was not planned or built until horizon 4, one would expect that there was insufficient space for the street. The distance between the western boundary of plot 9-10/C and the eastern boundary of the street is about 73.5 m and the distance between the western boundary of plot 9-10/C and the western boundary of the street is about 69.5 m. Dividing these measurements by 11.5 there would be room for respectively 6.1

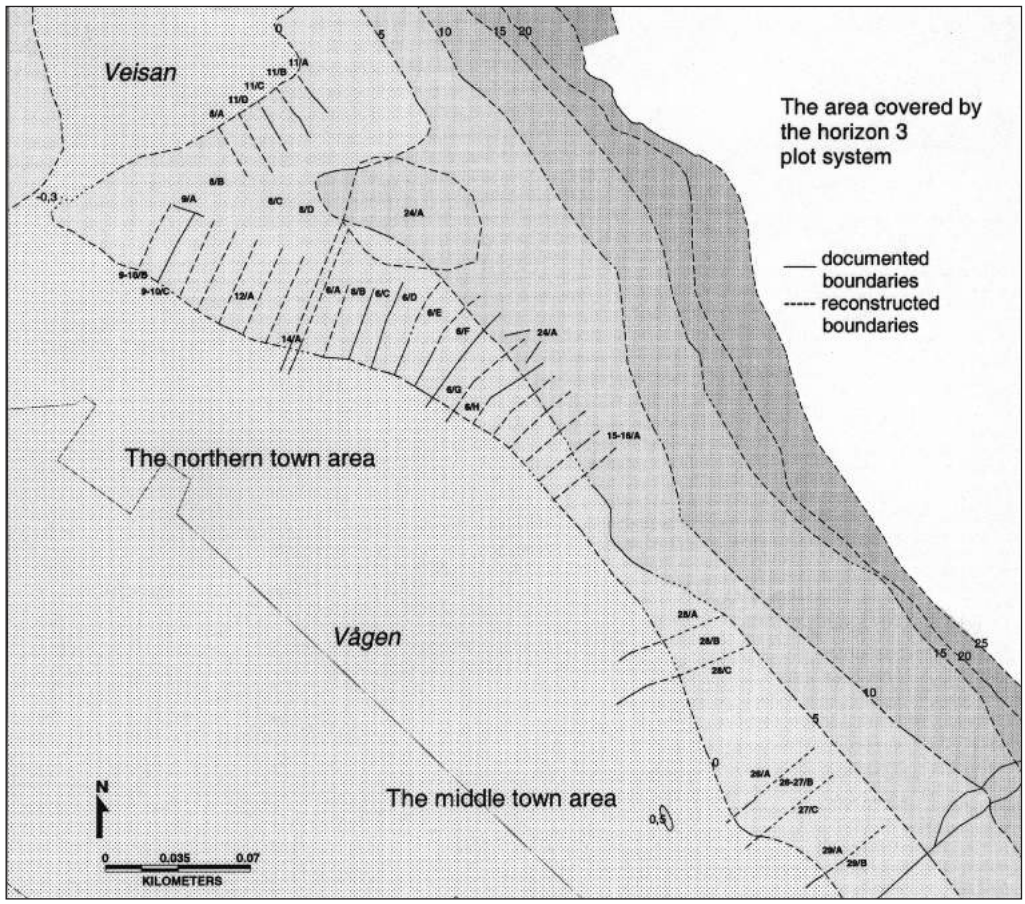

Figure 33. *The area covered by the horizon 3 plot system*

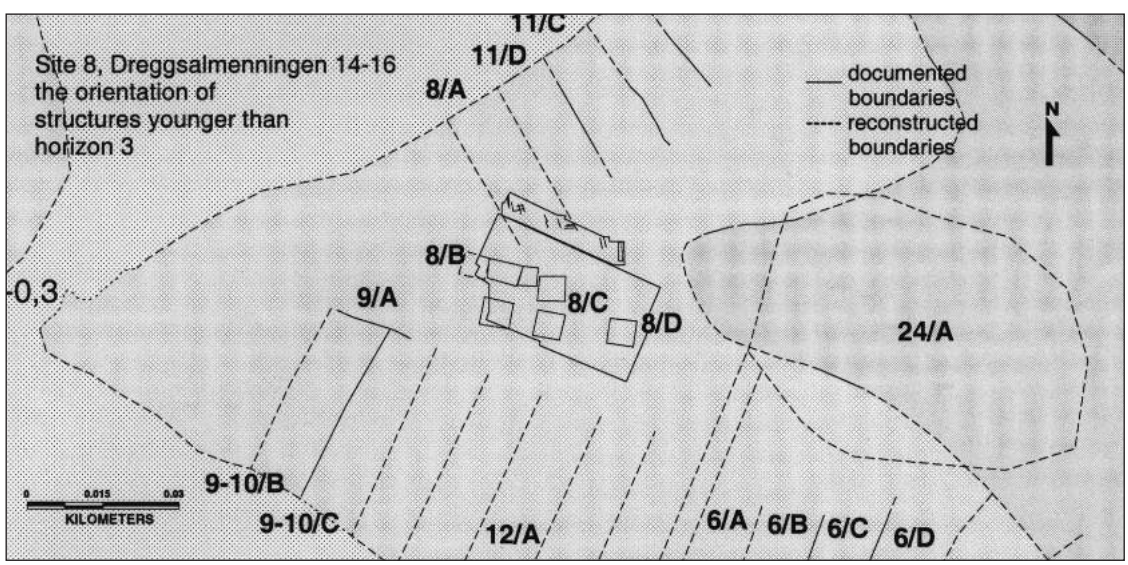

Figure 34. *Site 8, Dreggsalmenningen 14-16. The orientation of structures younger than horizon 3*

or 5.8 'model plots' between the street and plot 9-10/B. Based on this calculation it is slightly more likely that the street was not included in the horizon 3 system from the beginning. The calculation, however, is problematic: the 11.5 m standard for a model plot is only an estimate and a small change of the standard would change the calculation and indicate another conclusion, the calculation is therefore disregarded.

If, hypothetically, the street was originally a part of the plot system introduced in horizon 3, one could also argue that the Church of St. Mary's was part of the original system.[49] Some circumstances may point in that direction; the orientation of the later St Mary's certainly suggests that there was room enough for the church when it was constructed and that the church therefore was an early element in a comprehensive town plan. Also, one may suggest that when the plots on site 6 were prolonged towards Vågen by the introduction of a new plot system in horizon 3, they were shortened at the other end, thus making space for a church. On this basis I suggest that the street (14/A) and a plot earmarked for a church (23/A) may have been part of the plot system introduced in horizon 3. Whether or not a church and a street were also constructed during horizon 3 cannot be established at the present state of research.

Between plots 9-10/C and 11/C the curvature of the natural topography makes it difficult to reconstruct plots just by measuring out approximately 11.5 m wide 'model plots' along the shore by the mouth of the Veisan inlet. As already mentioned no boundaries can be identified at site 8 in the phases predating c 1170. In the following phases, however, a systematic difference in the orientation of structures in the different parts of the site becomes clear (Figure 34). Observing the orientation of structures from horizons 4 and 5 and younger structures on site 8, it seems clear that the northern part of site 8 belonged to a plot that ran more or less parallel to plots 11/A-C. This area is labelled plot 8/A. The sources from this plot include layer 684 in horizon 4 and a number of culture-layers in horizon 5. The western part of site 8 seems to have belonged to a plot that ran more or less parallel to the fence (plot 9/A) at site 9. This area is labelled unit 8/B and includes building 158 with associated structures in horizon 4 and buildings K166, K145/152/157 and associated structures in horizon 5. Regarding the middle and eastern parts of site 8, they cannot be assigned to any definite plots at the present stage of research. However, the four posts K136 in the middle of the site in horizon 5, may belong to one analytic unit: 8/C, and building K102/104 in the eastern part of the site may also be treated as one unit: 8/D.

In the middle town area, no attempt has been made to reconstruct plots that have not been recorded archaeologically because the size of the plots seems to vary. However, I assume that the whole of the middle town area along the Vågen shoreline was also regulated into plots.

In summary, the plot system assigned to horizon 3 probably covered the area along the Veisan and Vågen shorelines in the northern and middle town areas. Whether the system also included the areas closer to the foot of Fløyfjellet and the southern town area is impossible to decide on the basis of the available material. Plots may perhaps also have been parcelled out for a pier/street and a church, where the Church of St Mary was later built. If so, the plot system may be characterised as a rather comprehensive town plan.

The horizon 2 system

Based on the location of the palisade-built fences, the horizon 2 plot system ought to have covered the area by site 6, the northern part of site 9 and the shore of Veisan at least until site 11. We do not know, however, how far east and north the system extended beyond this area towards Fløyfjellet or towards the east along the Vågen Bay. As we have seen above, the distance between the easternmost boundary of St Peter's churchyard (24/A) and the reconstructed passage at site 15 corresponds well with a plot system based on the approximately 11.5 m standard width. If the plot width between 24/A and 15-16/A indeed was structured by the suggested approximately 11.5 m model plot, as argued above, this area might have been divided into plots of this size already in horizon 2. Otherwise, the organisers of the new plot system introduced in horizon 3 would have

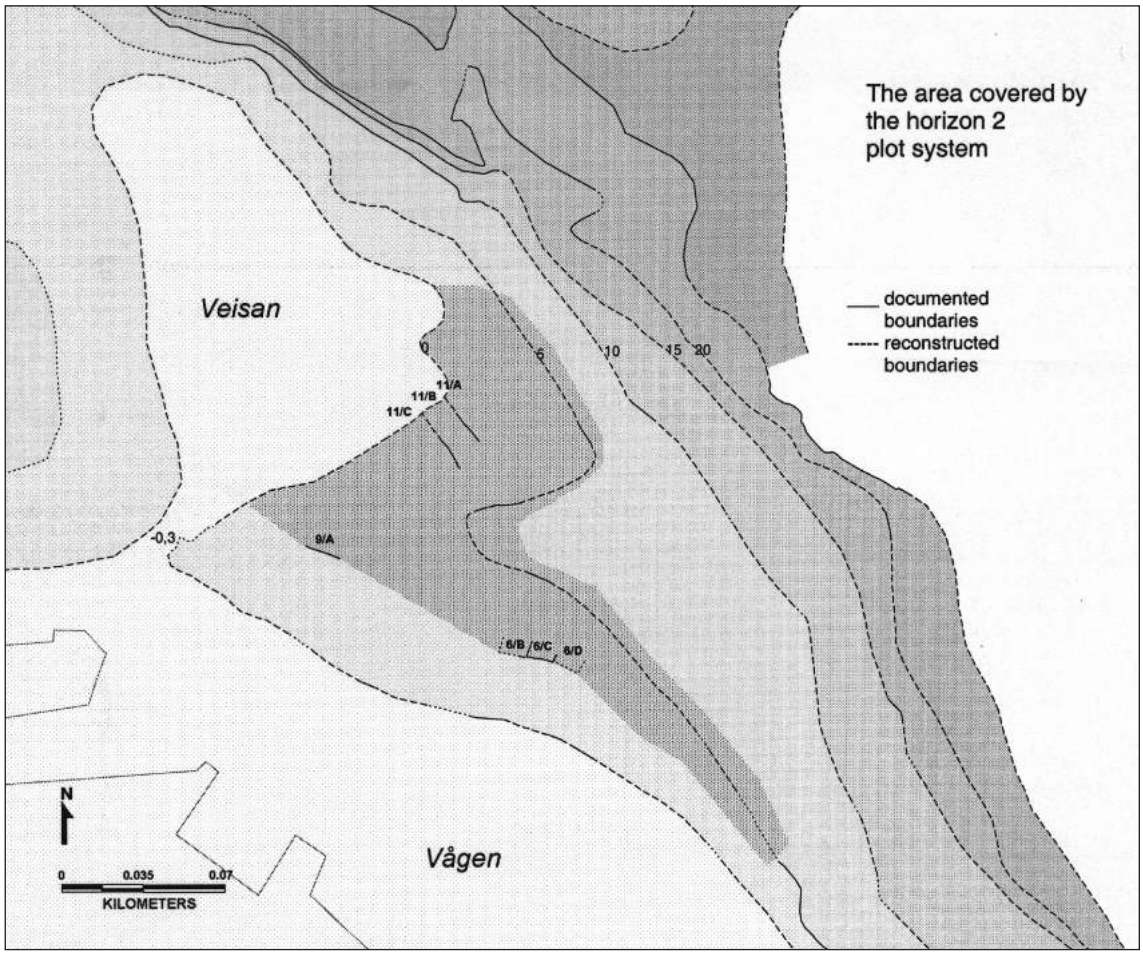

Figure 35. *The area covered by the horizon 2 plot system*

been free to apply other measurements to the plots here as they may have done in the middle town area. This is not well-founded empirically but nevertheless seems quite probable. I thus suggest that the area east of site 6 was divided in to approximately 11.5 m wide plots already during horizon 2. At site 6, the fence(s) that marked the transverse plot boundaries ran along the beach ridge between 2 and 3 masl, the extent of the regulated area is reconstructed along this line. The protruding rock reconstructed between the northern and the middle town areas may have functioned as a natural topographical 'barrier' against an extension of the horizon 2 system further east into the middle town area. It cannot be determined how far towards Fløyfjellet the system was applied. Figure 35 shows the area that may have been included in the horizon 2 plot system.

Conclusions

Boundaries were discerned along the Veisan and Vågen shorelines in the northern and the middle town areas only. Two plot systems may have existed in the period under study. The existence of plots and plot systems is well-founded empirically. The date of the plot systems is not so well substantiated, but dating the earliest plot system to horizon 2 and the later system to horizon 3 seems to be the better alternative at the present stage of research. The early system probably covered the northern town area, in this system the plots seem to have been directed more towards the Veisan shoreline than towards the Vågen shoreline. The

later system covered both the northern and the middle town areas, this system seems to have been more oriented towards the Vågen waterfront than the first. The early lengthwise plot boundaries apparently structured the location of the new plots in the northern town area, as there was continuity in all lengthwise boundaries documented in the northern town area, the approximately 11.5 m 'model' width of the plots was thus maintained. Plots of varying widths were laid out in the middle town area. The new plot system may possibly have included space for a church and a street, in which case it may be characterised as a rather comprehensive town plan, however, this is not so well-founded empirically.

10 TO WHAT EXTENT WAS THE BERGEN AREA 'OCCUPIED'?

In this chapter I will take a closer look at the questions concerning the extent and character of land use within the plots and units (cf p 67). The relationship between structures/buildings and the tidal zone and shorelines will also be studied, and I will discuss whether the structures/buildings along the Veisan and Vågen shorelines were confined to

- the area above the tidal zone, indicating low pressure on building land
- trespassed the physical boundary into the tidal zone, indicating pressure on building land
- or expanded beyond the waterfront, indicating high pressure on building land and/or investment in deeper harbours

Horizon 2 (c 1020/30-c 1070)

The excavated sites with indications of the general land use in horizon 2 only cover a few of the plots in the system that was probably introduced in the northern town area. Along the Veisan shoreline the plots at site 11 were probably not occupied (S) (Figure 36). At site 7, a pit-house K19 (S) and a fire-layer (S) that covered an area of at least 100 m^2 indicate that this site was occupied. Whether the structures were located on plot 11/B site 11 (cf above) cannot be determined on the basis of the available sources. Site 9 was divided into plot 9/A oriented towards Veisan and a southern area oriented towards Vågen. South of plot 9/A, a culture-layer (G), deposited onto the fence may reflect activity in this area in horizons 2 or 3; however, since the question of chronology cannot be settled I shall have to omit the layer as a source for the present question. On site 6, the jetty (B) stretching across the beach towards plot 6/D indicates that this plot was occupied. But the lack of culture-layers and structures (S) in the close vicinity implies that the jetty was the only structure on this part of the beach (cf p 85). To the east, the lack of structures and culture-layers in 'unit 7' (S) indicates that this part of the beach was not settled. On plot 6/C, at least two posts (S) were recorded, indicating that this plot was occupied. Scattered posts (S) outside the plot, towards the waterfront, may also belong to horizon 2, thus indicating that the beach immediately beneath plot 6/C was built on. The structures are confined to the area above the tidal zone. On plot 6/B no *in situ* structures or culture-layers (S) have been documented, but reused timbers from building 66, located on the plot in horizon 5 imply that the plot was taken into use already during horizon 2 (S) (cf p 65). On site 15 redeposited culture-layers (G) have been documented prior to horizon 5. If they originated in horizon 2 they imply that plot 15-16/A was occupied already during this horizon. On sites 8, and 16-21 the lack of structures or culture-layers (S) assigned to horizon 2, implies that the analytic units were vacant.

In the middle town area the pier (B) from horizon 1 was still in use (unit 30/A). Further up the shore (unit 30/D), the three posts, perhaps dated to horizon 1 (G) may also still have been in use. The pier and the posts both imply that the area was occupied. The built area was probably limited to the close vicinity of site 30, as there was a lack of structures and culture-layers on the neighbouring sites 26, 27, 31, and 34 and in profiles 26-29 and V3 (units 30/B and 30/E) at site 30.

The lack of structures and culture-layers at sites 35-36 and 38 in the southern town area, also imply that the area was vacant. At Nordnes and in the Nonneseter area there were no traces of settlement in horizon 2.

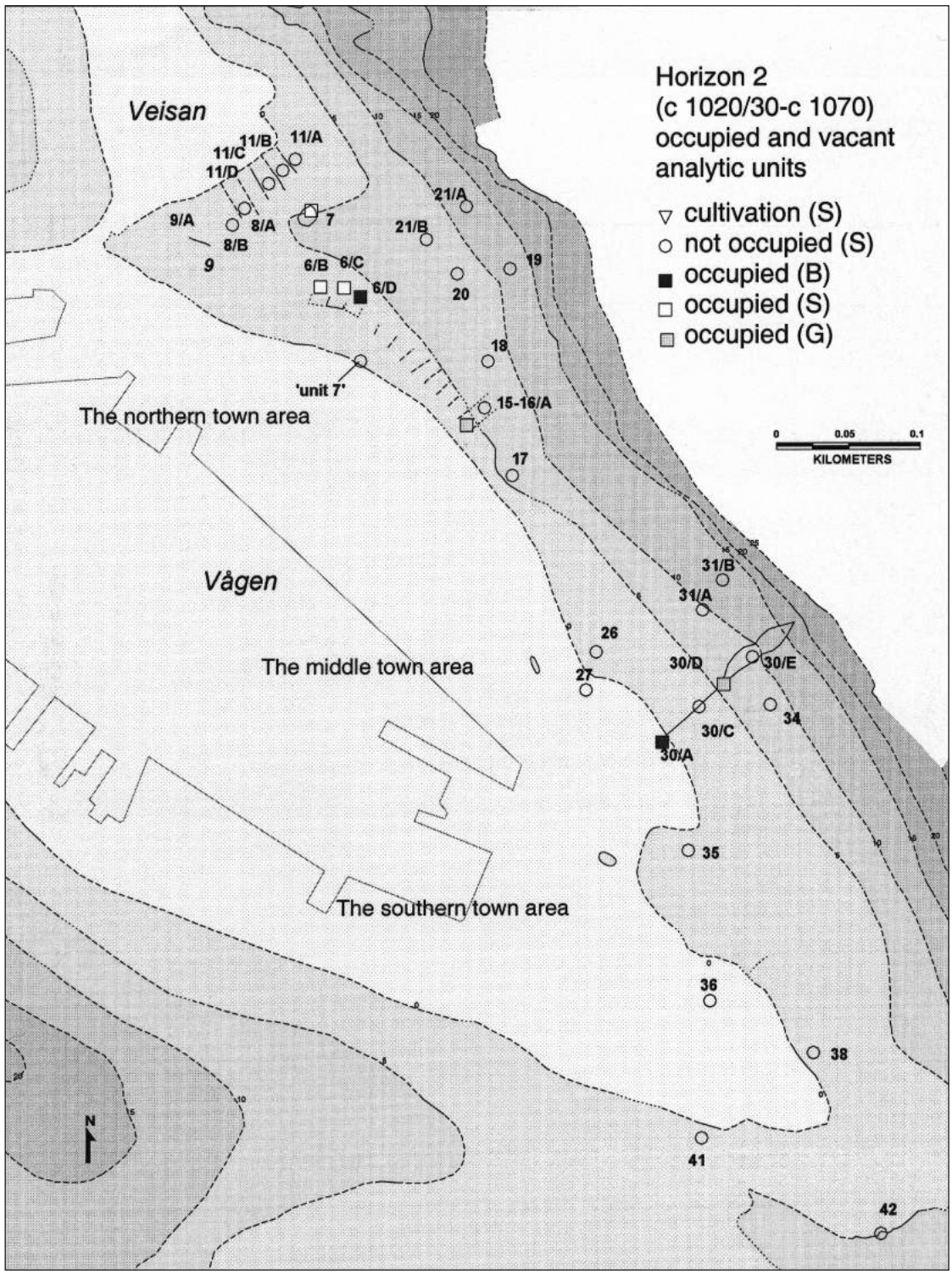

Figure 36. *Horizon 2 (c 1020/30-c 1070) occupied and vacant analytic units*

Summary

To sum up, data from 30 analytic units in the three town areas have been analysed as sources for horizon 2.[50] Occupation was indicated in seven of these. Data indicating occupation come from two basic sources, three supplementary and two general background sources, and are indeed rather scanty. Even so, if the sources are correctly assigned to horizon 2, they do indicate that some plots and units were occupied in the northern town area and near site 30.

In 23 of the 30 units there are no structures or culture-layers that could be assigned to horizon 2, this information is used as a supplementary source for horizon 2. The vacant units along the foot of Fløyfjellet were not interrelated and since they point in the same direction, this implies that the area was not occupied. Thus it seems reliable that these areas in the northern and middle town areas were not occupied. The vacant units in the southern town area are not interrelated and also point in one and the same direction, implying that this area was not occupied. However, given the lack of data and distance between the sources, no strong conclusions can be made about the general land use in this part of the Bergen area.

According to the trends discerned in the material, it seems that the areas close to the Veisan and Vågen shorelines in the northern town area and site 30 (unit 30/A and 30/D) in the middle town area were occupied. Where structures other than the jetties or piers were documented, they were confined to the area above the tidal zone. This implies low pressure on building land. Altogether the evidence is scanty, but seems to draw in the same direction, implying that some plots or units were occupied, but that, generally, pressure was low on building land during horizon 2. If the general background sources are erroneously assigned to horizon 2, the impression of low pressure on building land becomes even stronger.

Horizon 3 (c 1070-c 1100)

According to the written sources King Olav Kyrre began the erection of the Christchurch Cathedral at Holmen (B) (site 2), and he also built Christchurch minor (B) (site 3) on the churchyard of the Christchurch Cathedral (Figure 37). Christchurch Minor, was completed in the reign of Olav Kyrre whereas the construction work on the Christchurch Cathedral had not come far. Marit Nybø argues in her study of the Church of St Albany at Selje, that the construction of the Christchurch Cathedral must have been under way in the reign of Olav Kyrre, otherwise the church could not have served as a model for the Church of St Albany at Selje (Nybø 2000, 192-193). This could be an argument for intense activities at Holmen in horizon 3. On the other hand, a planned church in Bergen could also have served as a model, so the argument should not be given too much weight, when estimating the extent of activity at Holmen in the days of Olav Kyrre. All in all, we may still presume that a fair amount of building activity took place at Holmen in horizon 3. We do not know the number of individuals that were involved in the building processes, but the construction workers must have been accommodated somewhere. As we shall see it seems that the town area was scarcely occupied, so one must probably look elsewhere for the settlement that housed construction workers. There was ample space for housing construction workers at Holmen, but as we have seen, the sources cannot elucidate the extent of a settlement here.

No clear traces of occupation on plots documented along the shore of the Veisan inlet could be assigned to horizon 3. At site 9, as many as three buildings (S) may have been constructed above the tidal zone on plot 9-10/B, thus indicating occupation along the Vågen shoreline. On plot 9-10/C no traces of occupation (S) could be assigned to horizon 3, this may perhaps indicate a vacant plot. Plot 6/C was levelled with sand and gravel before 'the 9-post building' (S) and a possible cellar building (S) were constructed, both above the tidal zone. The jetty from horizon 2, probably associated with plot 6/D, may still have been in use. Sand and gravel layers (S) were deposited on the beach around the jetty perhaps as early as in horizon 3 (cf p 85ff), indicating that the plot was occupied. 'Unit 7', a marine layer deposited in Vågen just outside plot 6/E or 6/F, has also been tentatively assigned to horizon 3 (S), thus indicating that one of these plots was occupied this early. At plot 15-16/A, redeposited

culture-layers (G) may perhaps indicate activity in the vicinity. No structures or culture-layers (S) were documented on site 17, indicating that this area was vacant.

On site 26 in the middle town area, reused timber (S) at plot 26/A indicates that the area was occupied above the tidal zone. Redeposited culture-layers (S) at site 27 likewise indirectly indicate settlement in the area. On site 30 the pier (site 30/A) (B) and the three posts (site 30/D) (G) from horizon 1, represented traces of occupation here, whereas there were no traces of occupation in units 30/B and 30/E.

At site 20, a construction interpreted as part of a building (S) was assigned to horizon 3 and represents the first traces of occupation at the foot of Fløyfjellet. Between site 20 and site 30 in the middle town area no other remains of occupation have been found at the investigated sites (sites 16, 18, 19, 21/A 21/B, and 31), indicating that these areas were vacant.

In the southern town area, from site 30 to the head of Vågen Bay, no structures or culture-layers have been assigned to horizon 3. In the Nordnes and Nonneseter areas no traces of occupation have been documented.

Summary

In summary, two churches were initiated at Holmen, both are documented through basic sources and their presence is considered reliable. Data from 30 analytic units in the three town areas have been used as sources for the secular settlement in horizon 3. Traces of occupation were documented in ten units in the northern and middle town areas only. The settlement traces were documented through one basic, seven supplementary and two general background sources. Since the basic sources for the presence of settlement traces are so scarce, the picture drawn of occupied units may not be relied upon in every detail. The general trends in the material, however, ought to be quite reliable, as not all the supplementary sources are interrelated.

The lack of settlement was implied in 20 units. The vacant units along the foot of Fløyfjellet and in the southern town area may still be evaluated along the same lines of thinking as for horizon 2. The extent of vacant areas at the foot of Fløyfjellet in the northern and middle town areas, indicated by the sources, ought to be quite reliable, data from the southern town area may be evaluated as for horizon 2. The vacant plots by Veisan are documented through sources from two sites that were not interrelated, this enhances the likelihood of vacant plots in this area, and ought to be trusted as a general trend. The lack of settlement on plots along Vågen was only implied by one supplementary source; that is the lack of structures at plot 9-10/C, and cannot be used as conclusive evidence that settlement was missing here. If the traces of activity, assigned to plot 15-16/A cannot be dated as early as horizon 3, they do however support the idea that some plots along Vågen were not yet in use. It is difficult to be conclusive in this matter, so I will let the question of vacant plots along Vågen, in horizon 3, remain unanswered.

Altogether then, according to the general trends in the material, most of the occupied plots/sites seem to have been located by the Vågen shoreline. This may imply that the area was considered the prime area for settlement. Where buildings were documented, they were constructed above the tidal zone, indicating that pressure on building land was low. Along Veisan, some plots were probably still vacant. Along the foot of Fløyfjellet the available building space seems to have been vacant when looking apart from the settlement at site 20 in the northern town area.

The evidence is generally scarce, but seems to be in the same direction, leaving the impression of a rather sparsely built town area. It seems that pressure was low on secular building space and emphasis was on the monumental side. If the general background sources are erroneously assigned to horizon 3, this impression is strengthened.

The sagas say that after Olav Kyrre's foundation of Bergen, the town soon became a place for many rich men (Hkr 1893-1901, III 226; Fsk 305; Msk 289; Helle 1982, 86). If by this description the sagas meant to say that Bergen soon became a densely inhabited or populated place, the description does not correspond well with the general trends in the archaeological sources. The sagas are quite remote in time to the events

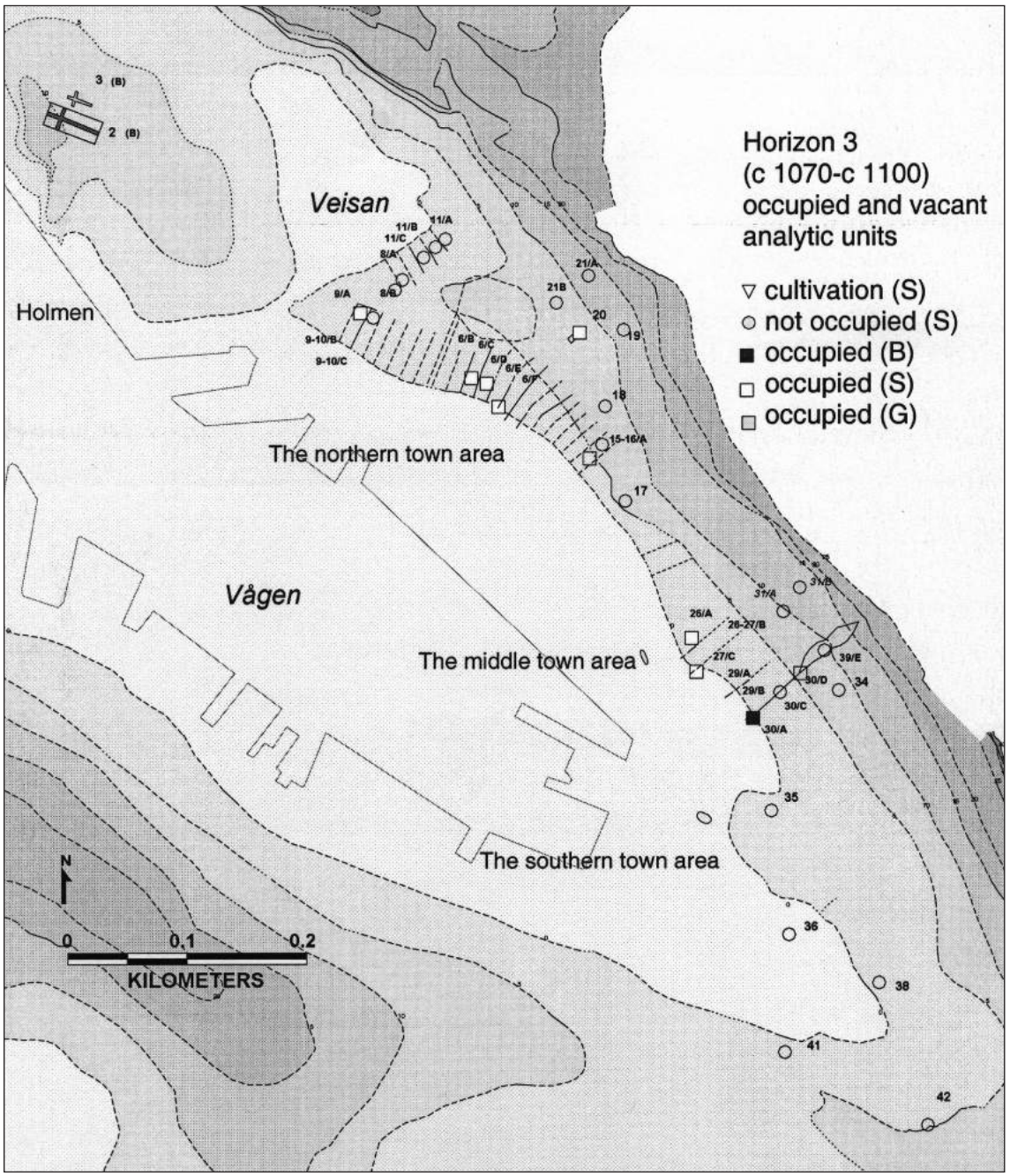

Figure 37. *Horizon 3 (c 1070-c 1100) occupied and vacant analytic units*

described (cf p 57ff) this may be one explanation for the discrepancy between the source categories. Another aspect to consider is that it is hard to determine what the chroniclers meant by 'many' and 'soon'. The archaeological sources are very specific and can be quantified directly as opposed to the description handed over to us by the medieval chroniclers. And 'soon' may from the position of the thirteenth century chroniclers be much later than horizon 3, or horizon 4 for the matter. Consequently I have choosen to disregard the description provided by the sagas as a

source about the extent to which the Bergen area was occupied.

Horizon 4 (c 1100-1120s)

At Holmen, archaeological excavations have not revealed any non-monumental structures that can be dated to horizon 4 (Figure 38). According to the written sources the Christchurch Cathedral (B) (site 2) and Christchurch Minor (B) (site 3) were still standing and two new monuments, the Church of the Apostles (B) and Øystein Magnusson's large timber hall (B) were constructed.

Along the Veisan shoreline no traces of occupation have been documented on the plots at site 11. On site 8, layer 684 (S) was recorded on plot 8/A, and interpreted as remains of occasional activity (Golembnik in prep-b). In the Bergen sources I have generally not been able to distinguish between culture-layers representing occasional occupation and layers representing continuous occupation based on the premises used by Golembnik (see also Chapter 13). Therefore, layer 684 can only be used to represent secular occupation in general. Building K158 (S) was constructed in unit 8/B. On plot 9-10/B towards Vågen, buildings 13, 10 and 11 and caisson 2 (S) have been associated with horizon 4, and indicate that this plot was occupied. On plot 9-10/C, building 12 and caisson 1 likewise indicate that the plot was occupied (S) and on plot 12/A a caisson (S) implies that this plot was taken into use. Two 4 m x 4 m stone-filled caissons (S), interpreted as the foundation for a pier, imply that plot 14/A was taken into use. A variety of culture-layers and structures at site 6 show that at least plots 6/B-G were occupied: on plot 6/C the '9-post building' (S), erected during horizon 3, may still have been in use. It is more certain that a gravel layer was deposited to prepare the building land in front of the '9-post building' towards Vågen and that building 45, a passage and a quay front were also constructed in the tidal zone on this plot (B). Posts from the horizon 2 jetty, associated with 6/D, were still visible on the beach, indicating that the jetty was perhaps also still in use. Sand and gravel layers were deposited on the beach around the jetty (S). Finally, layers of small stones (B) were spread over plots 6/B-G to consolidate the ground. 'Unit 7', a marine layer (S), accumulated as well, probably reflecting activity on plots 6/E or 6/F. At plot 15-16/A, redeposited culture-layers (G) may indicate occupation in the vicinity. No traces of occupation were documented on site 17.

In the middle town area, a triangular stone-filled caisson (B) was registred on plot 26/A. On plot 26-27/B the foundation of a quay or a building (B) was registred. Both constructions were located in the tidal zone, indicating pressure on building land. Detritus from construction work (S) and six layers (S) were deposited at the neighbouring site 27. These layers indirectly indicate that the shore behind the site (plot 27/C) was occupied in horizon 4. At site 30, the pier (30/A), erected in horizon 1 (B), was probably still standing.

At the foot of Fløyfjellet in the northern and middle town areas traces of secular settlement were found at site 20 only. K20 (S), interpreted as part of a building, was thus assigned to horizon 4. At sites 16, 18, 19, 21 and 31 no culture-layers or structures (S) could be assigned to horizon 4, indicating vacant areas. On site 30, cultivation layers and a number of pits (S) interpreted as sand extraction holes represent land use at some distance from the Vågen shoreline (30/D). According to the categories used here the pits represent 'occupation' whereas the cultivation layers represent cultivation in a broad sense, so the source is somewhat ambiguous as to the character of land use in the unit. When looking at the source in the context of surrounding units, a basin (S) used in connection with fresh-water supply has been documented in the close vicinity, this basin indicates that the area was now occupied (30/E). Accordingly I interpret the cultivation layers as belonging to a settled area in the close vicinity.

The Church of St Nicholas (site 32) (S) may have been located at the foot of Fløyfjellet in the middle town area. Burials and walls of the churchyard may denote the extent of the churchyard. The church was oriented SSE – NNW. With a point of outset in the somewhat irregular orientation of the Church of St Nicholas it has been argued that the church had to adapt to an area that was already so densely built out that the ideal orientation could not be achieved (Helle

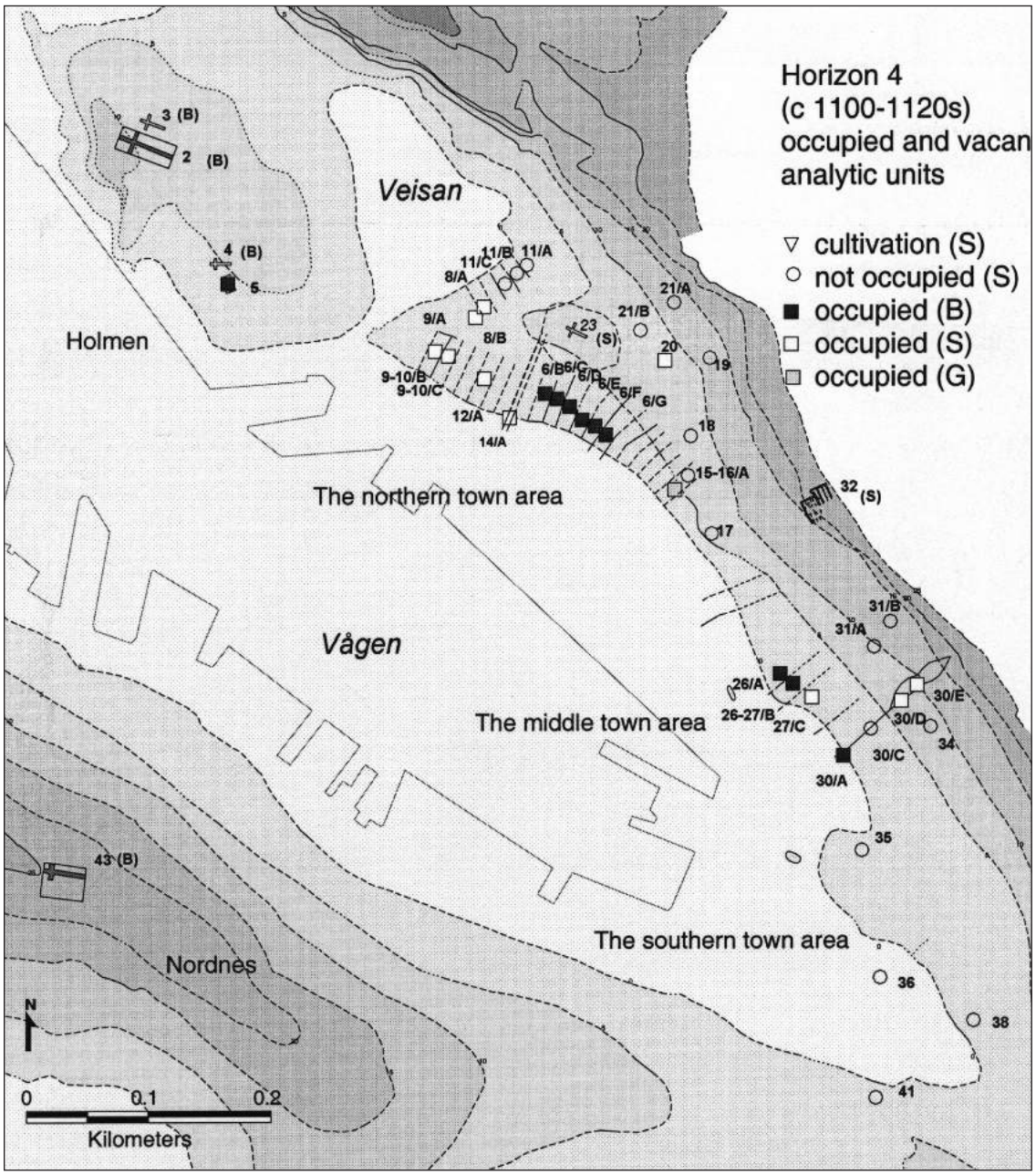

Figure 38. *Horizon 4 (c 1100-1120s) occupied and vacant analytic units*

1982, 149). The lack of secular occupation traces on sites in the area along the foot of Fløyfjellet does not support such an interpretation. Furthermore the orientation of the church coincides well with the general topographical orientation of the mountainside behind the church (Hansen 1994b, Figure 32). The building was located on a terrace at approximately 20 to 25 masl on the mountainside just below a point where the mountain rises rather steeply. If the church had been oriented strictly E -W there would not have been enough space for a large building. The chancel would have faced the mountainside and the building would have turned 'its back' to the

town, losing its impressive and dominating position as a landmark. In the northern town area a predecessor to the standing St Mary's (S) (site 23) may have been erected in horizon 4.

In the southern town area the sites are few and far between. No traces of occupation have been documented on any of the sites. No traces of occupation have been located in the Nonneseter area in horizon 4. According to the written sources the abbey of Munkeliv (site 43) (B) was established at Nordnes. Munkebryggen, a pier/quay on the western side of Vågen also belonged to the abbey, but the location of the quay is unknown.

Summary

To sum up, as many as five monumental buildings may have been erected at Holmen, on Nordnes and in the northern and middle town areas during horizon 4. This interpretation is based on three basic sources and two supplementary sources; if the supplementary sources are erroneously assigned to horizon 4 the sources still witness large investments in monumental manifestations in the Bergen area in this horizon.

Excluding the monumental sites, data from 35 analytic units in the town areas were used as sources. Secular occupation was indicated at 20 plots/units and in the northern and middle town areas only. The settlement traces derived from 9 basic sources, 10 supplementary sources, and one general background source. The basic sources now make up a much more comfortable share of the sources, and the trends in the material ought to be quite reliable in terms of the presence of occupation in the northern and middle town areas.

No traces of settlement were found in fifteen units (S). The vacant units along the foot of Fløyfjellet and in the southern town area may still be evaluated as in the previous horizons: the extent of vacant areas at the foot of Fløyfjellet in the northern and middle town areas, indicated by the sources, is quite reliable, whereas data from the southern town area are scarce, and the impression of vacant building land here is not so well-founded. The vacant plots by Veisan are documented through supplementary sources from one site only. The lack of settlement is thus not well-founded and the question of vacant land here in horizon 4 remains open.

Altogether, the sources are more firmly founded than in the earlier horizons, and trends in the material should be reliable. Accordingly, it appears that some Veisan shoreline plots were now occupied. Along Vågen, occupation was indicated on most documented plots, both in the northern and the middle town area. Where buildings have been documented in the northern town area, they are above or on the edge of the tidal zone, indicating low pressure on secular building space. In the middle town area, buildings may have trespassed into the tidal area indicating pressure on building land. Passages that led across the tidal zone to quays at the waterfront were built on some plots along the Vågen shoreline. Along the foot of Fløyfjellet, the church of St Nicholas probably occupied large part of the building land, but secular settlement was sparse and only documented at two sites, one in the northern and one in the middle town area. This also supports the impression of low pressure on building space for secular settlement in horizon 4. Large resources were put into constructing the monuments.

Horizon 5 (1120s-c 1170)

The Christchurch Cathedral (B) (site 2), Christchurch Minor (B) (site 3), the Church of the Apostles (B) (site 4) and Øystein Magnusson's timber Hall (B) (site 5) still constitute the monumental buildings at Holmen (Figure 39). The number of sources that produced traces of occupation in the town area increases considerably from horizon 4 to the period covered by horizon 5. Starting by the eastern shore of Veisan, plots 11/B and 11/C were now probably occupied by buildings (S). Plot 11/A may still have been vacant as no traces of occupation (S) were documented. Culture-layers, three buildings, a pavement and four posts (B) were found at site 8, the structures and culture-layers show that analytic units 8/A-D were occupied. Plots 9-10/B and 9-10/C, oriented towards Vågen, were probably occupied (S) plot 12/A (S) was probably occupied too.

The area just surveyed most likely corresponds to the area described as 'inside Sandbru'

(Sandy-Bridge) in the sagas. According to the sagas, several tenements were located in this area when a fierce fight took place here in 1155 (Hkr 1893-1901, 386ff; Fsk 353ff; Msk 455ff; Helle 1982, 6 with references). This corresponds well with the picture given through the archaeological sources.

Further to the east, along Vågen, the two large stone-filled caissons that were tentatively assigned to horizon 4 were still in function as a pier (B) (14/A). The pier was closely located to site 6 where traces of occupation (B) have been documented on plots 6/A-E and 6/G. The area associated with plot 6/F has not been excavated in detail nor well-documented, except along the waterfront where 2 m x 2 m stone-filled caissons were recorded. Posts above the waterfront, however, show that the plot was occupied in horizon 5. As far as plot 6/H goes, this part of the site is not well-documented, but mooring posts beyond the waterfront imply that the plot was occupied. The constructions at site 6 comprise 27 buildings and 33 2 m x 2 m stone-filled caissons. Mooring posts were located along the waterfront, several pits also belong to the horizon. The plots were now clearly occupied by buildings organised in tenements that ran perpendicular to the Vågen shoreline and occupied the tidal zone. This implies pressure on building land here. Plot 6/G had claimed some land from the sea in the sense that the outermost caissons were located 6.5 m from the original shoreline, an expansion of the built-up area into the sea had thus taken place and indicates high pressure on building land. On site 15 activity began with the deposition of layers (S) that made up the foundation for a structure interpreted as a passage (S) and an undefined structure (S). Plot 15-16/A was thus occupied in horizon 5. On site 17 the lack of traces of occupation indicates that this area was still vacant.

South of the protruding rock by the Vågen shoreline, site 28 was located in the bay some 15-20 m from the original shoreline. A pier founded on three 2 m x 2 m stone-filled caissons (B), a row of caissons (B) that ran along the waterfront, and 8 mooring posts (B) show that plots 28/A-C were now occupied. The location of the caissons clearly shows that an expansion of the built-up area into the sea had started here. This may indicate high pressure on building land. At site 26 partial demolition of the structures from horizon 4 was followed by massive layer deposition (B) that elevated the ground surface for building. Constructions (B) interpreted as the foundation for a walkway behind the quay front were then built. On site 27 to the southwest of site 26, three 2 m x 2 m stone-filled caissons (B), ran parallel to the shore some 5-15 m from the original shoreline. The original shallow bay here thus seems to have been filled in and the built-up area extended into the bay. Southwest of site 27 a similar caisson (S) was located at site 29 at some distance from the original shoreline. This caisson indicates that plot 29/A or 29/B behind the structure was probably occupied. The location of the caisson supports the picture of an expansion of the built-up area into Vågen at the expense of the small bay. This expansion is recorded at site 30 as well; the pier that dated back into horizon 1 was now on reclaimed land, incorporated in a structure (B) perhaps intended to stop the spreading of dumped layers or to keep the stream that ran down the sloping terrain, in its channel. Altogether the expansion of the built-up area into the bay indicates high pressure on building land.

Along the foot of Fløyfjellet a sand extraction pit (B) at site 22 shows that the area was in use for some kind of occupation. To the east of here, at site 21, the stone foundations for a building (S) and a number of associated layers (S) show that the NE part of the site (21/A) was probably occupied. In the SW part of the site (21/B) no culture-layers or structures could be associated with horizon 5, indicating that this area was vacant (S). At site 20 a building with a courtyard, an internal fireplace and a drain (S) indicate that this site was occupied. The structures and culture-layers from sites 20-22 were the only traces of secular occupation encountered along Fløyfjellet in the northern town area. Between site 20 and site 30 no traces of secular occupation (S) could be assigned to horizon 5 at sites 16, 18, 19 and 31, indicating that this area was vacant. At site 30 a bridge over the stream that ran down the sloping terrain was documented 15-20 m from the original shoreline (S) (30/B). The bridge may have secured passage between

the middle and the southern town areas. Further towards Fløyfjellet (30/D), the sand extraction pits from horizon 4 probably still represented the land use (S) and the basin (S) used in connection with freshwater supply was still located here as well (30/E). The culture-layers and structures at site 30 are the only traces of secular occupation encountered at the foot of Fløyfjellet in the middle town area.

Churches and churchyards occupied large parts of the northern and middle town areas in horizon 5. In the northern town area the Church of St Olav's on the Hill (B) (site 25) may have been located (S) north of site 21. The central northern town area was occupied by the Church of St Mary (B) (site 23) and its surrounding churchyard (B, S). St Mary's was quite well oriented according to an east-west axis. Southeast of St Mary's, the church (S) and churchyard (S) of St Peter (site 24) may have been located. The 'west end' of St Peter's faced Vågen. In the middle town area the Church of St Nicholas (B) (site 32) surrounded by the walls of the churchyard (B) was still present in the landscape. The Church of St Columba (S) (site 33) and the associated churchyard (S) perhaps occupied a share of the building area below St Nicholas'.

In the southern town area no traces of occupation (S) have been documented at site 34 located at the foot Fløyfjellet. At site 35, which is the only relevant site between site 30 and the Church of St Cross (site 40), no traces of occupation have been located, this may indicate that the small bay by site 30 was only being filled in from the middle town area and not from the southern town area. The Church of St Cross (B) was located on the promontory that extended into the Vågen Bay. Also the Church of St Olav's in Vågsbunnen (B) (site 39) was now erected. Only two relevant excavations have been carried out between the two churches. At site 38, on the beach at the head of the Vågen bay, a small square log-built caisson (B) and several posts (B) represent the first traces of occupation here. The material from site 38 cannot elucidate whether the general area was occupied, but as the two churches in the southern town area were well oriented east west according to the Christian standard this may perhaps be taken as an indication of ample building space when the churches were built. The material from site 36 (S) may tentatively support the notion that the southern town area was not built out in horizon 5, except in the innermost area at the head of the Vågen Bay by site 38. The evidence from the southern town area is, however, rather scanty due to the scarce number of excavated sites.

In the Nonneseter area, the Nonneseter convent (site 46) (B) was now erected on the northern shore of Alrekstadvågen. The churchyard was located on the north side of the church, the remaining part of the convent was located to the south.

At Nordnes the abbey of Munkeliv (B) was still standing and further two institutions were founded on the peninsula. About 300 m west of Munkeliv, St John's Abbey (site 44) (B) was located. Jonsbryggen, a pier/quay on the western side of Vågen, also belonged to the abbey, but the exact location of the quay is unknown. The Church of All Saints (S) was probably located further west on the land tongue between Vågen Bay and the Alrekstadvågen.

Summary

Summing up, as many as five new churches, in addition to the (second?) Church of St Mary, may have been founded in the town area in horizon 5, three of these are documented through basic sources two through supplementary. In the Nonneseter and Nordnes areas two monasteries and possibly also one church were established. The monestaries were well-documented through basic sources whereas the church is a supplementary source. All in all extensive investments in monuments is considered well-founded.

Data from 45 plots or units have been used as sources for secular occupation in the town area in horizon 5 and secular occupation was now documented in all three town areas. Traces of settlement were documented in 34 analytic units, in 22 cases by basic sources and in 12 units by supplementary sources. With the large share of basic sources, the wide presence of occupied plots and units should be considered well-documented.

Vacant plots and units were indicated in 10 units. The units located at the foot of the Fløyfjellet are not interrelated and as they point in

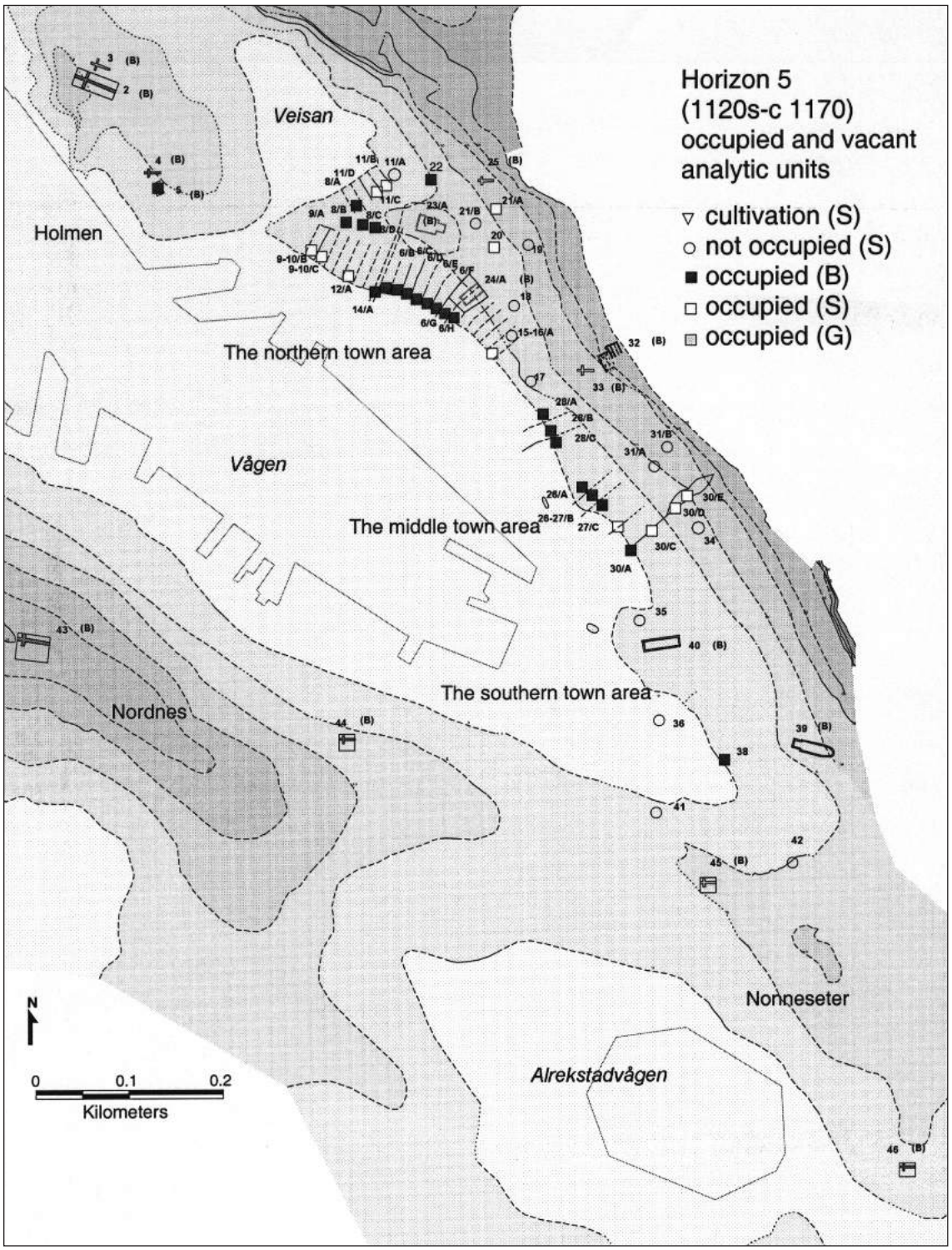

Figure 39. *Horizon 5 (1120s-c 1170) occupied and vacant analytic units*

the same direction the lack of secular settlement in this area ought to be quite reliable. The lack of occupation traces at site 17 close to Vågen may be real, as the earliest culture-layers at the site were located in a cleft in the bedrock and it is unlikely that older culture-layers had systematically been cleaned out of the cleft (cf p 119). The existence of vacant plots by Veisan is documented through a lone supplementary source, so the lack of settlement here should be taken with some reservations and the question remains open. The vacant units in the southern town, area as pointed out several times already, are not interrelated and seem to point in the same direction, implying that the southern town area was not densely built upon. This impression is now supported by the orientation of the two churches in this town area. Nevertheless, the sources for the southern town area are few and far between, so firm conclusions cannot be made.

According to the trends in the material, most of the plots along the Vågen shoreline seem to have been occupied in horizon 5. Along Vågen there was only a lack of settlement traces at site 17. Also along the Vågen shoreline, buildings were constructed throughout the whole length of the plots, making use of the tidal zone. This indicates that there was pressure on building land. On some plots the built-up area had also expanded into the Vågen basin claiming new building space, and seeking deeper water. This indicates high pressure on building land. The secular settlement had increased along Fløyfjellet in the northern town area but there was still vacant building land.

In conclusion the sources indicate pressure and in some places even high pressure on secular building space along the waterfronts in the northern and middle town areas. At the foot of Fløyfjellet there was still ample building space, though churches now occupy a good share of the land. In the southern town area settlement was documented at one site. The orientation of the churches in this part of town may indicate that the area was not densely built upon when the churches were established in horizon 5. This may indicate that there was low pressure on building land here, though no firm conclusions can be reached.

Conclusions

According to the trends discerned in the scarce sources assigned to horizon 2 settlement was mostly found in the areas closest to the Veisan and Vågen shorelines in the northern town area, the sources altogether imply low pressure on building land in this horizon.

In horizon 3, there was considerable activity on the monumental side. The sources concerning secular settlement are scarce, but according to the general trends in the material, most of the occupied plots or units seem to have been located by the Vågen shoreline. Along Veisan some plots may have been vacant, and at the foot of Fløyfjellet settlement was limited and only documented at one site in the northern town area and at site 30 in the middle town area. There seems to have been low pressure on building land on plots where occupation was documented.

Altogether, the sources for horizon 4 are more firmly founded than in the earlier horizons, and trends in the material should be reliable. Large resources were directed at the monumental constructions. In the town areas it seems that some Veisan plots were now occupied. Along Vågen, occupation was indicated on most documented plots, both in the northern and the middle town areas. The location of documented buildings indicates low pressure on secular building space in the northern town area, whereas pressure on building land was registred in the middle town area. Along the foot of Fløyfjellet, the church of St Nicholas probably took up a large part of the building land, but secular settlement was sparse and only documented at two sites, one in the northern and one in the middle town area. In the southern town area no secular occupation was found, but the sources for the town area are scarce so the impression of vacant building land is not well-founded.

In horizon 5 basic sources make up the majority of sources, and trends in the material should be reliable. In the whole Bergen area large resources were directed at monumental constructions. According to the trends in the material, most of the plots along the Vågen shoreline seem to have been occupied in horizon 5. Along Vågen the lack of settlement traces was documented at one site. Along the Vågen shore, there was pres-

sure on building land and on some plots even high pressure on building land. The secular settlement increased somewhat at the foot of Fløyfjellet in the northern town area but there was still vacant building land here although churches now probably occupied a good share of the land. In the southern town area the few available sources may indicate that pressure on building land was low here, though no firm conclusions can be made.

Altogether the sources imply that it took a long time before the majority of the documented plots and units in the town areas were occupied and taken widely into use. The actual occupation of the town areas was thus a long and slow process.

11 CRAFTS AND PRODUCTION IN EARLY BERGEN

In this chapter I will study the nature and organisation of the productive activities identified in early Bergen. I will discuss whether productive activities discerned in the material may have provided a fundamental economic basis for the emergence of a town in the Bergen area. First, places where productive activities were carried out are identified. Second the nature and organisation of the identified activities are discussed, and finally the importance of these activities as a fundamental economic basis for the emergence of the town is discussed. I will discuss the presence of the following crafts and productive activities in early Bergen:

- Combmaking
- Miscellaneous antler, bone, horn and whale/walrus bone working
- Shoemaking
- Other leatherworking
- Metalworking
- Stoneworking
- Woodworking
- Skinning
- Textile production
- Fishing
- Hunting, war and game
- Agriculture
- Basic cooking
- Food and beverage processing

Places of production

Crafts and production have left their traces through tools, blanks, raw materials, production waste and through the finished products. When identifying where productive activities were carried out the finished products are not considered. A number of multifunctional tools, including hones and possible tools made of metal are also excluded from the study because they cannot be used as signifiers of a specific activity. Places of production are identified horizon by horizon.

The sources are to a large extent presented in tabular form, since a comprehensive textual presentation of all artefact types for each unit, each town area etc would become too detailed and difficult reading. The tables should thus be consulted closely along with the text.

The nature and organisation of crafts and production

When studying the nature of the productive activities I will discuss whether the activities were aimed at household consumption, or for sale and thus carried out by professionals. Sale in this context is used in a broad sense, meaning distribution beyond the household of the producer (cf p 40). I use Karin Gjøl Hagen's definition of professionalism, where professional production is production for sale, as opposed to production for consumption within the household (Hagen (1988) 1994, 29-31). When studying how the productive activities were organised I will discuss whether the artisans/producers were sedentary residents of the plot or settlement where production took place, or if they travelled between several places of production.

In earlier research the nature and organisation of productive activities in the early Middle Ages have been studied through the quantity and distribution of production waste, the character of tools needed for the production and the quality and level of standardisation of the finished products. Written sources for various trades have been drawn into the discussion (eg Christophersen 1980, 127ff; Roesdal 1980, 105ff; Ambrosiani 1981, 32ff; Christophersen 1982, 109; Øye 1988, 131; Bergquist 1989, 22; Flodin 1989, 128; Færden 1990, 277; Christophersen and Nordeide 1994, 216; Ulriksen 1996, 119; Rytter 1997; Hagen (1988) 1994).

I will discuss the nature and organisation of the productive activities through (1) the link between production waste and the finished products, (2) the spatial distribution of the finished products in and beyond Bergen, (3) the character of tools, skills and knowledge needed for the production, (4) the level of standardisation of the finished products and (5) the distribution pattern for production waste.

Trying to link production waste to finished products, – that is rendering probable that finished products found in Bergen are reflected in the production waste and tools and *vice versa* - it may be shown that the finished products were or could have been produced and purchased in Bergen.

The spatial distribution of the finished products in Bergen may shed light upon the nature of the production. When two or more items are so similar that it seems probable that the same artisan or workshop made them, the items are denominated 'twin' products. If twin products are found in different analytic units I find it likely that they have been distributed beyond the producers household and thus, according to the definition used here, were produced for sale. The finished products are included in the discussion so far as possible within an acceptable effort.

When specialised tools, a high level of skills, and knowledge of how an up-to-date product was formed are required for the production this also implies that the producers were professionals. As opposed to this, production involving household tools and 'common knowledge' only may reflect household production. If the products were standardised, it may be an additional indication that they were produced professionally (cf Hagen (1988) 1994, 99).

The quantity and distribution of production waste reflect different ways of organising production. Waste assemblages are divided into two wide categories: 'small' or 'large'. The categories are defined for each activity type with reference to studies of similar activities in other medieval towns in Scandinavia. Thus an assemblage is characterised as small or large respectively if it falls within the quantity-categories that are considered as small or large for equivalent artefact categories in studies of other medieval Scandinavian towns. The different activities produce waste in varying quantity, volume and weight. When characterising waste assemblages as small or large I have choosen to let the number of fragments form the basis.

In Lund and Trondheim small amounts of production waste located in many different find spots were interpreted as traces of professional ambulating combmakers and metalworkers, whereas large amounts of waste were interpreted as traces of stationary artisans (Christophersen 1980, 127; Bergquist 1989, 128; Flodin 1989, 128). Based on small amounts of waste distributed on many places of production Jens Rytter has suggested that the artisans of Konghelle may either have ambulated, or they may have been resident 'part-time' artisans, with the production of combs as one of several trades (Rytter 1991, 92).

If the production was carried out professionally, I assume that many small waste assemblages imply that the producer was either a part-time professional resident artisan or an ambulating artisan. Household production may also be reflected in small amounts of waste scattered on many plots. Large waste concentrations are interpreted as the result of long-term production by full-time resident professionals. A permanent workshop may also reflect resident professionals. Since the quantity of production waste reflects the size of the production, I assume that small amounts of waste reflect a limited production aimed at an interurban market, whereas large amounts of waste may imply that the production was aimed at a wider market. Stone and timber buildings signify large-scale stone and woodworking, when quantifying these activity traces I merely consider their presence.

Based on similarities between Viking Age combs from Russia to the east and Ireland to the west, Kristina Ambrosiani has suggested that professional combmakers travelled and worked within limited regions that overlapped (Ambrosiani 1981, 32ff). If Bergen items have 'twins' outside Bergen and it is probable that the items were produced outside Bergen this may imply that the producers were professional ambulating artisans. I shall therefore study 'twin' products from localities outside Bergen, this is done

through published or otherwise accessible illustrations of artefacts.

As a point of departure I presume that four types of producers theoretically may have been present in early Bergen: (1) household producers, (2) professional sedentary full-time producers, (3) professional sedentary part-time producers, and (4) professional ambulating producers. The productive activities are linked to these producer types (Table 30).

Table 30. *Producer types and how they may be reflected in the sources*

	A few large waste assemblages	Permanent workshop	Many small waste assemblages	Household tools/common knowledge	Specialised tools	Specialised skills and knowledge	Twin products in Bergen	Twin products outside Bergen
Household producers			X	X				
Professional sedentary full-time producers	X	X			X	X	X	
Professional sedentary part-time producers			X		X	X	X	
Professional ambulating producers			X		X	X	X	X

Production as a fundamental economic basis

When addressing the importance of the productive activities as an economic basis for the emergence of the town I will discuss whether any of the productive activities identified were fundamental for the rise of the town. Productive activities that were carried out on a household basis and those serving an 'interurban market' did not add 'value' to the town community and may therefore not have been of fundamental importance to the initial rise of the town (cf Christophersen 1982, 108). As opposed to this productive activities that served a wider market may have played an important part as an independent economic factor in the early town.

Places of production

Combmaking and miscellaneous antler, bone, horn and whale/walrus bone working

A number of artefact groups have been studied in order to identify production areas for combmaking and miscellaneous antler, bone, horn and whale/walrus bone working. These find groups from Bergen have not previously been published or studied in detail. As mentioned earlier, Inger Kellmer studied the combs from site 6 where she also touched upon the waste material from comb production.[51] I have reclassified items that were originally classified as the remains of combmaking and that were retrieved in the archives, that is 85 % of this find group, supplementing my observations with Kellmer's notes when possible for the remaining 15 %. Comb blanks consist of discarded tooth segments and connection plates. These objects are quite characteristic and easy to identify (Figure 40). The group of comb offcuts contains offcuts that could be associated directly with comb-production as opposed to offcuts that could not be identified in terms of end product. Two tools could be associated with combmaking (Figure 41) both were made from tines of antler. The first tool was about 7 cm long, with a 2 cm x 2 cm quadratic cross-section, four holes of different diameters penetrated the item. I interpret it as a wire drawer used when forming rivets out of thin rolled sheets of metal.[52] The second tool derives from the same find spot, and based on size and shape it was apparently part of the same toolkit, the tool is interpreted as a punch (cf Ambrosiani 1981, Figure 62). Some of the comb production waste and blanks have been classified according to species by osteologist Anne Karin Hufthammer, as probable reindeer antler (cf footnote 63).

In addition to combs, other items of miscel-

laneous antler, bone, horn and whale/walrus bone were produced. The sources for this activity comprise various blanks and offcuts. I was only able to locate about half of the material originally catalogued as offcuts in the museum storerooms, for the remaining half I have had to rely on the original finds catalogues for a classification of the finds. It appears that a distinction between horn and antler has not been made in the finds-catalogue for site 6. In the material that could be checked, artefacts catalogued as horn actually turned out to be antler. Accordingly the site 6 material that was catalogued as horn, and could not be rechecked has been reclassified as horn/antler. When the artefact has been described as goat- or ox-horn, I presume that the artefact was actually horn. The raw material of the blanks (other than comb blanks) has been specified as far as possible, this classification has been carried out only visually by me. The category 'bone'comprises miscellanous bone, the category 'whale/walrus' comprises bone from the animals, not ivory.

There were no traces of combmaking prior to horizon 5 and no traces of miscellaneous antler, bone, horn and whale/walrus bone working prior to horizon 4.

Horizon 4 (c 1100-1120s)

Traces of miscellaneous antler working have been identified at four of the seven find-yielding analytic units. On plot 27/C, needle/pins of antler were produced, according to a blank found there (cf Table 31). The places of production were located on plots along the Vågen shoreline in the northern and the middle town areas, they were identified through basic as well as supplementary sources. The tendency in the material that several places of production existed during horizon 4, is thus considered trustworthy.

Horizon 5 (1120s-c 1170)

Along the Vågen shoreline in the northern town area, antler, whale/walrus bone and perhaps also horn was worked on plot 6/B, gaming pieces of whale/walrus bone were one product according to a blank found there (cf Table 32). On plot 6/C, antler, bone, as well as whale/walrus bone was worked, combs, needles/pins and line runners were products. On plot 6/D, antler, bone, horn as well as whale/walrus bone was worked. Combs, gaming pieces and needles/pins were some of the products. On plot 6/E antler, bone and perhaps also horn were worked, needles/pins of antler were one of the products. On plot 6/G, antler and bone were worked, combs were one of the products. By the Vågen shoreline in the middle town area, antler and bone were worked on plot 26/A. On plot 26-27/B, antler and perhaps also horn (26-27/BC) were worked and on plot 27/C horn and perhaps also antler (26-27/BC) was worked. On plot 28/C, antler was also worked and combs produced. Antler was worked by the small river that ran down the sloping terrain (unit 30/B). In horizon 5 the activity of

Table 31. *Horizon 4 (c 1100-1120s), miscellaneous antler, bone, horn and whale/walrus bone working (N=25)*

Plot/unit	Comb blank	Comb offcut	Punch	Wire drawer	Gaming piece blank	Needle/pin blank	Line runner blank	Miscellaneous blanks	Trial piece	Antler offcut	Bone offcut	Horn/antler offcut	Horn offcut	Whale/walrus bone offcut
6/B										**(2)**				
26/A										**3**				
26-27/B•										**4**				
26-27/BC•										**(6)**				
27/C						(1)#				(9)				

Artefact category II in brackets
Antler
Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Figure 40. *Tooth segments and connection plates*

Figure 41. *Punch and wire drawer: a BRM 0/86590/02; b BRM 0/86590/01*

combmaking was thus identified on four of the 24 find-yielding analytic units and miscellaneous antler, bone, horn and whale/walrus bone working was identified on 12 of the 24 find-yielding units. The production places were located in both the northern and middle town areas. The production places for combs were identified through basic sources only, the production places for miscellaneous antler, bone, horn and whale/walrus bone working were identified through 10 basic and two supplementary sources. The tendency in the material that production places for combmaking and for miscellaneous antler, bone, horn and whale/walrus bone working existed during horizon 3, is thus trustworthy.

Shoemaking and other leatherworking

The sources reflect that both shoemaking and 'other leatherwork' were carried out in early Bergen. Shoemakers are here defined as individuals or groups of specialists who produced items that were made from 'new' leather. These 'shoemakers' may have produced other leather items than shoes, but the sources have not been studied in such detail that concrete products can be linked to the waste, therefore, for the sake of simplicity they are termed shoemakers. The activity of 'other leatherwork' covers the production of articles that were fabricated from reused leather.

The Bergen town regulations of 1282 imply that shoemakers were also tanners and that tan-

Table 32. *Horizon 5 (1120s-c 1170), combmaking and miscellaneous antler, bone, horn and whale/walrus bone working (N=254)*

Plot/unit	Comb blank	Comb offcut	Punch	Wire drawer	Gaming piece blank	Needle/pin blank	Line runner blank	Miscellaneous blanks	Trial piece	Antler offcut	Bone offcut	Horn/antler offcut	Horn offcut	Whale/walrus bone offcut
6/B					**(1)** *					**1**		**1**		
6/C	**(4)**	**1**				**(1)** #	**(1)** #	**(2)** +		**1** **(10)**	**(4)**			**1** **(4)**
6/D	**(1)**				**(1)** #	**1** +		**(2)** +		**16** **(24)**	**(3)**	**6** **(5)**	**(6)**	**(4)**
6/E						**(1)** #					**(2)**	**(2)**		
6/G	**12** **(32)**	**1** **(30)**	**(1)**	**(1)**				**(1)** +	**2** **(5)**	**(5)**				
15-16/A										(2)				
26/A										**1** **(5)**	**(2)**			
26-27/B									**1** #	**1** **(9)**				
26-27/BC										**(9)**			**(2)**	
27/C													**(6)**	
28/B										**(7)**				
28/C	**(1)**									**(9)**				
30/B										(1)				

Artefact category II in brackets
Antler
* Whale/walrus bone
+ Bone
Numbers in **bold** refer to basic sources, in plain supplementary sources

ning and shoemaking were co-located (NgL III 14). The physical remains of tanning may be chalk, hair, bark (Schia 1975, 24), bird or animal manure and large vats used for soaking the hide (Larsen 1992, 86ff). The 1282 regulations relate to shoemaking in the high medieval town of Bergen more than 100 years later than the period studied here. The organisation of the shoemaker's craft may have differed from the early urban craft. Shoemakers in twelfth century Bergen may have tanned their own leather, but shoemaking could have taken place on other locations than that of tanning. When trying to identify production areas for shoemaking, leather-waste and/or shoemaker's tools have been considered sufficient evidence to identify shoemaking. The composition of culture-layers and traces of chalk production are, however, also regarded.

I have divided the leather waste into three types using the methods developed by Larsen (Larsen 1970, 34; Larsen 1992, 35) (Figure 42). Type 1 comprises pieces of leather where the edges are torn. The leather in this waste group has no traces of having been reused and represents rubbish. Type 2 comprises pieces of leather with stitching along some edges and straight cuts along others. This waste group represents the remains of leather items that were reused as raw material for new items. Type 3 comprises pieces of leather that had no traces of stitching and that were cut from a larger piece of leather. This type comprises waste from the regular fabrication of items from leather that had not been used previously. Larsen has studied shoes and leather waste from the Gullskoen area at site 6 (Larsen 1992), but did not distinguish between types 1 and 2 in this study. I have therefore reclassified the leather material from the Gullskoen area together with the remaining leather material from early Bergen before c 1170. Areas where shoemaking took place are identified through the distribution of waste of type 3 and tools of the craft. A last[53] is the only tool that has been safely identified as a shoemaker's tool (Figure 42). Areas where 'other leatherworking' was carried out are studied through the distribution of waste of group 2.

No traces of shoemaking or 'other leatherworking' were found before horizon 3.

Horizon 3 (c 1070-c 1100)

Traces of shoemaking and other leatherwork, tentatively dated to horizon 3 were found in the northern town area in one of the two find-yielding analytic units (plot 9-10/B) (Table 33). There is no indication in the documented culture-layers that tanning was carried out on any of the sites. Since the traces of shoemaking and other leatherworking stem from one supplementary source only, the material is considered as too inflicted with uncertainty for the identification of shoemaking and other leatherworking during horizon 3 and it is not included in the further discussions.

Table 33. *Horizon 3 (c 1070-c 1100), shoemaking and 'other leatherworking' (N=3)*

Plot/unit	Waste type 3 (shoemaking)	Last	Waste type 2 (other leather-working)
9-10/B	(2)		(1)

Artefact category II in brackets. Numbers in **bold** refer to basic sources, in plain supplementary sources

Horizon 4 (c 1100-1120s)

In the middle town area traces of shoemaking were found in three of the seven find-bearing analytic units (Table 34). There is no indication in the documented culture-layers that tanning was carried out on any of the plots/sites. The existence of places where shoes were made during horizon 4 is documented through basic as well as supplementary sources and is thus considered trustworthy.

Table 34. *Horizon 4 (c 1100-1120s), shoemaking and 'other leatherworking' (N=47)*

Plot/unit	Waste type 3 (shoemaking)	Last	Waste type 2 (other leather-working)
26/A	**2**		
26-27/B•	**(3)**		
26-27/BC•	**(19)**		
27/C	(20)		

Artefact category II in brackets. Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Horizon 5 (1120s-c 1170)

Waste of type 3 signifies shoemaking on 13 of the 24 find-yielding units (Table 35). On plot 6/C a last[54] was found in addition to the waste. No layers with tanning related contents have been recorded on any of the plots/sites. Three lime-slaking pits were, however, located in an open area of plot 6/C, and 3 lumps of chalk were recorded on the same plot, a lump of chalk was recorded on plot 6/G. It is not likely that these remains are related to tanning, because both plots 6/C and 6/G were excavated in their full lengths and no vats, necessary for soaking the hides, were documented. Furthermore, there was

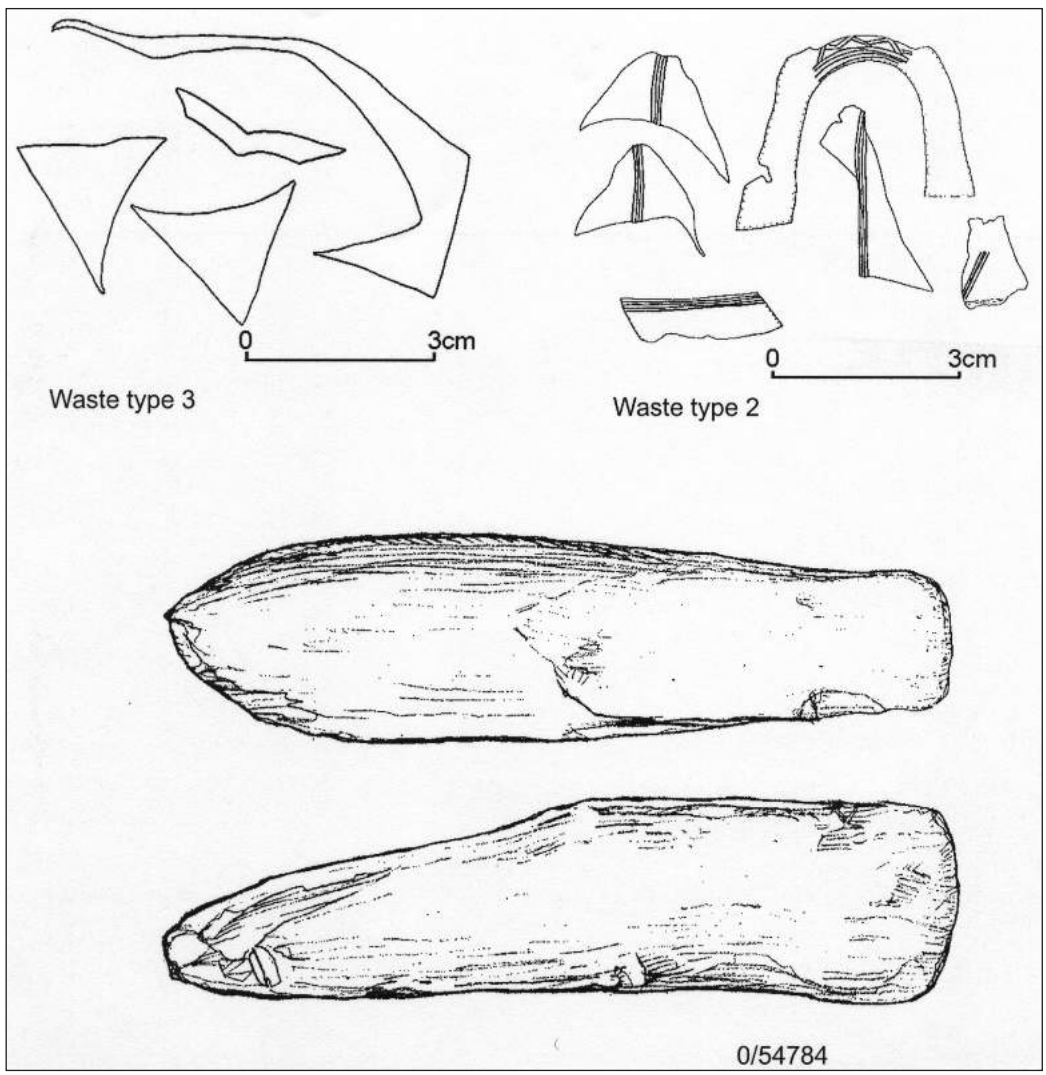

Figure 42. *Leather waste and a shoemaker's last (BRM 0/54784/01). (From Larsen 1991, 34-35). (Drawings by Svein Skauge)*

not enough running water on the plots for tanneries to be operated, and no layers with bark or other tanning-related ingredients have been recorded. There are thus no indications that tanning took place on plot 6/C or 6/G during horizon 5. Waste of type 2 was found in nine of the find-yielding analytic units and show that 'other leatherwork' was carried out here.

The production places for shoes as well as for 'other leatherworking' are found on the plots along the Veisan and Vågen shorelines and at the foot of Fløyfjellet. Shoemaking was documented through 11 basic sources and two supplementary sources, 'other leatherwork' through eight basic and one supplementary source, the tendency in the material that production of shoes and 'other leatherwork' took place during horizon 5, is thus considered well-founded.

Table 35. *Horizon 5 (1120s-c 1170), shoemaking and 'other leatherworking' (N=643)*

Plot/unit	Waste type 3 (shoemaking)	Last	Waste type 2 (other leather-working)
6/B	**(4)**		**(2)**
6/C	**6** **(51)**	**(1)**	**(20)**
6/D	**15** **(50)**		**29** **(52)**
6/E	**(21)**		**2** **(13)**
6/F			**(1)**
6/G	**268** **(8)**		**1** **(2)**
8/B	**(1)**		
20/A	(1)		(4)
26/A	**1** **(1)**		**(1)**
26-27/B	**(2)**		
26-27/BC	**(33)**		**(5)**
27/C	**(41)**		**(1)**
28/B	**(2)**		
28/C	**(2)**		
30/B	(2)		

Artefact category II in brackets

Metalworking

Metalworking has not been studied previously in the Bergen material. In the Urban Code of 1276 metalworkers are divided into several trades (Bl 1923, byskipingen Chapter 8). It is not possible, however, to make such fine distinctions in the present archaeological material. A common distinction in archaeological studies of metalworking is made between smithing and casting, the former identified through slag from metalworking, the latter through waste and equipment associated with casting (Bergquist 1989; Færden 1990). I have classified the material according to these principles. The workshop of a metalworker may be characterised by soot and charcoal in addition to production waste (Bergman and Billberg 1976; Færden 1990, 193). Such layers are, however, a common ingredient in the makeup of the culture-layers in Bergen as fires devastated the town repeatedly through the Middle Ages. Based on the available documentation soot and charcoal layers cannot be used as a source for metalworking in the present study.

The finds collection of slag is probably not representative for what was actually found (cf p 159ff). Only seven artefacts were originally classified as slag and the slag was found on almost as many different plots/sites. As mentioned earlier, slag was not collected systematically during excavations carried out before 1980. In addition, slag may derive from non-metallurgical processes (Bergquist 1989, 46). Only four of the seven pieces of 'slag' have been retrieved in the archives, and an evaluation of the original classification of the remaining finds has not been possible. Hence, slag is not considered as evidence of smithing unless it was identified by me. One fragment of a clay furnace lining is also found in the material, and may represent smithing.

Crucibles and moulds were used when casting (Bergquist 1989, 26) (Figure 43). Crucibles have been catalogued together with pottery. Since moulds is a finds category that has been given attention even in the oldest documentation material, I assume that the three artefacts classified as moulds were actually moulds - even the two that could not be retrieved in the museum storerooms. If found along with crucibles or moulds offcuts from copper alloy and fine metals may represent

Figure 43. *Crucibles, a possible touch stone, and a mould: a, c, e crucibles BRM 104/ 2280, BRM 104/2311, BRM 104/2326; b BRM 0/64456 touch stone?; d BRM 110/4949 mould*

the raw materials used when casting. These finds can, however, not stand in isolation as evidence of metalworking. Likewise, concentrations of nails, rivets, bits and pieces of iron found together with slag, may represent raw material for smithing (cf Ulriksen 1996, 42). On the other hand, this category of finds may, just as likely represent rubbish or it may even be part of structures or artefacts on the plot. I find it too difficult to distinguish between iron raw material and rubbish and have choosen to omit the find group from the analysis, except in the case of site 8 building K158. Weights and balances may also have been used in connection with metalworking (Pedersen 2001, 24) These tools can, however, also be associated with trade, and cannot in isolation be an indication of either activity. One item has been classified as a possible touch stone on the basis of its shape and the hardness of the stone.[55] A touch stone (Figure 43) was used when testing the valour of gold (cf Biddle 1990, 76, 278p). There were no traces of gold on the stone from Bergen, and as the classification is somewhat uncertain, the item cannot in isolation be a source for metalworking.

'The smiths' booths' are mentioned in the sagas in connection with a fight that took place in Bergen in 1155. The fight is described in several reliable sources (Helle 1982, 6), that give a de-

tailed topographical description of the location of the smiths' booths. According to the description, the booths should be close to a tenement probably located near or perhaps slightly to the east of site 9/10. Going down to this tenement from the booths, one would probably come from the area of site 8 located on the top of the morainic tongue that characterised the landscape just here. The saga passage is used as a supplementary source for horizon 5. There are no indications of metalworking prior to horizon 4.

Horizon 4 (c 1100-1120s)

In horizon 4 (Table 36), crucibles show that casting was carried out on two plots by the Vågen shoreline in the middle town area, offcuts of fine metal on plot 6/B in the northern town area may also be an indication of the activity of casting, but cannot in isolation be used as evidence of metalworking. In unit 30/E, located in the middle town area at the foot of Fløyfjellet, a fragment of a clay furnace lining reflects smithing. In addition, copper alloy offcuts may perhaps signify casting of copper alloy here. Altogether metalworking has been identified in three of the 7 find-yielding analytic units. Two units were basic sources, one was supplementary. The sources are few, but, due to the representativity problems inherent in the material, they probably represent a minimum of places where metalworking was carried out. The tendency in the material that metalworking took place during horizon 4 is thus considered reliable.

Table 36. *Horizon 4 (c 1100-1120s), metalworking (N=8)*

Plot/ unit	Crucible	Mould	Slag	Furnace lining	Offcut copper alloy	Offcut fine metal	Weight/balance arm	Touch stone?
6/B						**(1)**		
26/A	**1**							
26-27/B•	**(2)**							
30/E				(1)	(3)			

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Horizon 5 (1120s-c 1170)

In the northern town area, along the Vågen shoreline, casting of copper alloy took place on plot 6/C according to crucibles and other finds from this plot (Table 37). A possible touch stone and a weight from the same plot may perhaps also signify metalworking. Tools of trade were, however, also found on plot 6/C (Table 67), so the weight cannot be conclusively associated with metalworking. Casting of copper alloy and other fine metals took place on plot 6/D, in addition smithing is indicated through slag. A crucible and a piece of slag show that casting and smithing were carried out on plot 6/G .

By the Veisan, slag in unit 8/B indicates that smithing took place during horizon 5. The location of the smith's booths described in the written sources (cf above) corresponds well with the context of the slag found here. The slag, found in building 158, was found together with a larger concentration of iron bits and pieces. The building burned sometime after 1150 (cf p 98ff), slag and iron bits were found in the fire-layer and may reflect activities in the particular building sometime after 1150. As we have seen, the events described around the smiths' booths took place in 1155. Site 8 was excavated and documented thoroughly, but the site was also very disturbed by later activities (cf p 98ff) and only a fraction of building K158 and hardly any culture-layers outside the building were intact. Any waste located outside the building may thus have been removed by later activities. It is not impossible that building 158 could have been one of the smiths' booths.

Offcut of copper alloy was found on plot 20/A, located at the foot of Fløyfjellet in the northern town area, but cannot in isolation provide evidence of metalworking. By the Vågen shoreline in the middle town area, crucibles indicate casting on plot 26/A. A balance arm fits into the picture of fine metalworking. No finds indicating trade were found in this context in horizon 5 this strengthens the notion that this balance arm should be associated with metalworking rather than trade. On plot 26-27/B crucibles show that casting went on, the same applies to plot 27/C where a mould was found together with crucibles. Offcut of copper alloy found between 26-

27/B and 27/C fits well into the picture of metalworking on either plot.

Along the small river by site 30, offcut of fine metal was found in unit 30/B. Further up the sloping terrain, in unit 30/E, crucibles and slag indicate that both casting and smithing were carried out. The deposits in unit 30/B were fluvial layers and the fine metal offcut may well have been transported from 30/E to 30/B by fluvial action. The fine metal offcut could therefore represent activity further up the morainic slope around unit 30/E rather than around unit 30/B. In that case, only one activity area for metalworking is represented on site 30.

Table 37. *Horizon 5 (1120s-c 1170), metalworking (N=42)*

Plot/ unit	Crucible	Mould	Slag	Furnace lining	Offcut copper alloy	Offcut fine metal	Weight/balance arm	Touch stone?
6/C	**(2)**		**(1)**		**(1)**		**(1)**	**(1)**
6/D	**1 (1)**	**(1)**	**1+ 1 (1)**		**(1)**	**(1)**		
6/G	**1**		**1+**					
8/B			**(1) +**					
20/A					(1)			
26/A	**3 (2)**						**(1)**	
26-27/B	**(4)**							
26-27/BC	**(5)**				**(1)**			
27/C	**(1)**	**(2)**						
28/B	**(1)**							
30/B						(1)		
30/E	(2)		(1) +					

Artefact category II in brackets
+ catalogued by the author
Numbers in **bold** refer to basic sources, in plain supplementary sources

To sum up, remains of metalworking have been identified in 9 of the 24 artefact-yielding analytic units in horizon 5. Casting took place in 8 units comprising seven basic and one supplementary source. In three of these units there was also evidence of smithing. The three units comprised two basic and one supplementary source. On one plot smithing alone was documented, also through a basic source. This plot may perhaps correspond with the smith's booths mentioned in written sources. Altogether the tendency in the material that casting and smithing took place in Bergen during horizon 5, is considered well-founded.

Stoneworking

Stoneworking in large-scale in early Bergen is represented through the monumental buildings that were erected during the period under study. Lime-slaking pits and lumps of chalk that perhaps served as raw material for mortar may be other indicators. In addition, stoneworking of a smaller scale is documented through offcuts and blanks from the town area.

The artefact category 'discus' comprises flat, circular slabs of slate with a diameter of 8.5-13.5 cm and less than one cm thick. They may be interpreted as blanks but have also be interpreted as belonging to an outdoor game activity (Herteig 1969, 198). Alone they cannot signify small-scale stoneworking. Offcuts of stone have probably not been documented or collected systematically at the sites. Most likely only offcuts that stand out as somehow special have been documented or collected as this source group is often considered as part of the makeup of a layer rather than as an artefact in the layer. None of the recorded layers from early Bergen have been described as containing steatite offcut.[56] None of the finds that were originally classified as offcut of steatite or slate were retrieved in the museum storerooms, I feel confident though, that the finds were originally classified correctly because the stone types are not difficult to recognise. The stone types were quarried outside the Bergen area and must stem from stones that have been carried into town as finished items, raw materials or both. Altogether, the documented material is probably not representative for what was found during excavations and the representation of small-scale stoneworking places must be considered as a minimum.

Horizon 2 (c 1020/30-c 1070)

A piece of steatite offcut was assigned to horizon 2. It may reflect small-scale stoneworking carried out in or around unit 7/A. As the find stems from one supplementary source only, it is considered as too uncertain for the identification of small-scale stoneworking during horizon 2 and is not included in further discussions.

Table 38. *Horizon 2 (c 1020/30-c 1070), stoneworking (N=1)*

Unit	Large-scale stoneworking	Lime-slaking pit	Chalk	Offcut steatite	Offcut slate	Spindle whorl blank	Miscellaneous blank	'Discus'
	Large-scale stoneworking			Small-scale stoneworking				
7/A				(1)				

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources

Horizon 3 (c 1070-c 1100)

According to written sources the building of the Christchurch Cathedral was initiated at Holmen during horizon 3. This information is a basic source and is considered reliable.

No traces of small-scale stoneworking have been assigned to the horizon.

Table 39. *Horizon 3 (c 1070-c 1100), stoneworking (N=1)*

Site	Large-scale stoneworking	Lime-slaking pit	Chalk	Offcut steatite	Offcut slate	Spindle whorl blank	Miscellaneous blank	'Discus'
	Large-scale stoneworking			Small-scale stoneworking				
Christchurch Cathedral	**X**							

Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Horizon 4 (c 1100-1120s)

In the northern town area the possible predecessor to the standing St Mary's (S) may have been initiated during horizon 4. In the middle town area the Church of St Nicholas (S) may have been erected and at Nordnes the Munkeliv Abbey was initiated (B). The monuments are assigned to horizon 4 as two supplementary and one basic source respectively, should the supplementary sources be erroneously assigned to horizon 4, the tendency that large-scale stonework was carried out in this horizon is still considered reliable.

Steatite was worked on plot 6/C by the Vågen shoreline in the northern town area and in unit 30/E at the foot of Fløyfjellet in the middle town area (Table 40). Small-scale stone work is indicated through both a basic source and a supplementary source. The sources are few in number, but due to the representativity problems inherent in the material probably represent a minimum of places where small-scale stoneworking was carried out. The tendency discerned in the material that this activity was carried out in horizon 4, is thus found reliable.

Table 40. *Horizon 4 (c 1100-1120s), stoneworking (N=5)*

Plot/unit/site	Large-scale stoneworking	Lime-slaking pit	Chalk	Offcut steatite	Offcut slate	Spindle whorl blank	Miscellaneous blank	'Discus'
	Large-scale stoneworking			Small-scale stoneworking				
6/C				**1**				
30/E				(1)				
St Mary's	x							
St Nicholas'	x							
Munkeliv Abbey(site 43)	**X**							

Artefact category II in brackets
Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Horizon 5 (1120s-c 1170)

In horizon 5 large-scale stoneworking probably began in nine places. In the northern town area the (second?) church of St Mary (B) and the church of St Peter (S) were erected, in the middle town area St Columba (S), and in the southern town area the churches of St Olav (B) and St Cross (B). In the Nordnes and Nonneseter areas the establishment of the two monasteries St

John's Abbey and the Nonneseter Convent took place.

Large-scale stone work is also implied on two plots by the Vågen shoreline in the northern town area by the presence of lime-slaking pits and lumps of chalk on plot 6/C and perhaps also through the lump of chalk found on plot 6/G. The plots were located near St Mary's and St Peter's respectively where mortar was probably needed in connection with construction and repair work. Large-scale stone work is documented through several basic sources and the tendency in the material that this activity was carried out during horizon 5 is considered reliable.

Table 41. *Horizon 5 (1120s-c 1170), stoneworking (N=33)*

Plot/unit/site	Large-scale stoneworking	Lime-slaking pit	Chalk	Offcut steatite	Offcut slate	Spindle whorl blank	Miscellaneous blank	'Discus'
	Large-scale stoneworking			Small-scale stoneworking				
6/C		**X**	**3**					**2 (1)**
6/D				**1 (1)**	**(4)**	**1**		**1**
6/E				**(1)**				
6/G			**1**	**9**				
28/B							**(1)**	
30/E				(1)				
St Mary's (site 23)	**X**							
St Peter's (site 24)	x							
St Columba (site 33)	x							
St Olav's in Vågsbunnen (site 39)	**X**							
The Church of St Cross (site 40)	**X**							
St Johns Abbey (site 44)	**X**							
Nonneseter Convent (site 46)	**X**							

Artefact category II in brackets
Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Small-scale stoneworking was documented on three plots by the Vågen shoreline in the northern town area, on plot 28/B by the Vågen shoreline in the middle town area and on plot 30/E on the foot of Fløyfjellet. In addition to this, 'discuses' on plot 6/C may perhaps indicate stoneworking on this plot, however, this artefact category cannot in isolation provide evidence of small-scale stoneworking. Small-scale stoneworking was documented through four basic and one supplementary source. The tendency in the material that this activity took place during horizon 5, is thus considered reliable.

Woodworking

Large-scale woodworking is obviously represented by the timber buildings and structures uncovered at almost all of the plots/sites where activity has been documented archaeologically. The distribution of these sources is not listed here. Monumental buildings, not recorded archaeologically but known through the written records, also show that large-scale woodwork was carried out in the early town. The timber monuments that were initiated during the period under investigation are listed in the tables for the relevant horizons below.

Blanks, tools and waste - lathe-turned cores only - have been studied when identifying areas with small-scale woodworking. Lathe-turned cores may have been used as whipping tops (toys) in which case they were probably removed from their original place of production, though not necessarily from the plot where they were produced. Still, lathe-turned cores cannot in isolation be indicators of small-scale woodworking. There may be tools for woodworking among the metal finds, knives may obviously have been used for carving, but as mentioned earlier I have not been to able to sort out specialised tools with any degree of certainty and this metal finds category is omitted in my survey. As already pointed out, wood blanks and waste were probably often burnt as firewood, this of course affects the representativity of the material. The number of areas where small-scale woodworking was carried out must therefore be considered as a minimum.

Horizon 3 (c 1070-c 1100)

According to basic sources Christchurch Minor was built in wood at Holmen (Table 42) in horizon 3. The presence of large-scale woodworking is thus considered reliable. No small-scale

woodworking has been recorded in the sources for horizon 3.

Table 42. *Horizon 3 (c 1070-c 1100), woodworking (N=1)*

Site	Monumental building	Lathe-turned core	Rabbet	Needle/pin blank
Christchurch Minor (site 3)	**X**			

Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Horizon 4 (c 1100-1120s)

According to basic sources the Church of the Apostles was built at Holmen in horizon 4. The presence of large-scale woodworking is thus considered reliable. No small-scale woodworking has been recorded in the sources for horizon 4 (Table 43).

Table 43. *Horizon 4 (c 1100-1120s), woodworking (N=1)*

Site	Monumental building	Lathe-turned core	Rabbet	Needle/pin blank
The Church of the Apostles (site 4)	**X**			

Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Horizon 5 (1120s-c 1170)

The Church of St Olav's on the Hill (B) and perhaps also the Church of All Saints (S) were built in horizon 5, presumably in wood. The presence of large-scale woodworking is thus considered reliable.

In the northern town area along the Vågen shoreline a rabbet and a needle/pin blank show that small-scale woodworking took place at two plots, the finds of lathe-turned cores on additionally two plots may perhaps indicate that woodworking was also carried out here, but cannot in isolation provide evidence. Small-scale woodworking was thus documented on at least two plots. The sources for small-scale woodworking are assigned to horizon 5 as basic sources. The number of artefacts is small, but due to the inherent problems of representativity the recorded number of places where small-scale woodworking took place should probably be considered a minimum. The tendency in the material that this activity took place during horizon 5 is thus considered reliable.

Table 44. *Horizon 5 (1120s-c 1170), woodworking (N=10)*

Plot/site	Monumental building	Lathe-turned core	Rabbet	Needle/pin blank
6/B		**(1)**		
6/C		**(3)**	**(1)**	
6/D		**(1)**		**(1)**
6/E				
6/F		**(1)**		
St Olav's on the Hill (site 25)	**X**			
The Church of All Saints (site 45)	**X**			

Artefact category II in brackets
Numbers and **x** in **bold** refer to basic sources, numbers and x in plain supplementary sources

Skinning

Cut and chop marks on osteological material indicate that animals were skinned (Hufthammer 1987, 64ff). Four craniums of cats and five of dogs comprise the sources for skinning in early Bergen.

Table 45. *Horizon 5 (1120s-c 1170), traces of skinning: skulls of cats and dogs (N=12)*

Plot	Cranium cat	Cranium dog
6/D	**2** **(1)**	**(2)**
6/E	**(1)+**	**(1)** **(2)+**

Artefact category II in brackets
\+ studied by Hufthammer
Numbers in **bold** refer to basic sources, in plain supplementary sources

Table 45 shows that skulls assigned to horizon 5, as basic sources, were found on plots 6/D and 6/E in the northern town area.[57] One of the cat skulls and two of the dog skulls from plot 6/E have been studied earlier, all three skulls had chop or cut marks and show that skinning was carried out here (pers com Hufthammer 2002). Cut and chop marks are very common in the material from the whole medieval period in the Engelgården area (Hufthammer 1987, 64ff). On this basis there is a good chance that some of the three cat and two dog skulls from plot 6/D also indicate skinning. However, skinning has only been documented safely on plot 6/E. The presence of the activity is documented through a basic source and is considered reliable.

Textile production

Artefacts that could be associated with textile production have been divided into two groups: 'textile tools' and 'possible textile tools'. The first group contains artefacts that are characteristic and not easily mistaken for items with other areas of use. The second group comprises artefacts that are less distinct and may have had other areas of use. Weights and needles/pins belong to the group of 'possible textile tools'. In other studies of textile production weights have been analysed along with textile tools (eg Øye 1988, Hagen (1988) 1994, Nordeide 1989). Studies of textile tools and fishing tackle from Bergen have however, demonstrated the difficulties in distinguishing positively between weights used as warp-weights and those used as net-weights. In these studies the weight and to some extent the shape of the objects has been used as an indicator of function, but the context of the weights has been considered the most important indicator. Accordingly, if the weights were found with textile tools they were interpreted as 'possible warp-weights', if found along with fishing tackle they were interpreted as possible fishing related equipment. (Øye 1988, 70; Olsen 1998, 57, 87ff). When, in the present study, weights are found as the only indicator of textile production I will discuss the function of the concrete weights on the basis of weight as described in Øye (1988, 69) and on the basis of context. Needles/pins are also traditionally used as sources for textile production, but may also have had several other areas of use (Øye 1988, 97ff). When needles/pins are found as the only source for textile production, I will discuss the function of the particular needles/pins. No textile tools could be associated with horizon 2.

Horizon 3 (c 1070-c 1100)

One possible textile tool was assigned to horizon 3 (S); the weight on plot 9-10/B by the Vågen shoreline in the northern town area was, however, found along with fishing tackle and thus probably functioned as a net-weight. Textile production could not be documented in horizon 3 (Table 46).

Table 46. *Possible textile tools in Horizon 3 (c 1070-c 1100) (N=1)*

	Textile tools		Possible textile tools											Textile Production witnessed positively
Plot	Spindle whorl	Drop-spindle	Flax-beater	Flax-comb	Knife beater	Linen-smoother	Long-toothed comb	Needle/pin	Reed-hook	Shears	Warping paddle	Weight T/F	Winding pin	
9-10/B												(1) *		

Artefact category II in brackets
* Most likely a net-weight
Numbers in **bold** refer to basic sources, in plain supplementary sources

Table 47. *Possible textile tools in Horizon 4 (c 1100-1120s) (N=4)*

	Textile tools		Possible textile tools											Textile Production witnessed positively
Plot	Spindle whorl	Drop-spindle	Flax-beater	Flax-comb	Knife beater	Linen-smoother	Long-toothed comb	Needle/pin	Reed-hook	Shears	Warping paddle	Weight T/F	Winding pin	
6/B												**(1)** *		
26-27/BC•								**(1)** +						

Artefact category II in brackets
* Most likely a net-weight
+ Most likely not a textile tool
Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Horizon 4 (c 1100-1120s)

No textile tools were assigned to horizon 4 in the seven find-yielding units. However, five 'possible textile tools', were assigned to the horizon (Table 47). The weight on plot 6/B by the Vågen shoreline in the northern town area was found along with fishing tackle and should rather be associated with fishing. The needle/pin found between plots 26-27/B and 27/C in the middle town area was of Øye's type A (Øye 1988, Figure IV.2). The size and shape of the head indicates that this particular needle/pin cannot have been used for sewing, rather it may have been used as a pin to fasten garments (Cf Øye 1988, 99ff). The needle/pin can therefore not be taken as an indication of textile production on either of the plots. In unit 30/E located in the middle town area at the foot of Fløyfjellet a weight of Øye's type A (Øye 1988, Table III.4.2) was found, weighing about 162 g. Judging the weight and shape, the artefact was most likely used as a net-weight (cf Øye 1988, 69), and it cannot be taken as an indication of textile production. In conclusion textile production cannot be documented in horizon 4.

Horizon 5 (1120s-c 1170)

In horizon 5 textile tools were found on eight of the 24 find-yielding units and on either plot 26-27/B or plot 27/C (Table 48). The finds signify textile production in these units. Weights classified as 'possible textile tools' were present in four additional units. Weights at plot 6/F, 6/G and in unit 8/B were found together with fishing tackle, and are thus most likely net-weights. The weight on plot 15-16/A was of Øye's type B, the function of the weight cannot be determined with any degree of certainty. A needle/pin of Øye's type A or B was found on plot 26-27/B, and may have been used for textile production. A spindle whorl was found between 26-27/B and 27/C and indicates textile production on either plot. To sum up, textile production was documented on 9 plots. In addition to this, a weight that can-

not be classified in terms of function may have served as either a warp weight or a net-weight. The production places were located along the Veisan and Vågen shorelines in both the northern and the middle town areas and at the foot of Fløyfjellet on plot 20/A in the northern town area. The places of production were documented through eight basic and one supplementary source, the tendency in the material that textile was produced during horizon is thus considered reliable.

Fishing

Fishing tackle has been classified according to Ole Mikal Olsen's classifications (1998). I have divided artefacts into two categories: fishing tackle and 'possible fishing tackle'. The first group comprises artefacts that are identified according to function, the second group comprises weights that may reflect either textile production or fishing. The function of the weights that are considered as indicators of fishing related activities, is discussed and evaluated case by case on criteria similar to those accounted for under textile tools.

No fishing tackle could be associated with horizons prior to horizon 3.

Horizon 3 (c 1070-c 1100)

A weight tentatively assigned (S) to horizon 3 was found on plot 9-10/B in the northern town area (Table 49). The weight and shape of the object indicate that it was used as a net-weight (cf p 227). Since the evidence stems from one supplementary source only, it is considered as too uncertain for the identification of fishing during horizon 3 and is not included in the further discussions.

Table 49. *Horizon 3 (c 1070-c 1100), fishing tackle and possible fishing tackle (N=1)*

	Fishing tackle				Possible Fishing tackle	Fishing positively identified
Plot	Float	Line sinker	Line runner	Netting needle	Weight	
9-10/B					(1)	X

Artefacts of category II are in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources

Horizon 4 (c 1100-1120s)

Fishing tackle assigned to horizon 4 was found in the northern town area on plot 6/B and in the middle town area on plot 26/A. Fishing related activities are thus documented on two of seven find-bearing plots, in horizon 4 (Table 50). Fishing was documented through basic sources only, the tendency in the material that fishing took place during horizon 4, is thus considered reliable.

Table 48. *Textile tools and possible textile tools in Horizon 5 (1120s-c 1170) (N=177)*

	Textile tools		Possible textile tools											Textile Production witnessed positively
Plot	Spindle whorl	Drop-spindle	Flax-beater	Flax-comb	Knife beater	Linen-smoother	Long-toothed comb	Needle/pin	Reed-hook	Shears	Warping paddle	Weight T/F	Winding pin	
6/B	**2 (3)**		**(1)**	**(1)**				**3 (2)**				**4 (5)**		**X**
6/C	**5 (3)**	**(1)**	**1 (1)**			**1 (2)**	**(1)**	**(6)**				**10 (13)**	**(1)**	**X**
6/D	**3 (7)**	**1**			**(1)**	**3 (1)**	**1 (2)**	**4 (12)**	**1**	**1 (1)**	**1**	**27 (8)**		**X**
6/E	**(1)**			**1**				**(6)**				**(3)**		**X**
6/F												**(3) ***		
6/G												**6 (1) ***		
8/B												**(1) ***		
8/D	**1**													**X**
15-16/A												(1) ?		
20/A	(1)											(1)		X
26/A	**(1)**							**(1)**						**X**
26-27/B								**(1) +**						**X**
26-27/BC		**(1)**										**(1)**		**X**
28/B	**(1)**				**(1)**			**(1)**				**(3)**		**X**

Artefacts of category II are in brackets
* Most likely net-weights
? Function uncertain
+ Most likely a textile tool
Numbers in **bold** refer to basic sources, in plain supplementary sources

Table 50. *Horizon 4 (c 1100-1120s), fishing tackle and possible fishing tackle (N=3)*

	Fishing tackle				Possible Fishing tackle	Fishing positively identified
Plot	Float	Line sinker	Line runner	Netting needle	Weight	
6/B		**(1)**			**(1)**	**X**
26/A			**1**			**X**

Artefacts of category II are in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources

Horizon 5 (1120s-c 1170)

In horizon 5, fishing tackle was found in ten analytic units along the shores of Veisan and Vågen in the northern town area and in three units along the Vågen shoreline in the middle town area. In addition, a weight was found in unit 20/A located at the foot of Fløyfjellet. This weight was found together with textile equipment and most likely functioned as a warp-weight (cf p 228). On plot 15-16/A yet another weight was found, the function of this weight cannot be determined with any certainty (cf p 228). All in all, fishing was well-documented in 10 of the 24 artefact-yielding units, and a weight may indicate either textile production or fishing related activities on one plot (Table 51). Fishing was documented

through ten basic sources, the tendency in the material that fishing was an activity during horizon 5, is thus considered well-founded.

Table 51. *Horizon 5 (1120s-c 1170), fishing tackle and possible fishing tackle (N=128)*

	Fishing tackle					Possible fishing tackle	Fishing positively identified
Plot	Float	Line sinker	Line runner	Netting needle	Weights T/F		
6/B	**3** **(2)**	**2**	**(1)**		**4** **(5)**		**X**
6/C	**4** **(3)**			**(1)**	**10** **(13)**		**X**
6/D	**6** **(4)**		**(3)**	**(1)**	**27** **(8)**		**X**
6/E		**(1)**			**(3)**		**X**
6/F	**(2)**				**(3)**		**X**
6/G	**2**		**(1)**		**6** **(1)**		**X**
8/B		**(1)**			**(1)**		**X**
15-16/A					(1)?		
20/A					(1)*		
26-27/B			**(1)**				**X**
26-27/ BC				**(1)**	**(1)**		**X**
27/C			**(1)**				**X**
28/B		**(1)**			**(3)**		**X**

Artefacts of category II are in brackets
* Most likely a warp-weight
? Function cannot be determined
Numbers in **bold** refer to basic sources, in plain supplementary sources

Hunting and war

Weapons assigned to the period under study have been classified according to Ole Magne Nøttveit's classification (2000). In addition, leather items identified as slings (cf Dahlbäck 1983, 264; Marstein 1989, 115) are included. Slings were used as a weapon and as hunting equipment as well as in games as well (KLNM, VII 322ff, XVI 229). Some of the identified weapons, such as some of the arrow heads, were for hunting and indicate that hunting was part of the townspeople's strategy for gathering food or acquiring fur. Other weapons, such as spearheads, were meant for war or class distinction. Weapons were probably something the owner cared well for, thus the distribution of weapons on the plots/sites most likely shows a minimum of places where weapons were owned, rather than a real picture of the distribution (Nøttveit 2000).

No weapons could be assigned to horizons prior to horizon 5.

Horizon 5 (1120s-c 1170)

Weapons have been found on four plots in the northern town area and on one plot in the middle town area in horizon 5 (Table 52). All plots were located by the Vågen shoreline. Weapons of war were found on two plots and hunting weapons on two plots. A bow that may have been used either for hunting or war was found on a fifth plot. The weapons have all been documented through basic sources. It is thus well-documented that weapons for both hunting and war were owned by townspeople during horizon 5 and hunting was probably part of the townspeople's strategy for gathering food or acquiring fur.

Table 52. *Horizon 5 (1120s-c 1170), weapons of war, hunting and game (N=9)*

Plot	Bow hunt/war	Arrow head, war	Spearhead, war	Arrow head, hunt	Sling war/ hunt/game
6/B			**(1)**		
6/C	**2**	**(1)**			
6/D	**1**				**1**
6/G				**1**	**1**
26-27/B	**(1)**				

Numbers in **bold** refer to basic sources, in plain supplementary sources
Artefacts of category II are in brackets

Agriculture in early Bergen

Agriculture in this context is defined as the production of plants and animal husbandry (cf Øye 1998. 7). The osteological material is not available as a source for agriculture in horizons 2 to 5 and the botanical sources are, with one exception, not relevant. Øye has gone through the museum storerooms in order to identify tools used in agriculture, the tools identified by her were all

younger than horizon 5. During my own reclassification of the finds from early Bergen I have only retrieved one possible tool. Culture-layers that contain animal dung and artefacts may give information as to whether the inhabitants of early Bergen were also agriculturists. Before 1980 dung was not recorded as a component in culture-layers, and at sites excavated after 1980 none of the recorded layers contained dung according to the original documentation. Excrement-layers have been recorded at all excavations since 1955[58]. At site 21 layers 67 and 68 were described by the archaeologists as layers 'possibly with excrement' (Dunlop 1989f, 20). The botanical analysis of the layers, however, also identified dung (Hjelle 1989, 7). This implies that a clear distinction between dung and excrement is not always feasible without a botanical analysis of the deposits. Most of the sites excavated after 1955 had layers where excrement was part of the composition, and it cannot be excluded that some of this 'excrement' was actually dung. The absence of dung can therefore not be used as a source for the absence of animal husbandry.

Horizon 5 (1120s-c 1170)

In unit 21/A, at the foot of Fløyfjellet in the northern town area, construction K39 was interpreted as a stable or byre through remains of dung within the building (Table 53). It was not possible to determine whether the dung was from horses or cattle (Dunlop 1989f, 28; Hjelle 1989, 7). If the construction was a horse-stable and not a byre it does not reflect agriculture as such, since horses were mostly used for transport and horseflesh was not eaten in the Middle Ages (Øye 1998, 44, 53). Since the function of the building is ambiguous, it cannot stand alone as a source for agriculture.

On plot 6/G by the Vågen shoreline, in the northern town area, a possible sickle was found and may reflect harvesting. The item stems from a basic source, but was so badly preserved that it cannot be used as conclusive evidence of agriculture in early Bergen.

Altogether the sources of agriculture during horizon 5 cannot throw light upon the presence of agricultural activities.

Table 53. *Horizon 5 (1120s-c 1170), agriculture sources (N=2)*

Plot	Stable or byre	Possible sickle
6/G		**1**
21/A	X	

Artefacts of category II are in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources

Basic cooking, food and beverage processing

Food must have been cooked and consumed on all the occupied plots/sites in the early town. Were food and beverages also processed from raw material to refined products in all analytic units, or can different forms of specialisation be identified? Refinement of foodstuffs and beverages presupposes that the settlement on a plot/site where such activities take place was well established as opposed to being sporadic; food and beverage processing depend on the presence of extensive facilities, such as large containers and access to a fireplace where large amounts of water could be heated. Sausage making for example presupposes that animals were killed and dressed, this is a more time-consuming activity than the basic cooking task of boiling porridge for example.

In order to elucidate whether different forms of specialisation took place within preparation of food and beverages, places where basic cooking was carried out and where more time-demanding food and beverage processing took place are identified. Tools used when processing raw materials into refined foodstuffs and botanical evidence of beer brewing are used as sources for the latter activity. The tools that have been identified are: sausage pins - used when processing meat into sausages for storage or immediate consumption (cf Weber 1990, 76ff), skewers - used when drying fish, grinding slabs, and a cross - perhaps used when processing milk (Ågotnes in prep). As a premise, when identifying where sausages were made, I assume that the sausage pins were removed before the sausage left the place of production or storage and were served. The tools representing basic cooking are steatite ves-

sels and baking slabs of slate - used when baking flat-bread for storage or immediate consumption (cf Weber 1990, 62), most likely also for heating other foodstuffs over the hearth (Ågotnes in prep).[59] Many wooden artefacts may also reflect basic cooking, but a clear identification of their function is not straightforward, so they are not included here. Neither is the distribution of cooking vessels of pottery drawn into the discussion, as this artefact type has not been classified as an individual category at all sites. Steatite vessels and baking slaps will therefore suffice to represent basic cooking. I have not re-classified the sausage pins, the steatite vessels nor the baking slaps from site 6, as this material was difficult to access in the museum storerooms. The items are, however, easy recognisable and there is a good chance that they were properly identified during the original find documentation. Even if all the items were not classified correctly, the large number of the respective artefacts are regarded as quite representative for what was actually found during excavation.[60] Pollen of *myrica gale* recorded through botanical investigations may indicate beer brewing, as the plant was a common ingredient in beer in the twelfth century (KLNM, XX 689ff; Kjersgaard 1978, 84ff). As *myrica gale* also grows wild and had other areas of use (Høeg 1976, 457ff), its presence is only taken as an indication of beer brewing.

Horizon 2 (c 1020/30-c 1070)

In horizon 2 pollen of *myrica gale* may imply that beer brewing took place in the vicinity of site 7/A in the northern town area (Table 54). Since data stems from one supplementary source only, the evidence of beer brewing in horizon 2 is considered as too uncertain and is not included in the further discussions.

Table 54. *Horizon 2 (c 1020/30-c 1070), food and beverage processing (N=1)*

	Food and beverage processing					Basic cooking	
Plot	Sausage pin	Skewer	Grinding slab	Milk-processing cross	*Myrica gale*	Baking- stone	Steatite vessel
7/A					(X)		

Artefact category II in brackets

Horizon 3 (c 1070-c 1100)

Pollen of *Myrica gale* was recorded in 'unit 7' on either plot 6/E or 6/F (Krzywinski and Kaland 1984, 24), and it may indicate beer brewing on either plot. However, since data stems from one supplementary source only, the evidence of beer brewing in horizon 3 is considered as too uncertain, and is not included in the further discussions. Basic cooking was documented by sources assigned tentatively to horizon 3 on plot 9-10/B, again since data stems from one supplementary source only, the evidence of basic cooking in horizon 3 is considered as too uncertain to be included in further discussions (Table 55).

Table 55. *Horizon 3 (c 1070-c 1100), basic cooking, food and beverage processing (N=4)*

	Food and beverage processing					Basic cooking	
Plot	Sausage pin	Skewer	Grinding slab	Milk-processing cross	*Myrica gale*	Baking - stone	Steatite vessel
6/E or 6/F					X		
9-10/B						(1)	(2)

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Horizon 4 (c 1100-1120s)

Basic cooking was documented in five of the seven find-bearing analytic units in horizon 4 (Table 56). Food was also processed in two units

in the northern town area and on two plots in the middle town area. Basic cooking was documented through three basic and two supplementary sources, food and beverage processing was documented through three basic and one supplementary source. The main pattern discerned in the material that basic cooking and food processing were carried out during horizon 4, is thus considered well-founded.

Table 56. *Horizon 4 (c 1100-1120s), basic cooking, food and beverage processing (N=36)*

	Food and beverage processing					Basic cooking	
Plot/unit	Sausage pin	Skewer	Grinding slab	Milk-processing cross	*Myrica gale*	Baking- stone	Steatite vessel
6/B	**(2)**					**(11)**	**(7)**
6/C	**1**						**1**
26/A	**1**						
26-27/B•							**(5)**
26-27/BC•						**(1)**	
27/C	(2)					(2)	(1)
30/E						(1)	(1)

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources
• Artefacts from both basic and supplementary sources

Horizon 5 (1120s-c 1170)

In horizon 5, basic cooking (Table 57) was documented in 17 of the 24 find-yielding analytic units, located along the Veisan and Vågen shorelines in the northern, middle and southern town areas and at the foot of Fløyfjellet in the middle town area. Basic cooking was documented through 14 basic sources and three supplementary sources and the presence of this activity during horizon 5 is thus well-founded and considered reliable.

Food and beverage processing was documented in 12 of the 24 artefact-yielding units located along the Veisan and Vågen shorelines in the northern, middle and southern town areas and at the foot of Fløyfjellet in the middle town area. Sausages may have been made in nine places, fish may have been dried in three places, beer may possibly have been brewed in three places, cereals ground in one place and milk processed in one place. Food and beverage processing is documented through ten basic sources and two supplementary sources. Each of the varieties of food and beverage processing have been documented through at least one basic source, so the tendency that food and possibly also beverages were processed during horizon 5, and that all the varieties of food and possibly also beverage processing were represented, is considered reliable.

Table 57. *Horizon 5 (1120s-c 1170), basic cooking, food and beverage processing (N=1265)*

	Food and beverage processing					Basic cooking	
Plot/unit	Sausage pin	Skewer	Grinding slab	Milk-processing cross	*Myrica gale*	Baking- stone	Steatite vessel
6/B	**16 (38)**					**20 (25)**	**4 (14)**
6/C	**49 (122)**		**(2)**			**60 (58)**	**13 (30)**
6/D	**107 (244)**	**3 (2)**		**1**		**33 (71)**	**21 (16)**
6/E	**(138)**	**(1)**				**(37)**	**1 (9)**
6/F	**(3)**	**(1)**				**(3)**	**(3)**
6/G	**3 (2)**					**7 (1)**	**19 (5)**
8/A						**2**	**(1)**
8/B						**3**	**(11) (2)**
15-16/A						(2)	
20/A					(X)		
21/A					X		
26/A						**(1)**	**1 (1)**
26-27/B	**(2)**					**(1)**	**(2)**
26-27/BC	**(2)**					**(19)**	**(4)**
27/C						**(5)**	**(2)**
28/B	**(3)**					**(5)**	
28/C	**(1)**						**(1)**
30/B							(1)
30/E						(10)	(1)
38/A					**(X)**	**1**	

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary sources

Summary

A number of productive activities have been identified in early Bergen through the available sources (Table 58) Large- or small-scale stoneworking and possibly beer brewing were documented through artefact assemblages assigned to horizon 2 as supplementary sources. As the evidence for these activities stems from single supplementary sources, it has been considered too uncertain to be included in further discussions of productive activities.

In horizon 3 large-scale stoneworking and large-scale woodworking at Holmen have been identified through basic sources, and the presence of these activities is considered reliable. In the northern town area shoemaking, other leatherwork, fishing, basic cooking, and food and possibly also beverage processing were indicated by supplementary sources. Since the individual activities were documented through single supplementary sources only, their presence in horizon 3 is considered too uncertain to be included in the further discussions of productive activities.

In horizon 4, miscellaneous antler, bone, horn and whale/walrus bone working, shoemaking and other leatherworking, metalworking, large and small-scale stoneworking, large-scale stoneworking, fishing, basic cooking, and food processing were activities all indicated through both basic and supplementary sources, the presence of these activities in horizon 4 is thus considered reliable.

In horizon 5, combmaking, miscellaneous antler, bone, horn and whale/walrus bone working, shoemaking, 'other leatherworking', metalworking, large and small-scale stoneworking, large and small-scale woodworking, skinning, textile production, fishing, hunting, basic cooking, and food and possibly also beverage processing have all been documented through both basic and supplementary sources. The presence of these activities is considered reliable.

What was the nature of the productive activities and how were they organised?

Combmaking

Altogether 81 combs have been assigned to horizons 4 and 5, comb-blanks are related to horizon 5 only. The combs comprise a variety of composite single or double-sided combs, held together by rivets made of rolled sheets of copper alloy.[61] All but two combs stem from basic sources and the presence of combs is considered reliable. As mentioned earlier the combs are classified according to the system developed by Wiberg and Flodin with a few supplements from my side (Wiberg 1977, 202-209; Flodin 1989, 29-33) (Table 59).[62]

Within each general type of combs there are several 'variations over the same theme'. All blanks from the production places identified in

Table 58. *Productive activities documented from horizon 2 through horizon 5*

Horizon	Combmaking	Antler, bone, horn and whale/walrus bone working	Shoemaking	Leatherworking	Metalworking	Large-scale stoneworking	Small-scale stoneworking	Large-scale woodworking	Small-scale woodworking	Skin dressing	Textile production	Fishing	Hunting/war/game	Agriculture	Basic cooking	Food processing	Beverage processing
2							?										?
3			?	?		**X**		**X**				?			?		?
4		**X**	**X**	**X**	**X**	**X**	**X**	**X**				**X**			**X**	**X**	
5	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**	**X**

X in **bold** are based on basic sources in addition to supplementary, x in plain is based on supplementary sources only

? Data stem from single supplementary sources and are considered too uncertain to be included in further discussions

horizon 5 can be linked to comb types found among the finished products: a blank from plot 6/E shows that composite single combs were produced here. On plot 6/G, at least three different comb types were produced (E5-2, E5-3 and yet a single or double type) and on plot 28/C composite double combs were made. The comb types found in horizons 4 and 5 are all, except types E1, E5-1 and D2, found among the blanks as well. This link between blanks and the finished products shows that most of the finished combs were, or could have been, produced and purchased in Bergen during horizon 5.

brosiani 1981; Christensen 1986), skills and not least knowledge of what an up-to-date comb looked like. Bergen comb types have parallels in material from Oslo (Wiberg 1977; Wiberg 1987), Trondheim (Flodin 1989) in Norway, in Lund (Blomquist 1942), Viborg (Nielsen 1969) and Schleswig (Ulbricht 1984, Tafel 71 no 1) in medieval Denmark, in Sigtuna (Floderus 1941, 89) and Lödöse in medieval Sweden. This also shows that the products were standardised. On this basis there should be no doubt that the combs associated with horizons 4 and 5 were produced by professional combmakers.

Table 59. *Combs assigned to horizons 4 and horizon 5 and according to comb type (N=81)*

Plot/Comb type	E1	E3	E3-b	E4	E5-1	E5-2	E5-3 one row of rivets, no profile	E5-3 one row of rivets, one profile	E5-3 two rows of rivets	E5-5	E6-1	EU	D1	D2	DU
Horizon 4 (c 1100-1120s)															
26/A							**1**								
Horizon 5 (1120s-c 1170)															
6/B	**(2)**	**(1)**		**(2)**	**(1)**			**(1)**	**(1)**			**(1)**			
6/C	**(2)**		**(1)**	**1** **(2)**	**(1)**		**(1)**		**(1)**	**(1)**	**(1)**				
6/D	**1** **(2)**		**(3)**	**2** **(2)**	**(1)**	**(1)**	**(1)**		**1** **(5)**		**1**	**(2)**			
6/E			**(1)**	**(1)**											**(1)**
6/G	**1** **(2)**		**(1)**	**(1)**		**(1)**		**(1)**	**2** **(2)**			**(1)**			
26/A			**1**	**(1)**		**(1)**		**1**	**(3)**						
26-27/B			**1**	**(1)**					**1**						
26-27/BC									**(1)**						
27/C	**(1)**										**(2)**			**(1)**	
28/B	**(1)**								**(1)**		**(1)**			**(1)**	
28/C											**(1)**			**(1)**	
30/E												(1)			
38/A									1						

Artefact category II in brackets
Numbers in **bold** refer to basic sources, in plain supplementary

Were the combs produced professionally? In some cases, two or three combs are so similar that it is reasonable to assume that the same combmaker or workshop may have produced them. The twin combs belong to horizon 5 and they are found on different plots (Figure 44 and see also Figure 45) indicating that the combmakers sold combs to people from various households. In addition one may argue that the production of the combs required specialised tools (cf Am-

Waste from comb production was found on four of the artefact-yielding analytic units in horizon 5 (Table 32). The presence of combmaking during horizon 5 is considered reliable. The amount of waste on each production place was very scarce, varying from one to 75 blanks and offcuts and must be characterised as small because they fall within the quantity categories characterised as small in studies from contemporary Scandinavian towns (eg Christophersen

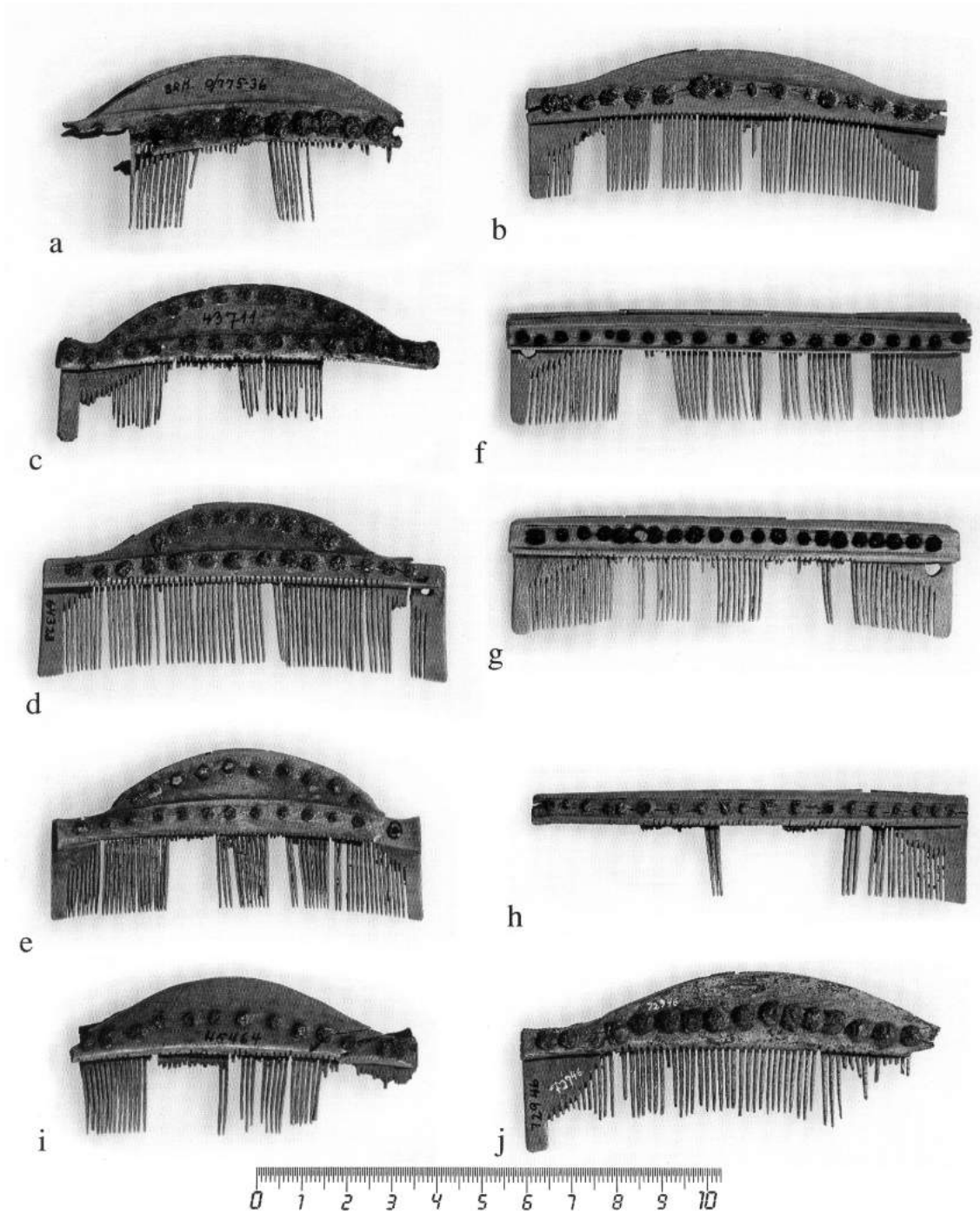

Figure 44. *Twin combs from Bergen. Type E5-3 one row of rivets, one profile: a BRM 0/77536 plot 6/B, b BRM 104/2383 plot 26/A; type E5-3 two rows of rivets: c BRM 0/43711 plot 6/D, d BRM 0/64328 plot 6/C, e BRM 110/5483 plot 26-27/BC; type E-1: f BRM 76/11106 plot 28/C, g BRM 76/9807 plot 28/B, h BRM 110/4605 plot 27/C; type E5-3 one row of rivets, no profile: i BRM 0/45464 plot 6/D, j BRM 0/72946 plot 6/C*

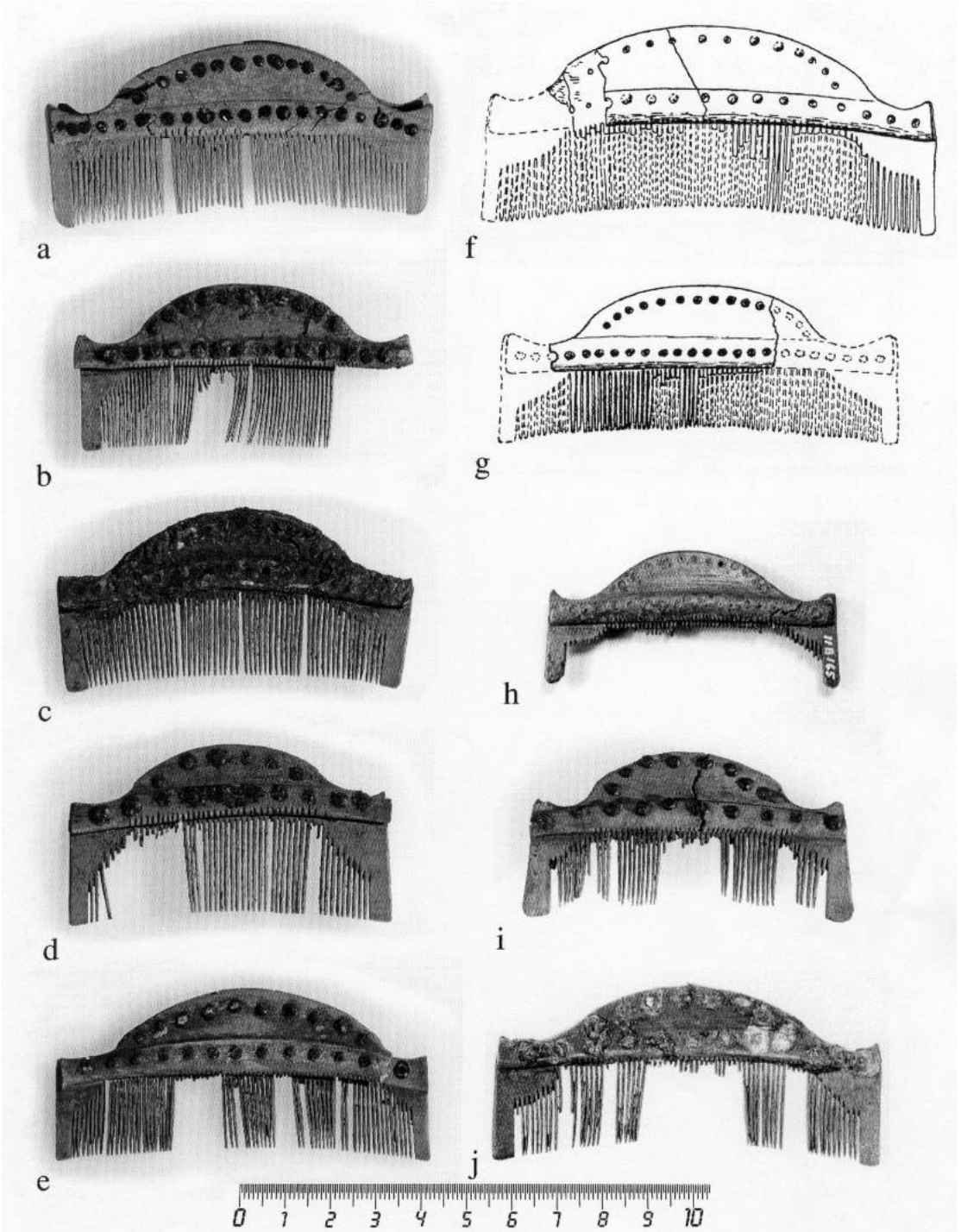

Figure 45. *Twin combs of type E5-3, with two rows of rivets, from Bergen, Lund, Viborg, Schleswig and Lödöse. Bergen: a BRM 76/12652 plot 28/B, b BRM 104/1987 plot 26-27/B, c BRM 104/2276 plot 26/A, d BRM 104/2369/01 plot 26/A, e BRM 110/5483 plot 26-27/BC; Lund: f L.U.H.M. 15310 282:A, g K.M. 22802 a VIII (Blomquist 1943, 144-145); Viborg: h 11B165 (Nielsen 1969, Figure 26) Foto Turi Thomsen; Lödöse: i 2700-68-CA 35 (Pers com Sonia Jeffery 2002 Lödöse Museum); Schleswig: j no number (Ulbricht 1984, Figure 71:1)*

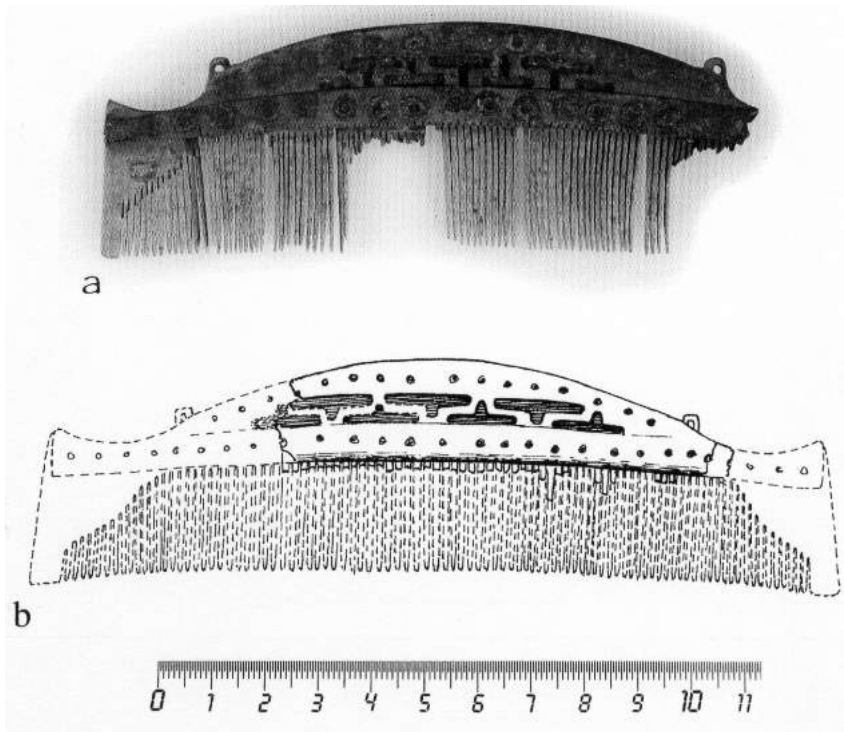

Figure 46. *Twin combs of type E5-2 from Bergen and Lund. Bergen: a BRM 104/2275 plot 26/A; Lund: b K.M. 8480 Annegatan (Blomquist 1943, 144)*

1980, 126ff; Flodin 1989; Rytter 1997). The sparse amount of waste implies that the artisans primarily produced for an interurban market and the small amount of waste distributed on several plots implies that the artisans either ambulated or were part-time occupied residents of Bergen during horizon 5.

Several of the combs from horizon 5 have contemporary twins in other towns in Scandinavia. I have found twins in Lund, Viborg and Schleswig in medieval Denmark and in Lödöse in medieval Sweden.[63] The similarities between the combs found in Bergen, Lund, Viborg, Schleswig and Lödöse (Figure 45 and Figure 46) are so striking that the same artisans or workshops should probably be seen behind the twins or direct contacts between the artisans must have existed. Either way the strong resemblance between the combs from a variety of places suggests that the combmakers were ambulating artisans. In contemporary Trondheim (Flodin 1989, Figure 11 and 12) and Konghelle (Rytter 1997, 91) waste from combmaking shows the same distribution pattern as that in Bergen. This may support the notion that some combmakers travelled. In contrast, the material from contemporary Lund seems to suggest that combmakers here were more permanently settled artisans (Christophersen 1980, 126ff).

Altogether the distribution pattern for production waste in Bergen and other contemporary towns in Norway and 'twins' among the finished products in Bergen as well as in other towns strongly suggest that the combmakers represented in horizon 5 in Bergen were professional ambulating artisans who travelled from place to place, worked here for a limited period of time and then went on. When working in Bergen they mainly served an interurban market. There must have been more travelling artisans or workshops working in the Scandinavian area at any given time, they must have been inspired by each other's work and as a consequence many variations over the same basic comb types were developed.

Miscellaneous antler, bone, horn and whale/walrus bone working

Finished products of miscellaneous antler, bone, horn and whale/walrus bone working, found in the Bergen material are all represented among the blanks except the spindle whorls. This link between the finished products and production waste makes it likely that finished products found in Bergen were or could have been made here. The activity of miscellaneous antler, bone, horn and whale/walrus bone working was documented in four of the seven artefact-yielding units in horizon 4 and in 12 of the 24 artefact-yielding units in horizon 5; the presence of the activity in horizons 4 and 5 is considered reliable.

The amount of waste retrieved at each place of production spanned from two to nine fragments in horizon 4 and one to 68 fragments in horizon 5 (Table 31 and Table 32). The waste assemblages are characterised as small, as they fall within the quantity categories characterised as small in studies from contemporary Scandinavian towns (eg Christophersen 1980, 126ff; Flodin 1989; Rytter 1997). The distribution pattern and amount of waste may therefore be interpreted as either the result of household producers and/or part-time resident producers and/or ambulating producers. The sparse amount of waste implies production for an interurban market.

The finished products can be divided into those that could be produced with the use of household tools like a knife and no specialised skills or knowledge and those that required somewhat more specialised skills, tools and knowledge. Providing that the raw materials were available and based on the level of skills, knowledge and specialisation of tools required, the first group of finds may have been produced as household production. The second group is more likely to have been produced by skilled professionals.

Table 60 shows antler, bone, horn and whale/walrus bone items found in horizons 4 and 5, they all stem from basic sources, and their presence is considered reliable. All the items, except ornamented gaming pieces and two ornamented needles/pins, may represent household production. It is thus likely that miscellaneous antler, bone, horn and whale/walrus bone working was carried out on a household basis during horizons 4 and 5.

A pair of compasses was necessary when decorating the ornamented gaming pieces and may have required specialist skills and tools. The decorations on the two ornamented needles/pins must have been incised with a knife or another sharp pointed tool by carvers that were familiar with the looks of fashionable dress or hair accessories (Figure 47). The ideas behind the needles/pins from Bergen are also recognised in needles/pins from Trondheim, although the latter are found, in older contexts (Christophersen 1987, Figure p 73). Both the decorated gaming pieces from horizons 4 and 5 and the needles/pins from horizon 5 may, therefore, have been produced by professional specialists.

Table 60. *Horizons 4 and 5 products of antler, bone, horn and whale/walrus bone (N=45)*

Plot	Gaming piece	Ice-skate	Line runner	Needle/pin	Rowlock	Runic inscription	Spindle whorl	Unspecified tool
Horizon 4 (c 1100-1120s)								
6/B								**(1)**
6/C								**(1)**
26/A	**1***		**1**					
Horizon 5 (1120s-c 1170)								
6/B	**(2)**		**(1)**	**1**	**(1)**			**(1)**
6/C	**1** **(1)***			**(1)***			**1**	
6/D	**(1)***	**3** **(2)**	**(1)** **(2)**	**(1)** **(1)**		**1** **(1)**	**(1)**	**(1)**
6/E	**(2)**			**(1)** **(1)***				
6/G		**(1)**	**(1)**					**(2)**
26/A				**(1)**				
26-27/B	**(1)*** **(1)**		**(1)**	**(1)**				
27/C			**(1)**					
28/B				**(1)**				
30/B						**(1)**		

Artefact category II in brackets
Numbers in **bold** the latter basic sources, in plain supplementary sources
* Ornamented gaming pieces and needles/pins

It is not possible to ascertain whether the professionally produced items were made in Bergen by part-time resident or by ambulating specialists, so I will leave the question open.

In conclusion, based on the distribution pattern for waste and the character of finished products it is likely that household producers carried out miscellaneous antler, bone, horn and whale/walrus bone working during horizons 4 and 5. Professional artisans also probably worked in Bergen during both horizons 4 and 5. In horizon 4 it cannot be established whether the professionals were part-time residents or ambulated. Production must mainly have served an interurban market both during horizons 4 and 5.

Shoemaking

Leather waste (type 3) cannot be linked so directly to the finished products, as was the case for the comb blanks. Still, tools from horizon 5 and leather waste of type 3 from both horizons 4 and 5 reliably reflect the production of shoes in the town area. It is therefore likely that at least some of the shoes found were or could have been produced and purchased in Bergen.

Were the shoemakers professional? A total of 1082 shoes, that is soles or uppers, were found in horizons 4-5, they mostly stem from basic sources and the main pattern of their spatial and chronological distribution is considered reliable. Of the 656 uppers, 217 were decorated with embroider-

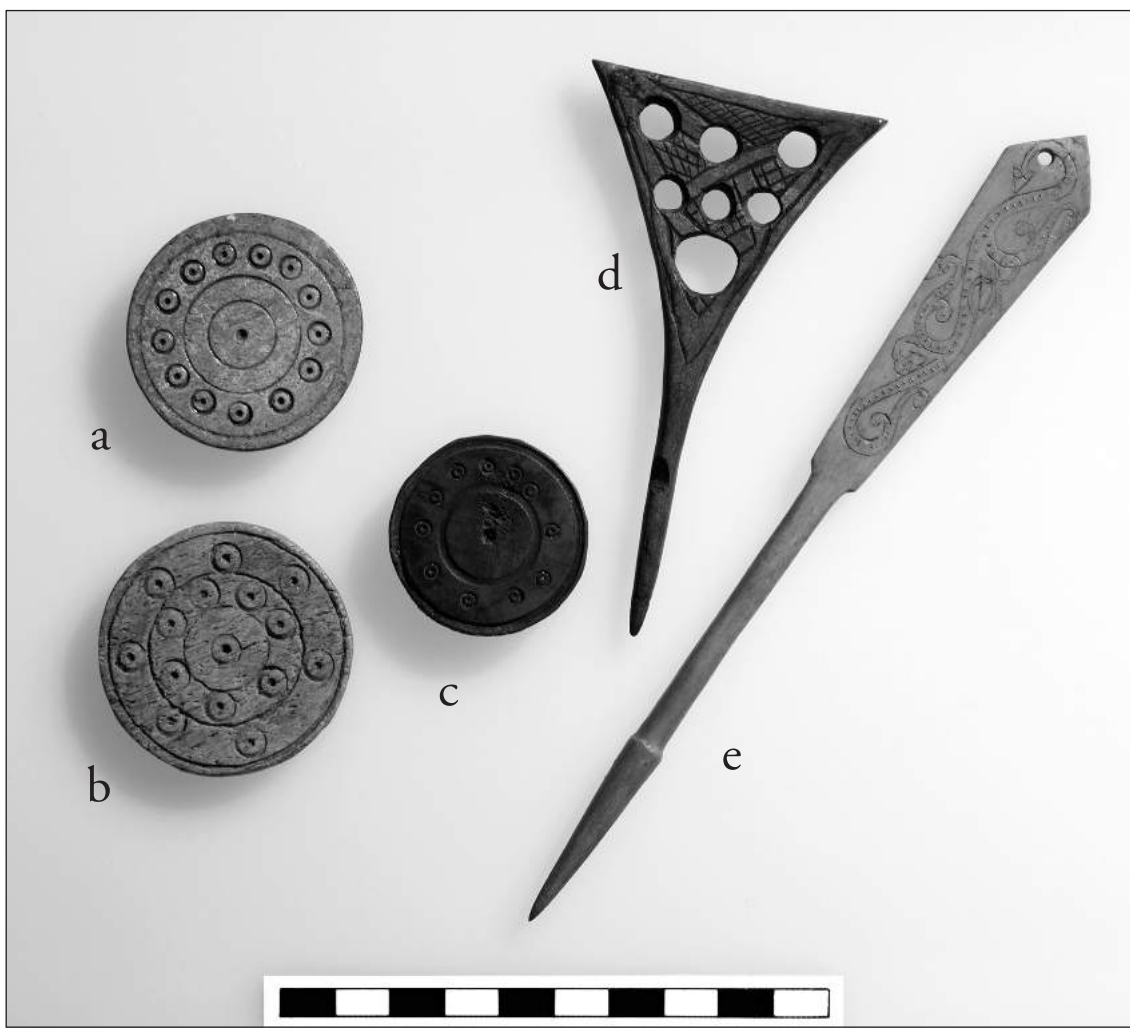

Figure 47. *Ornamented gaming pieces and needles/pins: a, b, c gaming pieces; d BRM 0/53003; e BRM 0/81009*

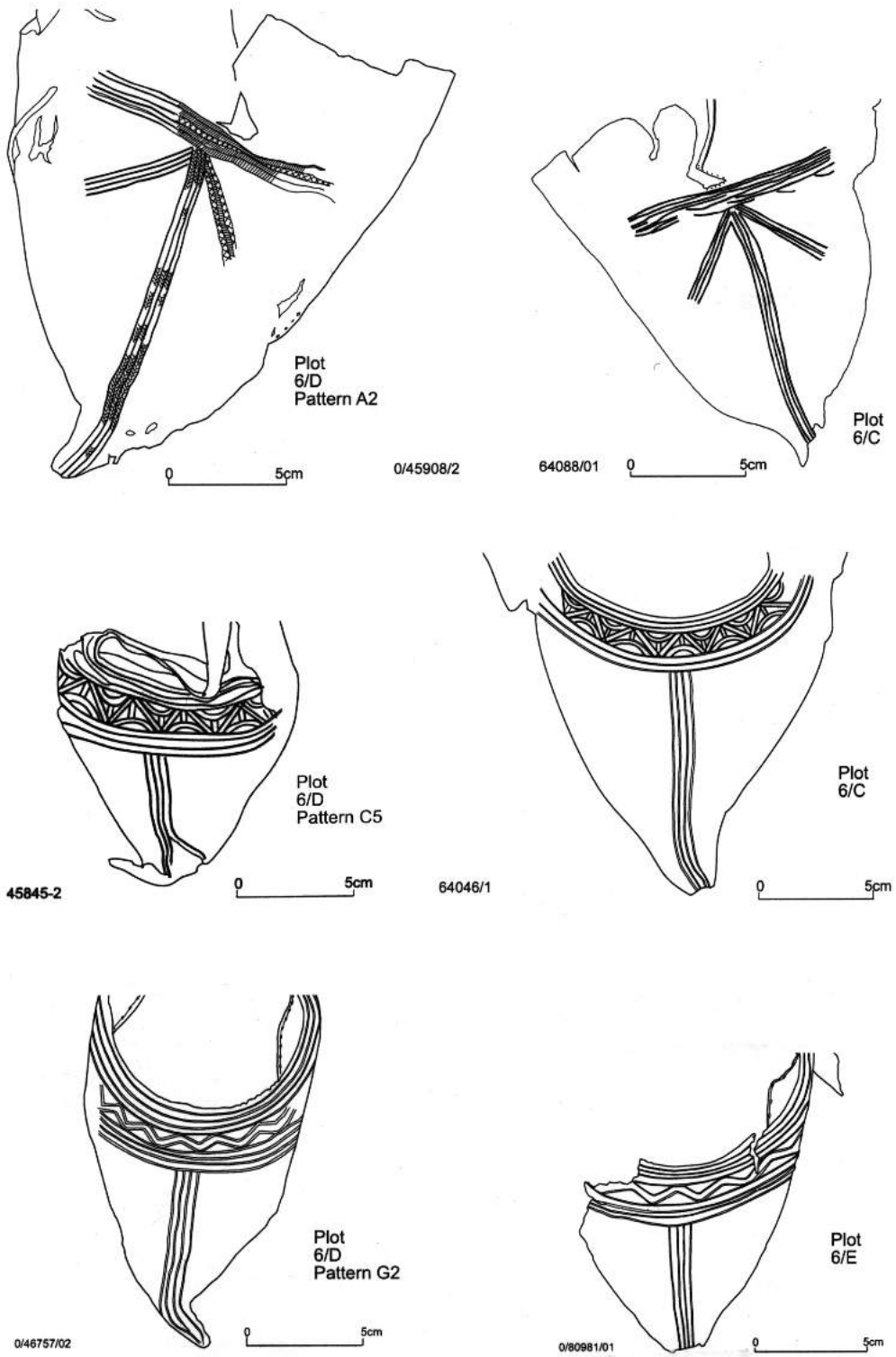

Figure 48. *Twin shoes from Bergen*

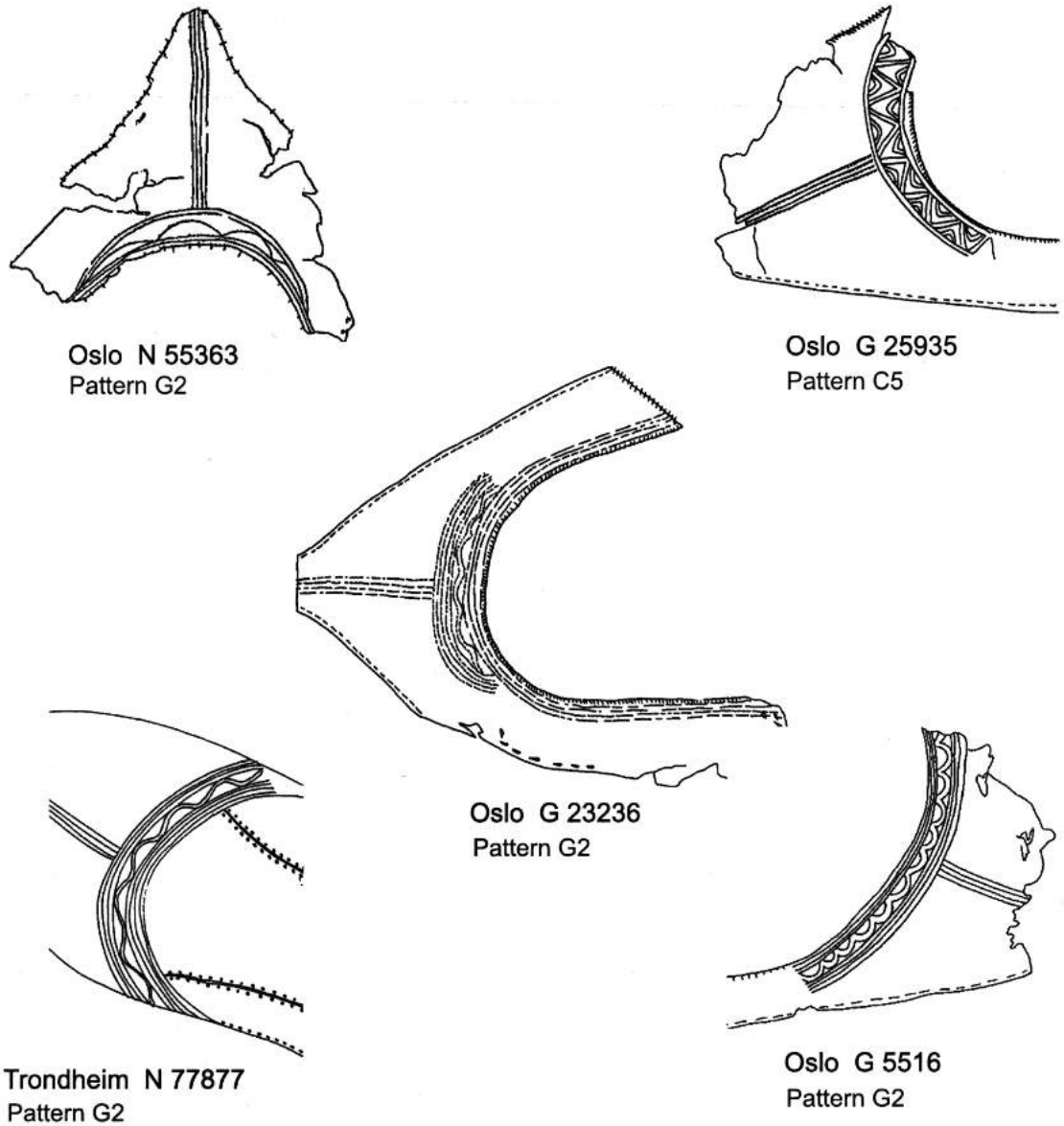

Figure 49. *Embroidery patterns C5 and G2 from Trondheim and Oslo. (Published in Schia 1977, Figure 44; Schia 1987, Figure 22; Marstein 1989; Smedstad 1991, Figure 32)*

ies varying from a single line to more elaborate patterns, the embroidery on the uppers was classified according to Larsen 1992 (Larsen 1992, Plate 1). Before the upper was decorated, the embroidery pattern was scored onto the leather surface with a knife. The individual shoemakers scored the leather with a personal 'touch'. As with the combs, the embroideries can be classified in several types and within each type there are variations. I have studied the pattern and the 'touch' and the spatial distribution of uppers with elaborate embroidery patterns of type A2, C5 and G2 in order to identify the 'touch' of concrete artisans or workshops behind these shoes.[64]

Three examples of 'twin' shoes (from different pairs of course) were identified in the materi-

al assigned to horizon 5, the embroidery patterns on these shoes and the 'touch' of the shoemaker are so similar that the same shoemaker or workshop must be seen behind the products. The twin shoes were found on different plots. This indicates that shoemakers sold shoes to people outside their own household and were professional (Figure 48). Furthermore, the production of shoes found in both horizons 4 and 5 required specialised tools, they had a high quality[65] and the shoe types as well as the embroidery types represented in the Bergen material have clear parallels in contemporary Oslo and Trondheim (compare Schia 1977; Schia 1987b; Marstein 1989; Larsen 1992). This shows that the Bergen shoemakers in both horizons 4 and 5 knew how an up-to-date shoe should be cut and in many cases decorated, and that the products were standardised. These factors suggest that the shoes were made professionally in both horizons 4 and 5.

The assemblages of production waste from shoemaking varied from two to 20 shreds of leather waste in horizon 4 and one to 276 shreds in horizon 5 (Table 34 and Table 35). They fall within the quantity category characterised as small in contemporary Oslo (Tørhaug 1998, 51). Waste from shoemaking has a distribution pattern similar to that of combmaking: small amounts of waste in several analytic units. This indicates that the shoemakers did not work on a permanent basis or as full-time shoemakers on the production places in early Bergen. It also indicates that they produced mainly for an interurban market.

Were the shoemakers itinerant artisans like the combmakers? If the Bergen embroidery patterns have twins in other collections, this would present a convincing argument for such a suggestion. Unfortunately, embroidery on shoes is a subject that has not been widely studied. Embroideries are common in the published material from contemporary Oslo (Schia 1975, 189 Figure 123), they seem to be common in contemporary Trondheim as well (cf Marstein 1989). Published illustrations of the embroidered shoes are scarce, however. Figure 49 shows examples of embroideries of Larsen's type C5 and G2 from contemporary Oslo and Trondheim. When comparing with the embroideries from horizon 5 on Figure 48 it appears that the same variations over embroidery types C5 and G2 were applied in the three towns. The illustrations from Trondheim and Oslo are, however, somewhat standardised and the variations of the particular C5 and G2 themes are not so specialised or complicated that they can be taken as the 'fingerprint' of one artisan or workshop. In order to identify 'twins', the embroideries will have to be studied in more detail, which is beyond the scope of this study. Thus it has not been possible to identify positive twin shoes in other collections in Scandinavia. A concluding argument for ambulating shoemakers cannot be produced. Still, one cannot ignore the fact that the similarities between the embroideries from horizon 5 in Bergen and contemporary Trondheim and Oslo are striking. Waste from shoemakers in contemporary Oslo also shows the same pattern of distribution as that of the early Bergen material (Tørhaug 1998, 94-95), supporting the notion that some shoemakers ambulated. Altogether, in the light of the distribution of production waste in Bergen and Oslo and the close paralells between embroideries in Bergen, Trondheim and Oslo, I find it very likely that shoemakers of Bergen in horizon 5 were organised in a way similar to that of the combmakers: professional ambulating artisans that worked in a large region, producing items mainly for an interurban market. A strong case cannot be made for the organisation of shoemakers in horizon 4; according to the distribution pattern for waste found in Bergen they may have been either resident part-time artisans or ambulating artisans, and the question remains open.

'Other leatherwork'

Waste from 'other leatherwork' cannot be linked directly to the finished products but it is likely that at least some of the products of 'other leatherwork' were made in Bergen, since the activity is well-documented during horizon 5. 'Other leatherwork' was documented on 10 plots/sites in horizon 5, the waste assemblages spanned from one to 81 shreds of leather waste (Table 35) and must be characterised as small (Tørhaug 1998, 51). The quantity and distribution of production waste indicate that the production was carried out by household producers, professional part-

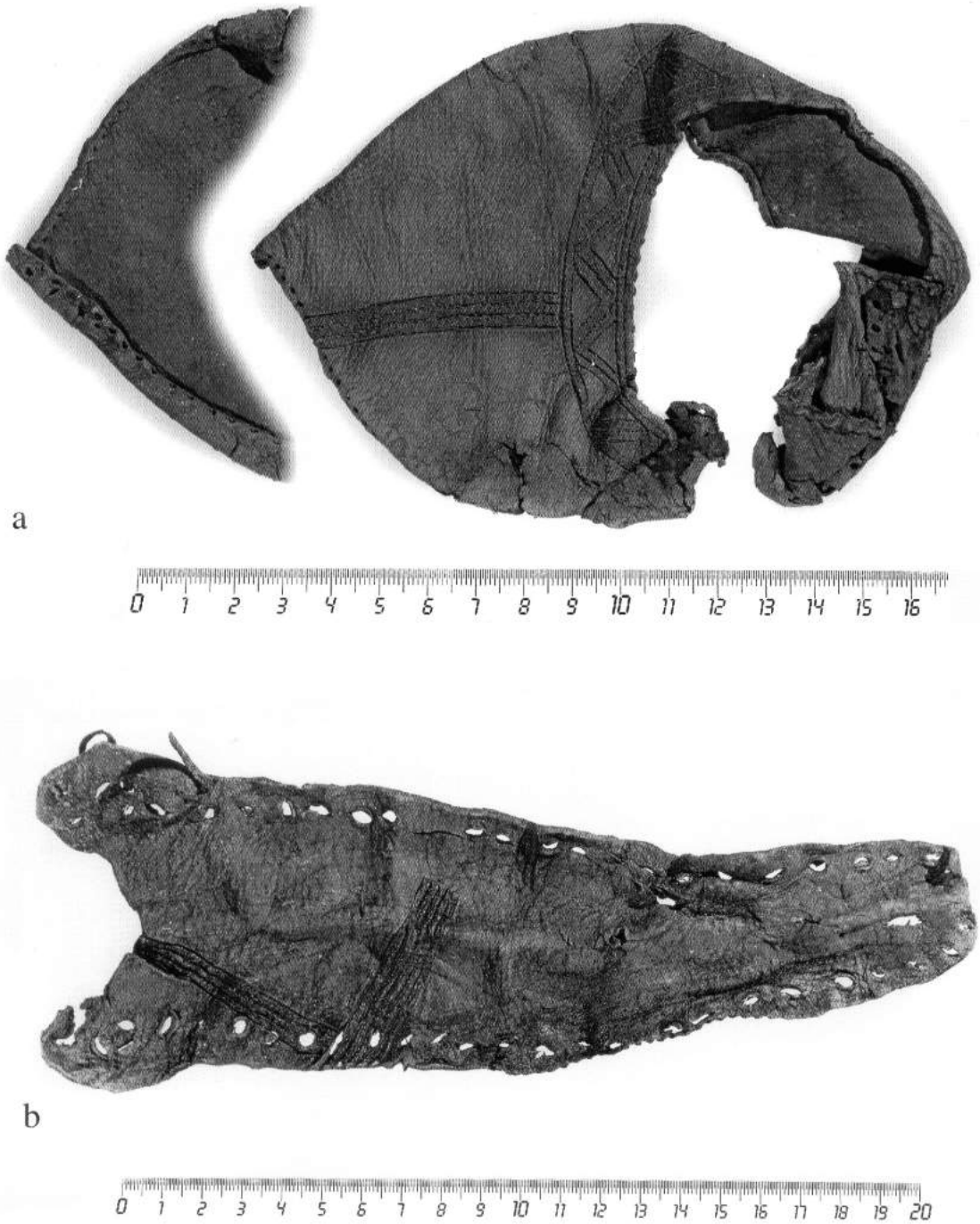

Figure 50. *Examples of crude and fine 'other leatherwork': a BRM 0/85396/01, child's shoe made from a grownup's shoe with embroidery; b BRM 0/45983/01, knife-sheath made from a shoe with embroidery*

time or ambulating artisans, and the production must mainly have served an interurban market.

The identified products of other leatherwork are all from horizon 5, they stem from basic sources and the main pattern of their distribution in time and space is considered reliable. The products comprise shoes that have been repaired either with thread (3 finds) or with leather straps and similar techniques (24 finds), a child's shoe made out of a grownup's embroidered shoe and a knife-sheath made from an embroidered shoe-upper (Figure 50). All these products may have been made in Bergen. The question is whether they were made professionally or not.

The products can be divided into fine and crude work, the first category being characterised by the use of thread, fine needles and probably a last, the latter by the use of leather straps and a pointed instrument for piercing holes in the leather. Judged by the tools and skills involved, professional leatherworkers should probably be seen behind the finer work, whereas household producers - the townspeople, may be seen behind the other products. The shoes that were repaired with thread including the aforementioned child's shoe are examples of the category of professional work. Shoes repaired with leather straps and the sheath that was sewn together with straps are examples of the group of items made on a household basis. It seems that both professionals and household producers carried out 'other leatherworking' during horizon 5.

Waste from 'other leatherwork' is often found in the same bag of category I finds, or in the same category I layer as that of waste from shoemaking (eg bags 45534, 45544, 45593 all from plot 6/D and 85400, 85457 from plot 6/G). This may indicate that the distinction between shoemakers and cobblers may not yet have been introduced (cf Larsen 1992, 88), and that the professional and probably ambulating shoemakers carried out the finer repair work during horizon 5.

In conclusion, in the light of the distribution pattern for waste, the character of the finished products from horizon 5 and the frequent co-location of waste from shoemaking and 'other leatherwork' during this horizon, it seems that 'other leatherwork' may have been carried out both by household producers and by professional artisans. Some of the professional artisans may have been identical to the ambulating shoemakers.

Metalworking

Metalworking, studied initially as smithing and casting, has left reliable traces in horizons 4 and 5. First the nature and organisation of casting will be discussed. There are few items made in copper alloy and no items of fine metals have been found. Furthermore, the products of casting are not so well preserved and have been treated by various methods during conservation. A visual comparison between items has generally not been fruitful and it has not been possible to make a direct link between the artefacts that indicate production and the finished products. Since we have traces of production (Table 36 and Table 37) it is likely that at least some of the casts found in Bergen were also made here.

Traces of the activity of casting were found in horizons 4 and 5. The find assemblages varied from one to three fragments in horizon 4 and one to five fragments in horizon 5 (Table 36 and Table 37), and must be characterised as small (cf Bergquist 1989). Casting has left a waste distribution pattern similar to that of comb and shoe production: small amounts of waste scattered on several plots. The distribution pattern implies that casting was carried out either by household producers, by resident part-time professionals or by ambulating artisans. The activity of casting requires specialist skills and knowledge, this may in itself imply that the casting smiths of horizons 4 and 5 were professional. The producers may thus have been either resident part-time professionals or ambulating artisans. The production may chiefly have served an interurban market during horizons 4 and 5.

Slag and clay from a furnace lining, indicating smithing has a distribution pattern similar to that of casting and the other trades discussed above; in horizon 4 a fragment of a furnace lining was retrieved and in horizon 5 the number of slag pieces on each plot/site varies between one and three specimens per analytic unit. In spite of the problems of representativity attached to the artefact groups, the number of fragments associated with smithing must be considered as

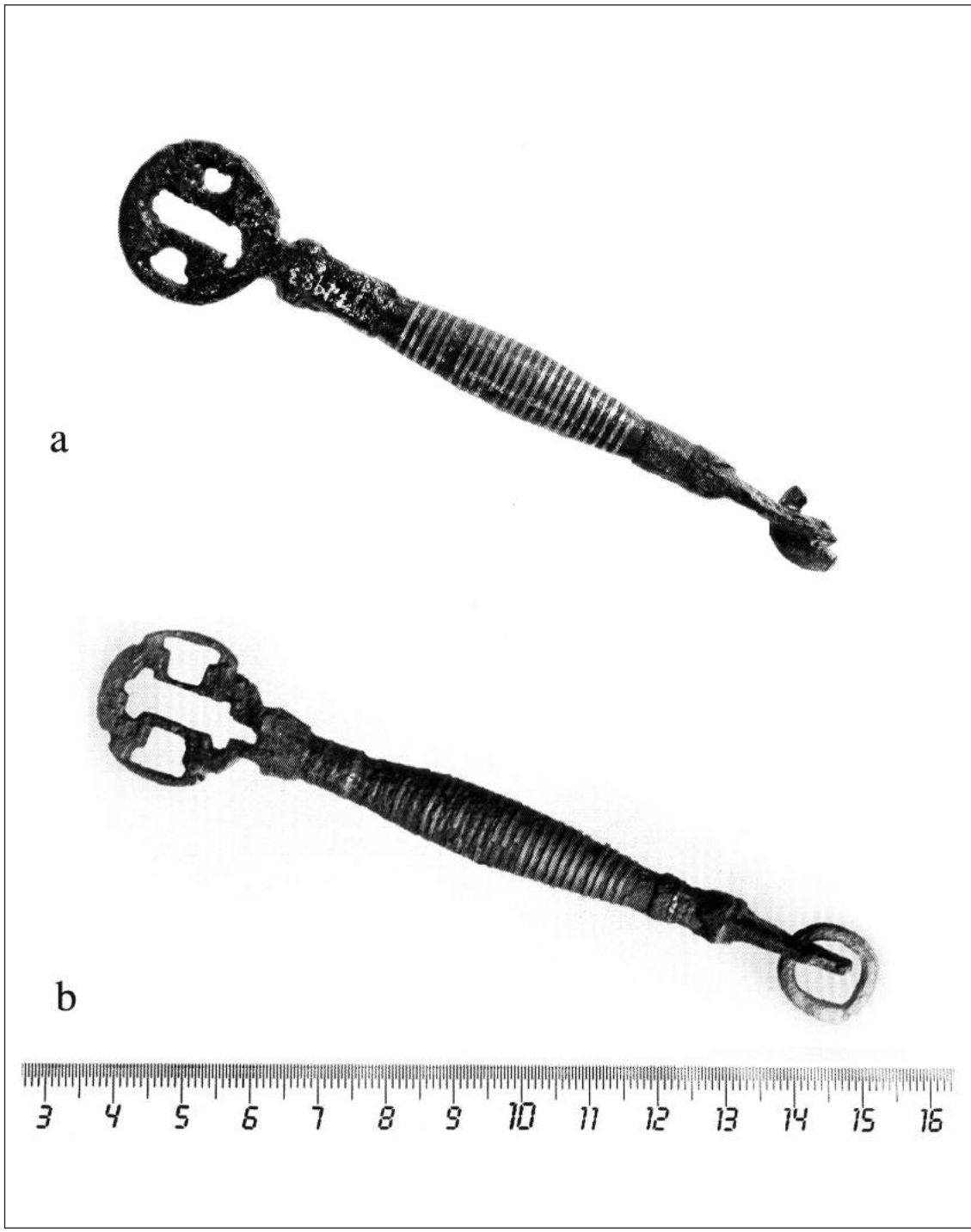

Figure 51. *Twin keys from Bergen and Trondheim. Bergen: a BRM 0/72983; Trondheim: b N 10579/S 139 (Christophersen 1987, Photo p 87)*

small (cf Bergquist 1989). The distribution pattern implies that smithing was carried out either by household producers or by resident part-time professionals or ambulating artisans. Like casting, the activity of smithing requires specialist skills and knowledge, this may in itself imply that the smithing artisans of horizons 4 and 5 were professional. Furthermore three keys for barrel locks were found in horizon 5. The keys are made from iron with a string of copper alloy twisted around the key as ornament.[66] The three keys present variations of the same key type. The artisans behind these keys were up-to-date on the looks of contemporary keys, as strong parallels to the Bergen keys found in for instance Lund, Copenhagen, Novgorod, York, Trondheim and in Greenland indicate (cf Mårtensson 1976, Figure 358; Christophersen 1987, Photo p 87; Roesdal 1993; Berglund 2001, 269). One of the keys from Bergen has a 'twin' in Trondheim (Figure 51). As the Bergen and Trondheim keys were found in two different towns the artisan who made the keys must have sold articles outside his household. Altogether this suggests that the metal workers behind for instance these keys were professional. Some of the producers may thus, when also considering the distribution pattern for waste, have been either resident part-time professionals or ambulating artisans. The production may chiefly have served an interurban market.

If the twin keys were made by the same workshop in Bergen and Trondheim respectively, they were most likely produced by an ambulating artisan or workshop. This suggests that some of the smiths ambulated. In contemporary Trondheim the distribution pattern for the activity of casting and smithing is similar to that of horizons 4 and 5 in Bergen (cf Bergquist 1989, 121). The evidence of smithing in contemporary Trondheim supports that the Trondheim key may have been made locally, and the distribution pattern for waste from Trondheim supports that some smiths ambulated. I suggest that some of the smithing artisans working in Bergen during horizon 5 were professional ambulating smiths. This suggestion finds support in patterns discerned in the waste material from Bergen and contemporary Trondheim and Oslo and in the presence of the twin keys in Bergen and Trondheim during horizon 5. In terms of the organisation of the trade during horizon 4, that is whether the artisans were part-time resident or ambulating artisans, cannot be determined, so the question is left open.

An interesting detail in the material is that in horizon 4, the furnace lining fragment was found along with offcuts of copper alloy. In horizon 5 all but one occurrence of slag was found along with crucibles and offcuts of copper alloy. Perhaps these finds should be associated with the work of the casting smiths and *vice versa*? Perhaps some of the smiths were not so specialised but knew how to handle both methods? It is hard to decide on the scarce material available, and no conclusions can be reached on this question here.

In one case slag appears alone without any indication of casting, this is in unit 8/B in building 158. As discussed earlier, this building may well have been one of 'the smith's booths' mentioned in Heimskringla (cf p 214ff). If a locality called 'the smith's booths' existed in 1155 one would expect this to be permanent workshops for professional smiths. Of course, it cannot be excluded that ambulating smiths returned to special workshops and worked there for some time. On the other hand, many products of smithing such as nails, rivets and various tools seen in the archaeological material from horizons 4 and 5, were goods needed in the everyday household and one would expect that the demand for these products was large enough for a stationary smith to reside here and supply the urban community.

To conclude, there are many uncertainties associated with the archaeological evidence of metalworking in early Bergen. It cannot be ascertained whether the metal workers of horizon 4 were part-time resident or ambulating artisans, so this question is left open.

The contours of different categories of smiths have emerged. In horizon 5, some smiths may have been stationary and perhaps supplied the town with everyday commodities. Some probably ambulated and supplied a large area with more rare products, such as the twin keys of Bergen and Trondheim. The keys can hardly be characterised as luxury items, as close parallels to the Bergen keys are rather common and the keys are not made of especially rare or precious metals.

Stoneworking

Large-scale stoneworking was indicated through the churches and other institutions initiated from horizon 3 through horizon 5. The craftsmen behind the stone-built monuments must have sold their expertise and labour and were professionals in a broad sense of the word. The craftsmen may perhaps have been organised in *Bauhütten* or 'lodges' - workshops of skilled craftsmen, this is how they were organised in Europe (Lidén and Magerøy 1990, 73; Ekroll 1997, 112). There was no local or Norwegian tradition for building in stone when the first stone monument was initiated in Bergen by King Olav Kyrre about 1070. Lidén finds it likely that the first lodge of craftsmen that worked in Bergen in the period represented by horizon 3 was made up by foreigners or Norwegians that had learned their craft abroad. Judged by Anglo-Norman moulding on pilasters in the standing Church of St Mary, the early lodge was inspired by Anglo-Norman architecture. The early lodge worked at the Christchurch Cathedral at Holmen and may have formed the pilasters of St Mary's (Lidén and Magerøy 1990, 73).

In the beginning of the twelfth century, represented by horizons 4 and 5, a new lodge arrived in Bergen. The work of this lodge is seen in all the twelfth century churches in Bergen. This lodge had a Classical/Lombard background. Art historians have discussed whether the craftsmen came to Bergen via the cathedral in Lund or via the cathedral in Speyer in the Rhineland. Lidén finds it most likely that the craftsmen came from Lund around 1120 (for a detailed discussion see Lidén 1990, 73-87). About the middle of the twelfth century the church builders of Bergen were again inspired by the English, perhaps through English lay brothers who, at that time worked at the Cistercian monastery of Lyse close to Bergen. Lidén suggests that the craftsmen of the 'Classical/Lombard lodge' now tried out new forms and combined them with the earlier ones (Lidén and Magerøy 1990, 88).

The project of building a church was a lengthy one, the Christchurch Cathedral was under construction for perhaps as long a century (cf p 80) and for instance the standing St Mary's (initiated during horizon 5) must have been under construction for several decades as the work was begun by Classical/Lombard inspired craftsmen but finished under English/Classical/Lombard inspiration. Craftsmen on many levels were required, perhaps the main architects ambulated, but most of the lower level workers must have lived in Bergen. Anyhow, we may assume that the many monumental building sites of early Bergen provided full-time work for many resident stoneworkers.

The mortar or plaster from the lime-slaking pits on plot 6/C must have been produced to be used outside the boundaries of the plot, because no structures using mortar or plaster have been recorded in horizon 5 nor in the following phase on the plot. Perhaps the lime was meant for the maintenance of the nearby church of St Mary or for other stone buildings? Distributing lime, the lime producers on plot 6/C in horizon 5 would be professionals and then probably stationary ones.

In conclusion, professional large-scale stoneworkers were probably present in Bergen from horizon 3 through horizon 5 in connection with the monumental building sites. In addition professional large-scale stoneworkers, who produced lime may have been present during horizon 5. Given the limited size of the production, they probably produced for an interurban market only.

Small-scale stoneworking was reliably documented through small amounts of offcut of steatite and a few blanks scattered on several plots in horizons 4 and 5. As pointed out the documented areas for small-scale stoneworking are probably not representative for the real number of production areas, and it cannot be excluded that other types of stone than steatite was worked. The waste and blanks may indicate household production, production by part-time resident or ambulating artisans. The production may have been aimed at an interurban market only.

When leaving out the stone items that were surely brought into Bergen as finished products or blanks (hones, baking slabs, steatite vessels, and grinding stones), only a small number of other stone products are left, comprising steatite products: moulds for casting, fishing tackle, warp-weights and spindle whorls. Spindle whorls and fishing tackle in other types of stone and slate discuses are also found in horizons 4 and

5. The products can be divided into two groups. In the first group, items may have been produced using ordinary household tools like a knife only, and the finish of the objects was rather crude. In the second group, items were produced using more specialised tools such as a lathe, and the finish of the objects was fine.

Steatite warp weights, fishing tackle and not least the steatite spindle whorls may belong to the first group. The spindle whorl blank from plot 6/D in horizon 5 was of steatite (Table 41). Steatite pieces must have been easy to come by at the monumental building sites and in some cases steatite vessels have been reused as raw material for weights, all these factors suggest that the products were made locally by household producers during horizons 4 and 5.

Thirteen spindle whorls turned in serpentine may belong to the second group of finds (Figure 52). Several factors suggest that they were made professionally. Geological analysis of five of the whorls show that the whorls have a uniform chemical composition.[67] It is thus not unlikely that they originate from the same quarry. The whorls vary somewhat in shape and size, but all are neatly finished compared to the steatite whorls. Furthermore, the raw material is so hard that special tools must have been required when working it. The presence of one whorl made from pottery[68] and one cast in metal[69] shows that spindle whorls were an article that would be bought if made for sale. The 13 serpentine/diabase whorls were found on six different plots in horizon 5 (6/B, 6/C, 6/D, 20/A, 26/A and 28/B). If they were made by the same artisan/workshop, the distribution of the whorls on different plots suggest that professional craftsmen made them. Another indication that they were made professionally is the fact that ten more whorls of the same stone were found in younger contexts, implying production over time.

It is not possible, to determine whether the

Figure 52. *Turned spindle whorls. BRM 0/45060, BRM 0/45222, BRM 0/45847, BRM 0/54529, BRM 0/63860, BRM 0/64396, BRM 0/64557, BRM 0/64558, BRM 0/65017, BRM 0/73103, BRM 76/10967, and BRM 94/1066, BRM 104/2261*

whorls were made in Bergen or imported into Bergen, as we cannot link the product to a place of production. Given that many other stone items were imported it is likely that the whorls were also imported from somewhere outside Bergen.

Altogether, the sources imply that small-scale stoneworking was carried out on a household basis during horizons 4 and 5. There was no indication that professional small-scale stoneworking was carried out in early Bergen.

Woodworking

Large-scale woodworking is represented in the ordinary house constructions and in the monumental building projects initiated during horizons 3, 4 and 5. Building in wood was tradition in Norway and the buildings on the town plots were probably built by those who were going to use them in a broad sense. As with the large-scale stonework, the craftsmen who built the monumental timber buildings must have sold their expertise and labour and were in this respect professionals. The craftsmen may or may not have been organised in lodges. It is possible that the craftsmen were native craftsmen rather than foreigners, given that wood was the traditional material for buildings in Norway. Since we do not know for how long the monumental timber buildings were under construction, the material is too scarce to give a qualified opinion on whether the craftsmen were stationary or ambulating professionals and the question is left open.

In conclusion, professional large-scale woodworkers were most likely present in Bergen from horizon 3 through horizon 5 in connection with the monumental building sites. How these workers were organised is uncertain.

Small-scale woodworking is represented in the finished products and was well-documented in horizon 5 through tools and production waste. As mentioned earlier, the waste from small-scale woodworking is most likely underrepresented. We have no indication of the real distribution of production areas and the real extent of production; the distribution pattern given by the sources cannot be used as an indicator of the nature of the production.

Lathe-turned cores indicate the production of lathe-turned vessels found on several plots. The vessels are, however, rather uniform with no special external characteristics to diagnose 'twin products'. Turning requires a lathe, whether or not this was standard equipment in a household in twelfth century Norway is hard to say. According to the Urban Code of 1276, turners were considered a separate group of craftsmen (Bl 1923 8,1) (KLNM, XVII 470ff). Whether this applies to the twelfth century as well is, impossible to determine. A needle blank, the only identified blank among the finds, cannot form the basis of a discussion. This blank may have been cut for use within the producer's household or for sale. The finished products in wood comprise a multitude of items spanning from the simplest sausage pin to ornamented items of varying sizes and functions. Most of the items (excluding the turned vessels) may have been produced using household tools like a knife, and required no special skills. They may thus represent household production, and it is likely that small-scale woodworking was carried out on a household basis during horizon 5.

A group of items is distinguished by being ornamented and demands further discussion. On the basis of carvings on wood Signe Horn Fuglesang has argued for a workshop of professional woodcarvers in eleventh century Trondheim (Fuglesang 1981; Fuglesang 1984). I have studied carvings on wood from early Bergen, excluding gaming pieces in an attempt to identify a similar workshop in Bergen. The ornamented pieces of wood (Figure 53) are all assigned to horizon 5 and derive from basic sources. The 17 finds make up a heterogeneous group, comprising three spoons – none of which have been retrieved in the museum storerooms but two were identified through drawings[70], one lid for a drinking vessel[71], two possible plugs with animal heads,[72] four lids for containers[73] and one undefined utensil.[74] The function of the remaining six[75] objects is more uncertain. All the ornaments are unique and none stand out with especially high artistic qualities. The carvings are cut or incised with a knife - which was surely a standard tool in every household. Hence there is nothing in the available material that points towards a workshop of professional woodcarvers

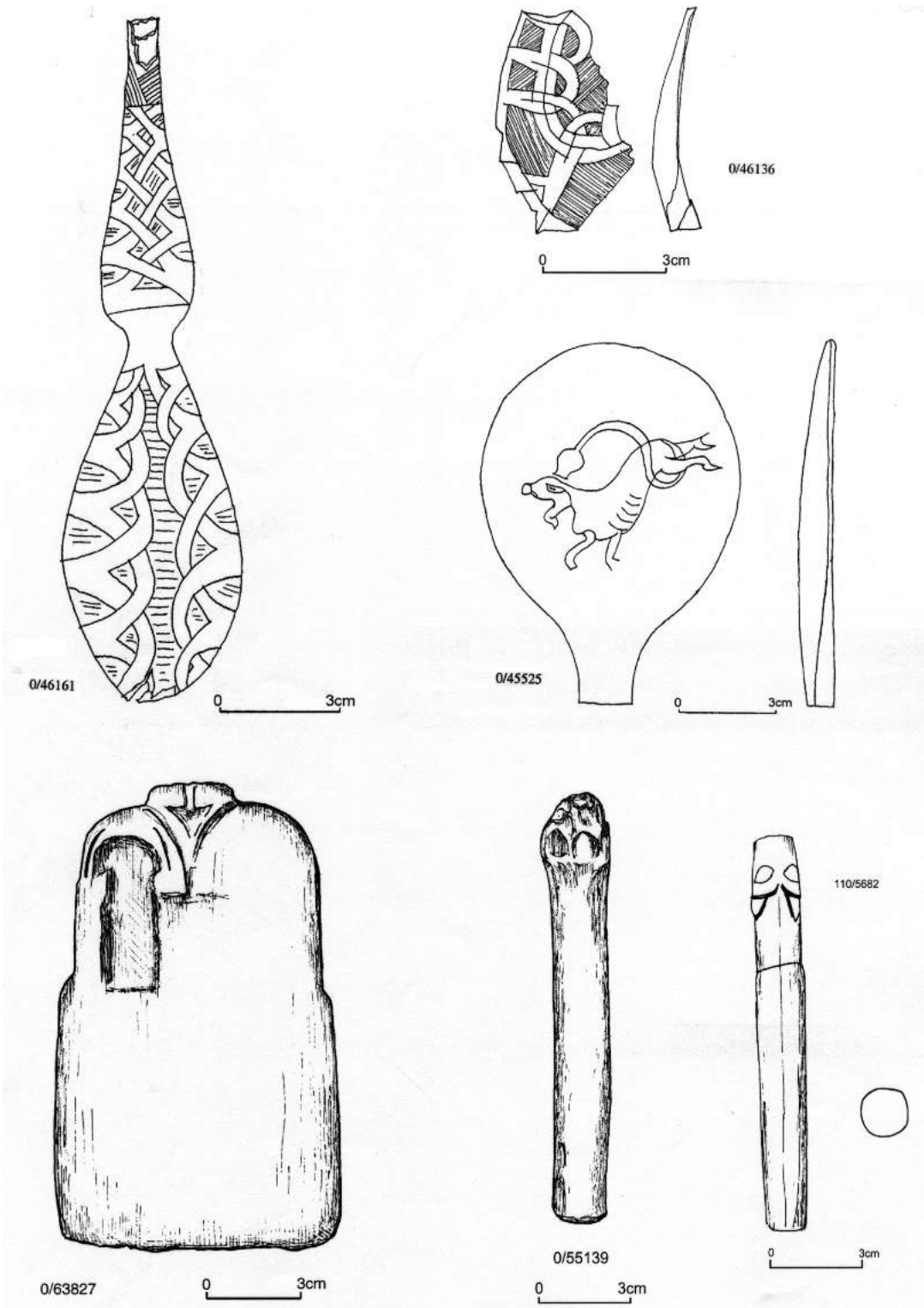

Figure 53. *Ornamented items in wood*

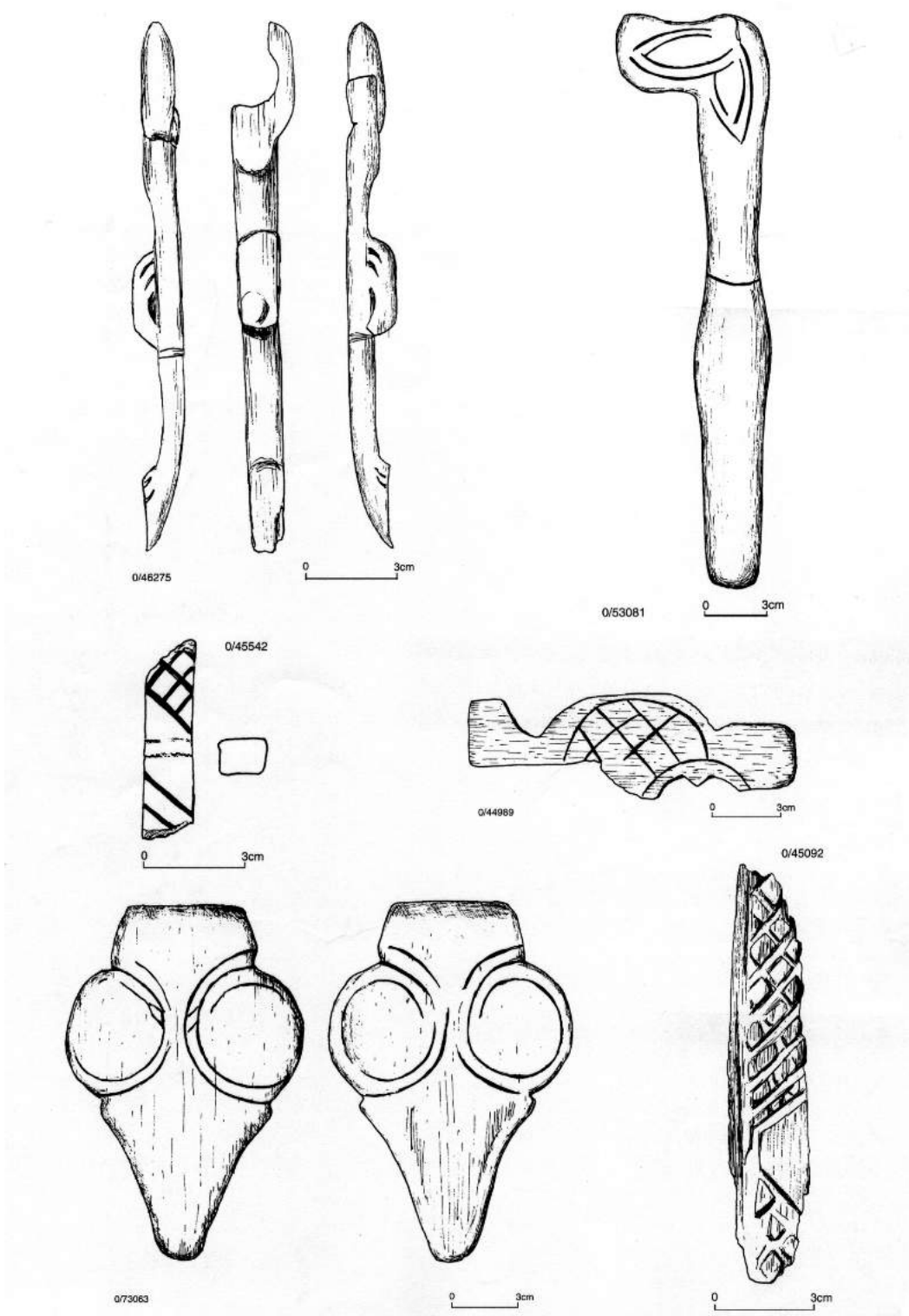

Figure 53 b. *Ornamented items in wood*

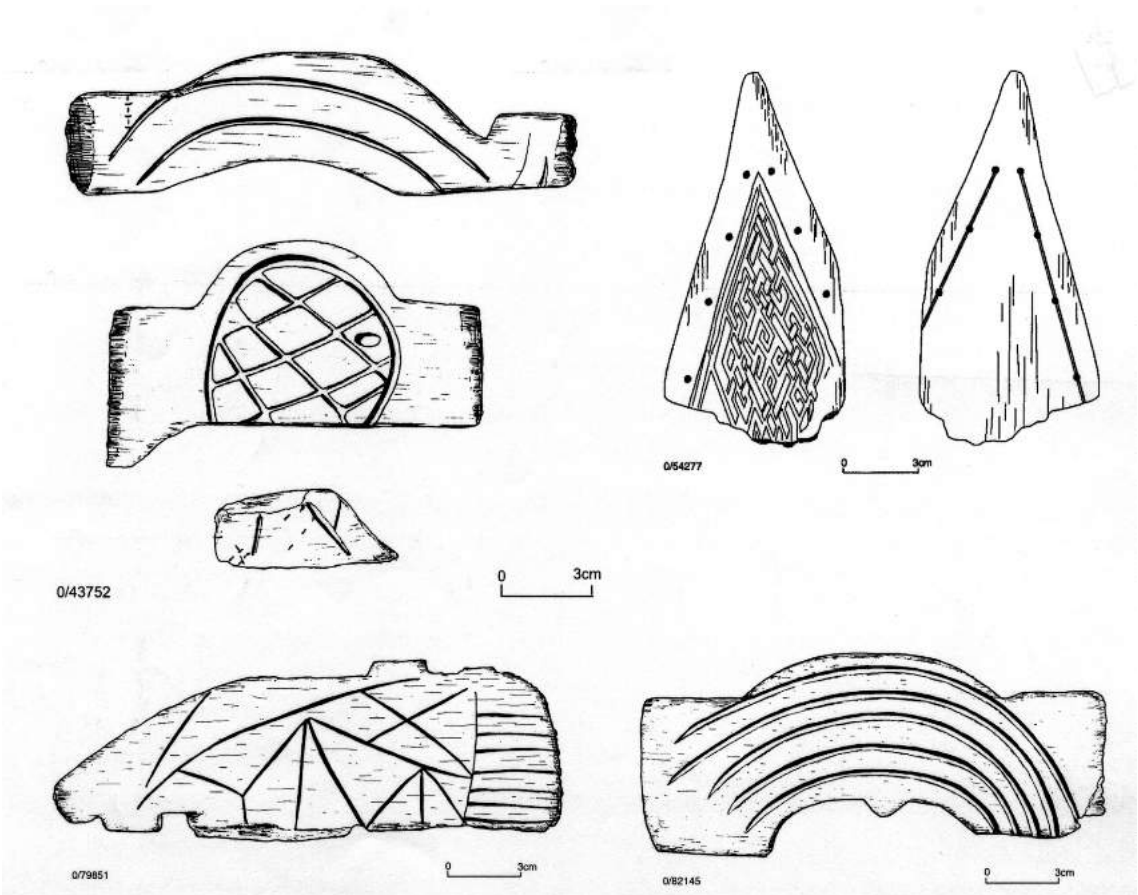

Figure 53 c. *Ornamented items in wood*

in Bergen. Rather the carvings may have been made on a household basis.

To sum up, most of the small-scale woodworking represented in the finds from horizon 5 may have been made on a household basis, the turned vessels may be an exception to this, but there is no concrete evidence of local professional production in the period studied here.

Skinning

In the town regulation from 1282 (NgL III, 14) skinners are mentioned as a separate group of craftsmen. The available sources for skinning in early Bergen are, however, too scarce to be used as a source for the nature and organisation of the trade for this period.

Textile production

When discussing the nature and organisation of textile production in early Bergen tools are the only source studied. Textile tools were found on nine plots in horizon 5 and the presence of textile production in this horizon is considered well established. The identification of professional versus amateur textile producers has been attempted by Øye (1988) and Gjøl Hagen ((1988) 1994) on material from Bergen and Trondheim respectively. Gjøl Hagen has as a premise for her studies that the upright loom, represented by warp weights in the archaeological material, combined with textiles woven in two-shaft technique and a low level of standardisation reflects production for household consumption. As opposed to this the horizontal loom combined with three-shaft textiles with a high degree of standardisation would reflect the production of textiles for sale (Hagen (1988) 1994, 73-99). Øye also associates the upright loom with production of textiles for

household use, the horizontal loom with professional production (Øye 1988, 131).

As I have not studied the fragments of textile in the material from early Bergen, they cannot be drawn upon as a source here. If there is a direct connection between the upright loom and production of textiles for household use, the presence of warp-weights only and no horizontal looms in horizon 5 reflect that textiles were produced for household use only. A direct one to one connection between the upright loom and production of textiles for household use cannot be taken for granted as Icelandic frieze, woven on upright looms, was produced for sale and export at least from the thirteenth century onwards (KLNM, XIX 409; Hagen (1988) 1994, 98). Based on the presence of warp-weights alone it cannot be determined whether the production of textiles in Bergen was for household use only or for sale as well.

In conclusion the investigated sources for textile production in early Bergen cannot elucidate the nature and organisation of this production.

Fishing, hunting and, farming

The activities of fishing, hunting,[76] and farming are 'primary activities', whose products cannot be traced by archaeological methods alone and the nature and organisation of the production cannot be grasped on the sparse osteological and botanical evidence available.

The tools for fishing assigned to horizons 4 and 5 and those for hunting, assigned to horizon 5 were most likely part of the ordinary household equipment in contemporary coastal Norway. Olsen points out that fishing demands insight in how to use a boat, how to handle the fishing tackle, and how to 'read' the weather, knowledge of local fishing grounds is also an asset (Olsen 1998, 121). One might argue along a similar line of thinking in terms of agriculture and hunting. This kind of knowledge is perhaps considered somewhat specialised today, it must however, have been common in early medieval Norway. One cannot argue on this basis whether or not full-time specialists carried out fishing, agriculture or hunting. On a common-sense basis one may argue that if one was a full-time fisher, hunter or agriculturist, Bergen, being a town was probably not the optimal place to settle in. Hence when fishing, in horizons 4 and 5 and hunting in horizon 5 are recorded, the activities were most likely just one of several strategies of the household economy in an early urban context.

Basic cooking and food and beverage processing

The products of basic cooking and food and beverage processing have not been investigated archaeologically. Basic cooking was represented by finds on respectively 6 of 7 and 17 of 24 of the artefact-yielding plots/sites in horizons 4 and 5 and the activity was considered well-documented in both horizons. Basic cooking definitely involved the use of ordinary household equipment and common knowledge. It is therefore likely that this activity was carried out on a household basis. Also the various forms of food processing; their presence being well established through the sources for horizons 4 and 5, were most likely carried out with the use of ordinary household equipment and common knowledge, so they were probably also carried out on a household basis.

Beer brewing was possibly reflected in the sources for horizon 5. The tools and knowledge involved in beer brewing were probably also integrated in an ordinary household, and the activity may have been carried out as household production. Still, thirteenth century sources tell of sale of beer, thus implying that beer was then brewed by professionals in addition to being brewed for the household (KLNM, VI 224). May such professional brewing be found at an earlier stage also?

When Ragnvald Kale from Agder visited Bergen between 1115 and 1120 (horizon 4) he drank and slept in Unn's tenement, which from the description, must have been an inn (Orkn 1913-16; Holtsmark 1970, 92-94; Helle 1982, 114). And when King Sigurd Munn (Sigurth Haraldsson) was killed in 1155, corresponding to horizon 5, he was also in a tenement drinking. Sigrid Sæta was the hostess of this tenement (Hkr 1911, 591; Holtsmark and Seip 1975, 679). These passages imply that inns where visitors could buy beverages, presumably beer, and lodging were a reality in Bergen perhaps already during horizons 4 and 5.

Helle finds it likely that the description of the town in 1115-1120 is anachronistic, describing

Bergen at the end of the twelfth century or somewhat later (Helle 1982, 114). I find it reasonable to assume that inns were a reality in Bergen at least as early as horizon 5 (the 1120s to c 1170). Because if we accept that various ambulating artisans visited the town during horizon 5, it it likely that these visitors, and probably also other visitors in still increasing numbers, could not depend merely on the hospitality of the townspeople (cf KLNM, V 701ff). Visitors to the town would need accommodation, and as for the artisans, a place for a temporary workshop as well. It is thus likely that at least the inn visited by King Sigurd Munn in horizon 5 was a reality this early.

In addition, some people must have let out suitable premises for a temporary workshop, during horizon 5 when ambulating artisans visited Bergen. This may be illustrated by buildings at site 6, where more than one type of activity carried out by professional ambulating artisans were indicated by artefacts of category I (Table 61).

Table 61. *Buildings with the presence of more than one productive activity carried out by professional ambulating artisans, indicated by artefacts of category I.*

Buildings in Horizon 5 (1120s-c 1170)	Combmaking	Antler, bone, horn and whale/walrus bone working	Shoemaking	Leatherworking	Metalworking
6/40 (plot 6/C)	X		X		
6/196 (plot 6/G)	X	X	X	X	X

The likely presence of inns and premises for lease suggest that new urban trades had been introduced in Bergen during horizon 5, trades conducted by people who as part of their strategy for making a living in Bergen, gave service to visitors of the town.

The distribution of sausage pins in relation to tools for basic cooking shows an interesting pattern and may also shed some light on the presence of service-related trades. As already mentioned, the production of sausages was probably an activity carried out on a household basis. Still, sausage pins were not found in nearly as many analytic units in horizon 5, as were tools for ordinary cooking (Table 57). This may be an indication that sausage making in some respects was a specialised activity.

Eight percent of all finds assigned to analytic units in horizon 5 were classified as sausage pins. This shows that the artefact is very common and indicates that, when it is not found in some units in horizon 5, this may have not only methodological but culture historical explanations as well. As mentioned earlier, I have as a premise for the discussion that the find spots for sausage pins reflect the place where the sausages were made or stored, not where they were eaten. I also hold as a premise that 'everybody' ate sausages.

Are there any special factors that characterise the analytic units where sausages were not made or stored? Figure 54 shows that on several analytic units in horizon 5, where basic cooking took place but no, or relatively few, sausage pins were found, the professional and probably ambulating artisans (combmakers, shoemakers and metalworkers) had made a visit. This relates to analytic units 6/G, 8/A, 8/B, 26/A, 30/B, and 30/E. Sausage pins were also absent on plot 27/C, but some pins were found between plot 27/C and 26-27/B and it cannot be excluded that the pins stem from 27/C. This general pattern in the material may imply that ambulating artisans did not make their own sausages, but instead had to buy their sausages. The thought in itself is not unreasonable, considering the many processes involved when making sausages (cf p 235). From this it follows logically that some people must have made sausages for sale, and thus were professional sausage makers.

Since such a conclusion is based not only on the presence of artefacts, but also on the absence, a quantitative evaluation of the material is called for. Unfortunately, when considering artefact assemblages from the plots with few sausage pins but many artisans, only the artefact assemblage from plot 6/G, horizon 5, qualifies for a reliable quantitative analysis (cf p 71ff). On plot 6/G (horizon 5) where ambulating artisans of various kinds had stayed, only 0.55 % of the finds were classified as sausage pins, implying that sausage making was not a recurring activity here. Bearing in mind the methodological problems inherent in the material, the distribution pattern for sausage

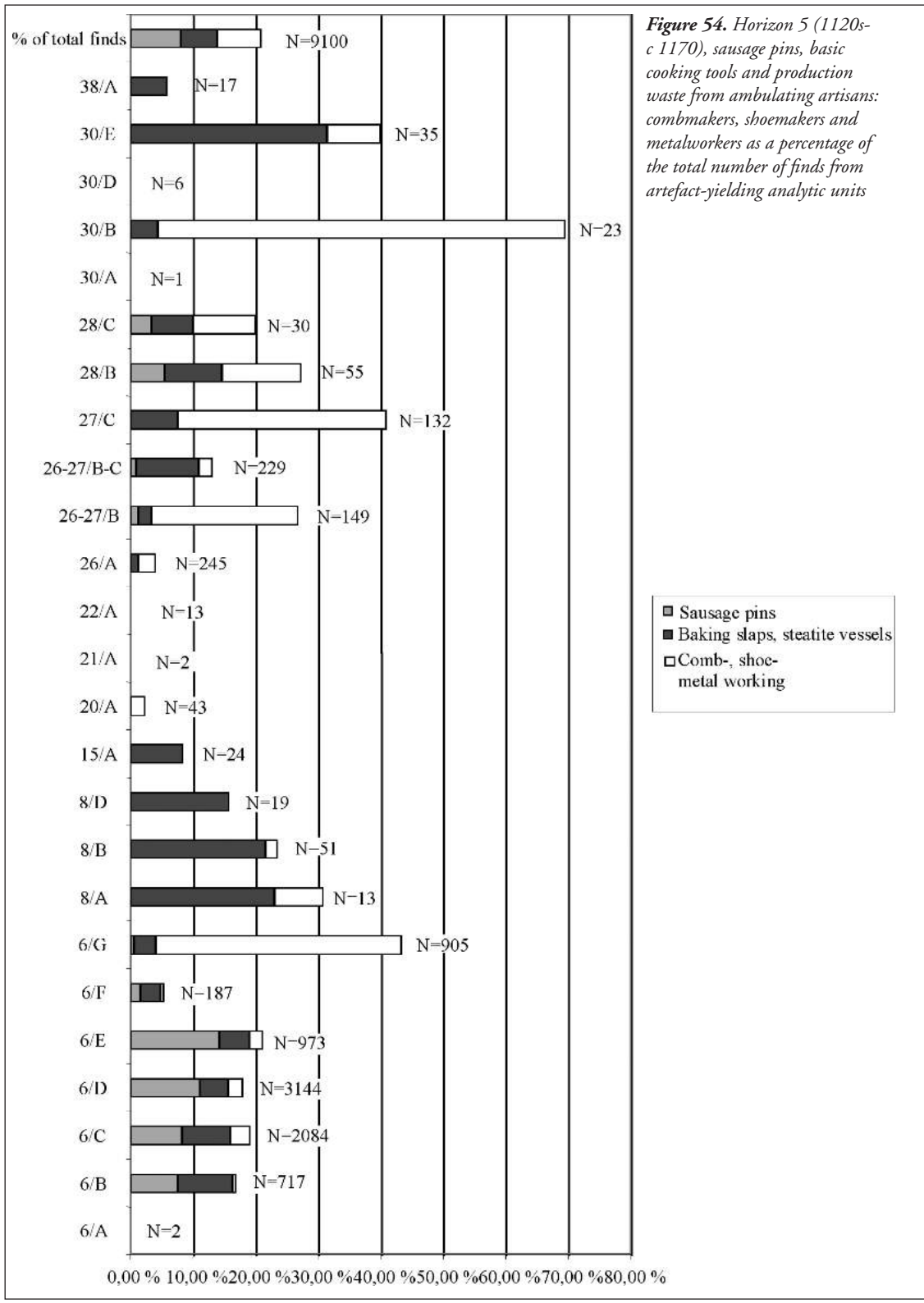

Figure 54. *Horizon 5 (1120s-c 1170), sausage pins, basic cooking tools and production waste from ambulating artisans: combmakers, shoemakers and metalworkers as a percentage of the total number of finds from artefact-yielding analytic units*

pins still appears to imply that sausages were not made on/in all plots/analytic units during horizon 5.

If 'everybody' ate sausages, patterns in the sources imply that sausage makers, besides producing for their own consumption, sold their products to hungry visitors such as ambulating artisans. Accordingly these sausage-making specialists must have been professional. And they were most likely residents of Bergen representing a new urban service-related trade.

Whether the innkeepers, people with premises for lease and the professional sausage makers carried out their service-related trades on a full-time basis cannot be determined on the available sources. But their likely presence suggests that new urban service-related trades had become part of the townspeople's economy during horizon 5. As visitors made use of the services provided one may argue that the service-related trades served a 'wider market' as opposed to an interurban market.

Summary

Table 62 sums up the suggested nature and organisation of the productive activities identified from horizon 3 through horizon 5. The nature and organisation of skinning and textile production, carried out during horizon 5 could not be established. And it could not be established whether large-scale woodworkers were full-time professional residents or ambulating professionals during horizons 3 to 5. Neither was it possible to make a strong case for whether the activities of antler, bone, horn and whale/walrus bone working, and shoemaking during horizon 4 and antler, bone, horn and whale/walrus bone working during horizon 5 were carried out by part-time resident professionals or ambulating artisans.

It seems likely that fishing, hunting, basic cooking, small-scale stone and woodworking, some sausage making, and some miscellaneous antler, bone, horn and whale/walrus bone working were all activities carried out on a household basis during horizon 4. During horizon 5, additional activities were carried out on a household basis, these were hunting, some beer brewing and food processing other than sausage making. Furthermore, large-scale stoneworking was most likely carried out on a full-time professional basis in horizons 3 to 5. And some metalworking may have been carried out by full-time professional residents during horizon 5. Combmaking, shoemaking, some leatherworking, and some metalworking were most likely carried out by professional ambulating artisans during horizon 5.

Common for all the above-mentioned activities is that they must primarily have served an interurban market.

In addition some beer brewing, some sausage making, innkeeping and the activity of letting out premises were probably carried out by full-time or part-time professional residents during horizon 5. These service-related trades may have served a wider market than the town, as visitors of the town probably made use of the facilities and services provided.

Were any of the productive activities fundamental for the emergence of Bergen?

Fishing, hunting, miscellaneous antler, bone, horn and whale/walrus bone working, some 'other leatherworking', small-scale wood and stoneworking, basic cooking and some food and beverage processing were probably all activities carried out on a household basis. Accordingly, none of these added value to the town community, and none of them could in themselves have provided a fundamental economic basis for the rise of the town.

Ambulating professional shoemakers (who also repaired shoes), combmakers and metalworkers who came to Bergen for short visits, were most likely artisans that served large areas with standardised non-luxurious items, and they may primarily have served the interurban market while working in Bergen. Their presence in Bergen reflected in the material from horizon 5 must be seen as secondary, and as a consequence of an established community. Consequently their presence may not have served as a fundamental economic basis for the rise of the town.

It could not be established whether the activities of antler, bone, horn and whale/walrus bone

Table 62. *The nature and organisation of productive activities indicated in Bergen before c 1170*

Productive activity/ Producers	Combmaking	Antler, bone, horn and whale/walrus bone working	Shoemaking	'Other leatherwork'	Metalworking	Large-scale stoneworking	Small-scale stoneworking	Large-scale woodworking	Small-scale woodworking	Skin dressing	Textile production	Fishing	Hunting/war/game	Basic cooking	Beer brewing	Sausage making	Food processing other that sausage making	Innkeeping	Letting out room for contemporary workshops
Cannot be established										5	5								
Household		4 5		5			4 5		4 5			4 5	5	4 5	5	4 5	5		
Professional sedentary full-time					5	3 4 5		3+ 4+ 5+							5+	5+		5+	5+
Professional sedentary part-time															5+	5+		5+	5+
Whether Professional sedentary part-time or ambulating cannot be established		4 5	4		4														
Professional ambulating	5		5	5	5			3+ 4+ 5+											

Numbers denote horizons where the activities were recorded
+ Denotes that the nature and organisation of the activity may be manifold

working, and shoemaking during horizon 4 and antler, bone, horn and whale/walrus bone working during horizon 5 were carried out by resident part-time professionals or ambulating artisans. Regardless of the organisation of these activities during horizon 4, and for antler, bone, horn and whale/walrus bone working also during horizon 5, the small amounts of waste left behind suggest that the artisans produced for an interurban market only. Accordingly, the activities did not add value to the town community and cannot have served as a fundamental economic basis for the rise of the town.

The only 'full-time professional' productive activity documented in early Bergen is large-scale stoneworking, carried out by craftsmen engaged in the construction of the many monumental buildings erected through horizons 3-5. Presumably the artisans were integrated in the household of the monument founders during the period of construction. In spite of being professional, their production thus took place within a 'household', and their presence should not in itself be seen as a fundamental economic basis for the rise of the town. Along the same line of thinking the presence of professional sedentary or ambulating large-scale woodworkers should not be seen as a fundamental economic basis for the rise of the town.

Innkeepers with beverages for sale and lodgings for rent, sausage makers and people who let out premises for temporary workshops may represent a group of urban professionals who were active in Bergen from horizon 5. The activities of these new urban service-related trades, carried out by part-time or full-time professionals, may in time have added value to the town community as the activities, in part, were paid for by visiting

travellers. The new trades should also be seen as a consequence of the existence of a community rather than triggering off the rise of the town.

In conclusion none of the productive activities documented in early Bergen can have served as a fundamental economic basis for the emergence of the town. The productive activities were rather present as a consequence of the existing settlement, though their presence must also have had a synergetic effect on the growth of the town.

12 TRADE

Raw materials and items not produced in Bergen, show that goods from both far and near were brought into town and used here and the distribution of twin combs and shoes has demonstrated an internal redistribution of goods within the town. However, when elucidating the existence of trade as a daily activity and the importance of trade for the users of Bergen, only traces of long-distance trade will be discussed and investigated. Thus the entering and departure of goods in and out of Bergen are considered, not the internal redistribution of goods within the town. As mentioned earlier, the broad term 'long-distance trade' covers both trade that was part of an international network and trade limited to Norway (cf p 40p).

Did the physical organisation of the town meet the demands of long-distance trade? Were major initiatives taken to choose the best natural harbours and to improve harbour and working conditions along the waterfront? In Trondheim eleven and twelfth century investments in harbour facilities have been interpreted as a reflection of the development in contemporary freight carriers (Christophersen and Nordeide 1994, 91ff; Christophersen 1997). I presuppose that, if access to the sea from the town plots was a priority for the planners of Bergen this may indicate that sea transport in general was considered important to the planners. And if accessibility for seagoing and coastal freight carriers seems to have been a priority when plots were laid out in the town areas, this may be an indication that long-distance trade was considered important for the planners of Bergen. I also presuppose that if working conditions in the tidal zone and access to the waterfront were improved this is an indication that sea transport in general was considered important by the users of Bergen. And if harbour facilities were improved so that they met the demands for deep harbours of contemporary carriers, this may be an indication that long-distance trade was considered important for the users of Bergen.

When evaluating harbour conditions I will apply a methodological approach similar to that of the Trondheim study. The ship wreck Skuldelev 3 is used as an example of an eleventh century coastal carrier, Skuldelev 1 as an eleventh century deep sea cargo carrier, and Lynæs, dendro dated to c 1140 is used as an example of twelfth century deep sea cargo carrier. The three ships had draughts of respectively 0.84 m, 1.28 m and 1.50 m when fully loaded (Crumlin-Pedersen 1985, 85-88). The profiles of the bottoms of Skuldelev 1 and 3 (Crumlin-Pedersen 1985, Figures 4 and 7), indicate that these boats had to be loaded and unloaded while still floating,[77] - if they were drawn onto the beach they would heel over severely, probably causing damage to the hull. Unloading and loading these boat types would therefore require mooring possibilities; a quay placed in water with ample depth and with direct access to land, or mooring posts located on ample depth. The latter solution would involve the use of barges or a gangplank.

When facilities such as quays or mooring posts placed at ample depth are constructed, I interpret this as the attempt to meet the demands of contemporary carriers. When access to the shore and working conditions in the tidal zone are improved I interpret this as an indication that sea transport in general was considered important for the initiators behind the activities.

The distribution of tools of trade: tallysticks, owner's marks, weights and balances, and the presence of possible storage buildings serve as sources as to where goods entered town and where commodities may have been stored. Tallysticks were probably used during loading and unloading of cargo from ships and comprise sticks of varying forms marked with knife-cuts along the edges (Grandell 1988, 66). A tallystick

from Trondheim (dated to between 1050 and 1150) had the inscription: 'Sigmund owns this sack' (Christophersen and Nordeide 1994, 256), in Bergen similar inscriptions are found in two cases, in slightly later material.[78] The inscriptions support that the sticks were closely associated with trade in bulk commodities. When found *in situ* in a building a tallystick probably signifies a place where commodities were accounted for or a storage room. Owner's marks are labels of wood often with a name written on it in runes. (Grandell 1988, 69). The labels were probably attached to the commodities and may denote the owner, either the buyer or seller. When an owner's mark is found *in situ* in a building the building may be interpreted as a storage building. I find it likely that the use of tallysticks and owner's marks implies that bulk commodities, as opposed to small volume luxury items, reached Bergen. The presence of tallysticks and owner's marks thus suggest the presence of long-distance trade with bulk commodities. One weight and a balance arm were found in horizon 5, these artefacts are often used as indicators of trade (eg Callmer 1991, 29), they may, however, also be associated with metalworking (Pedersen 2001) and can therefore not be seen in isolation as sources for trade. No coins were assigned to the period under study, neither on sites excavated before nor after 1980. Metal detectors have generally not been used in Bergen but if coins had been common in the period under study, one would expect that at least some had turned up, in spite of relatively poor preservation conditions for metal. The scarcity of coins is therefore probably real. Christophersen has discussed the use of coins in early medieval Scandinavia. He argues convincingly that coins were not used as 'general purpose money' (Christophersen 1989, 134-137). The absence of coins is therefore not used as a source here when discussing the activity of trade in early Bergen.[79]

In earlier studies some of the buildings from early Bergen have been interpreted as storage houses on the basis of their location, the lack of fireplaces or box benches, and special constructional details. The function of these buildings, and buildings where tools of trade are found as category I artefacts, is discussed through category I finds from the buildings (cf p 68ff). The artefact groups that served as sources for the productive activities discussed in Chapter 11 are drawn upon as sources for activity in the buildings. The number of buildings used for the storage of goods and the degree of specialisation of these buildings may be an indication of the intensity of trade-related activities that took place (Carelli 1999, 480; Sarfatij 1999, 275). This may also be significant for understanding the importance of long-distance trade for early Bergen.

Direct or indirect contacts between Bergen and eastern and western Norway respectively are studied through hones from Eidsborg in the east and Dark Grey Schist hones with a western Norwegian origin (Mitchell, Askvik, and Resi 1984).[80] The scope of direct or indirect contacts between Bergen and foreign places of production is studied through the presence of pottery from places of production in present day England[81], Germany,[82] France[83] and the Low Countries,[84] and stave beakers traditionally believed to have a north German origin (Weber 1990, 94). Being aware that these artefacts may reflect consumption rather than trade (Carelli 1999, 77; Hodges (1982) 1989, 57ff), I still take it that they reflect an indirect or direct contact with distant harbours. Owner's marks with a use of 'Greenlander' runes, that may imply an owner from Iceland or Greenland (Hagland 1986, 24; Johnsen 1990, N682, N737), are used as a source for contact between Bergen and North Atlantic destinations. Pollen from plants[85] that did not grow in contemporary Norway may indicate the import of grain to Bergen (Krzywinski and Kaland 1984, 33). Passages in the written sources also imply trade relations with both long-distance localities in Norway and abroad, they are drawn into the discussion when relevant.

When referring to structures and the natural topography, the sources are labelled (B) for basic, (S) for supplementary and (G) for general background sources. This is an expression of the general reliability of the material as sources for the horizons and to the reconstruction of the natural topography.

Table 63. *Trade-indicating sources*

Infrastructure	Improvement of harbour facilities Storage buildings
Tools of trade	Tallystick Owner's mark
Possible tools of trade	Weight Balance
International contacts	Pottery, stave beakers, runic inscriptions, written sources, pollen
National long-distance contacts	Hones from Eidsborg, and from western Norway

Horizon 2 (c 1020/30-c 1070)

A plot system was laid out in the northern town area, at the present state of research, this is believed to have taken place during horizon 2 (cf p 183ff). The plots along Veisan probably included the Veisan shoreline, whereas the plots along Vågen did not extend to the waterfront. In this sense the system was more directed towards Veisan than towards Vågen (cf p 180ff).

Veisan was still a marine basin in the eleventh century (B) (Figure 55a). The recorded bedrock threshold between Vågen and Veisan was quite high, probably at -0.3 m below sea level (S) and at the normal high tide there would only be about 0.76 m water above the threshold. A joker in the reconstruction is, however, that perhaps only part of the mouth of Veisan has been recorded (cf Appendix 1, point 1 and footnote 89). The possibility of a natural fairway between Vågen and Veisan in an area not covered by investigations cannot be excluded, and I shall have to leave the question of the threshold to Veisan open.

The reconstruction of the natural topography on the western bank of Veisan (B) shows a gently sloping beach suitable for loading and unloading if boats were drawn onto the beach. The boats must, however, have been fit for beach landing. The natural harbour conditions in Veisan were

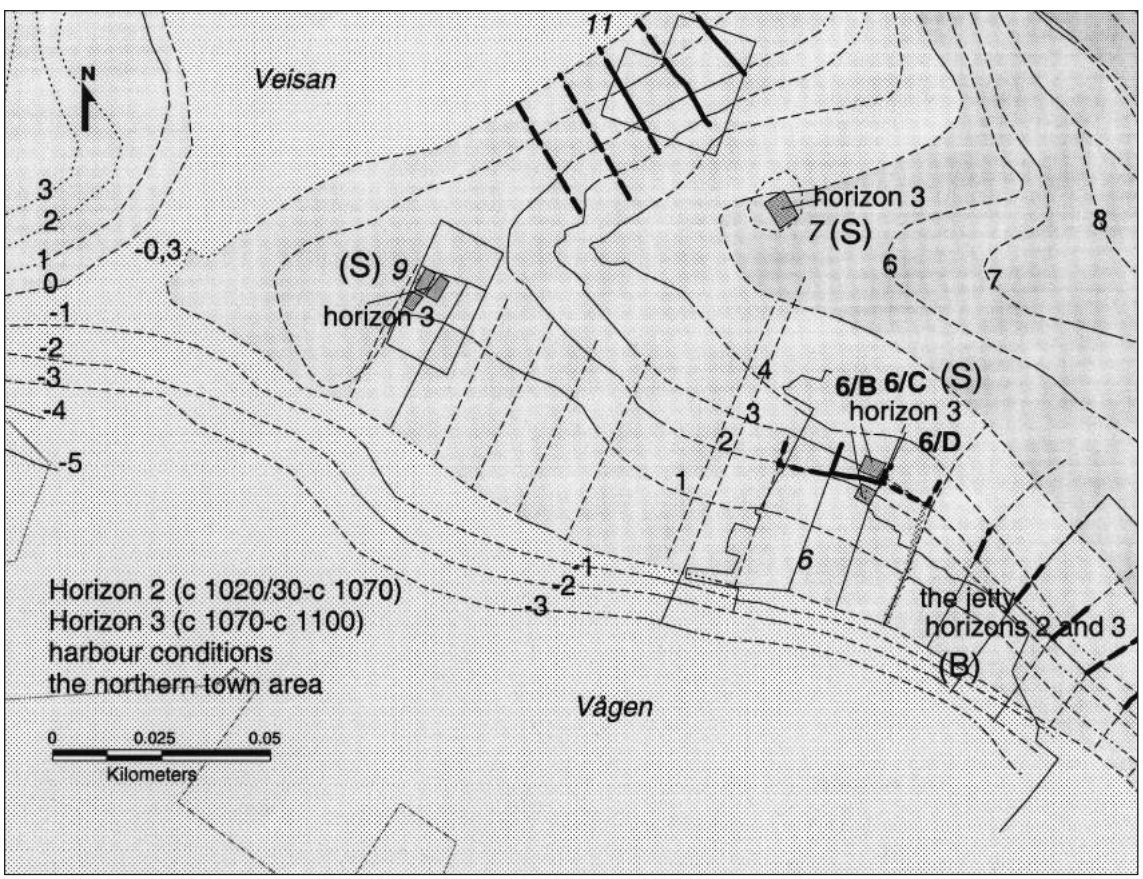

Figure 55a. *Horizons 2 and 3, harbour conditions, the northern town area*

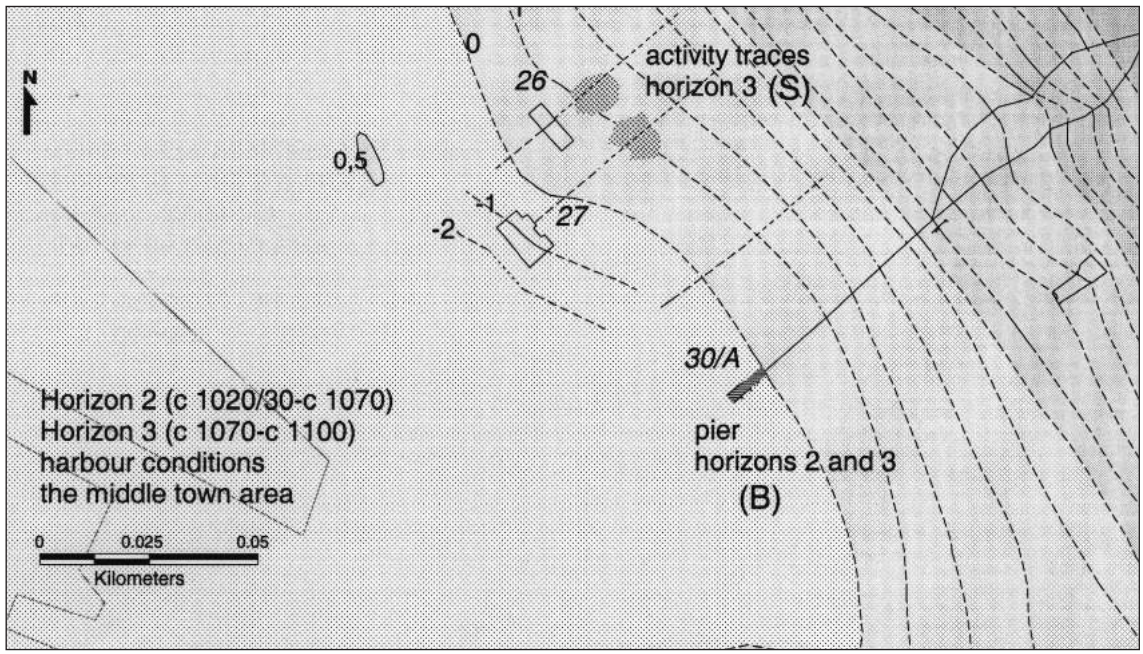

Figure 55 b. *Horizons 2 and 3, harbour conditions, the middle town area*

thus not especially suitable for contemporary cargo carriers.

Along Vågen, in the northern town area, the seabed has been documented by site 6 only. The beach sloped gently with a gradient of about 1:12-1:17 between the 1 masl contour and the +/-0 contour resulting in a wide tidal area (B). The gradient between +/-0 m and -3 m was about 1:3 (B), contemporary carriers thus could not moor alongside here directly, but would have to moor beyond the underwater shelf. The sources for the reconstruction of the beach and the seabed by site 6, are basic, and considered reliable.

Altogether contemporary cargo carriers would have to moor beyond the underwater shelf both in Veisan and by the Vågen shoreline, and would have had to unload and load using barges. This may be an indication that sea transport in general and landing conditions for contemporary carriers were not the only issue when dividing the land into plots.

The jetty (B) that ran across the beach from plot 6/D may have provided access from the plot to boats anchored beyond the underwater shelf (Herteig 1990, 132). It is however uncertain if the jetty actually extended into the bay. The jetty was the only documented attempt to improve harbour facilities or working conditions by the waterfront along Vågen, in the northern town area (cf Table 64). The natural harbour conditions as well as the improvement of harbour and working conditions by plot 6/D are considered well-founded. The improved access to the waterfront on plot 6/D in the northern town area may indicate that working conditions at the waterfront, and thus sea transport in general, were considered important for the users of this plot.

In the middle town area (Figure 55 b)the pier built in horizon 1 (B) (unit 30/A) was still standing and must have been kept up. Hence the pier was apparently still considered important for the users. The seabed has not been documented around the pier, but judging by the reliable seabed contours (S, B) from sites 26 and 27 the pier must have reached at least the -1 to -1.5 m contour and contemporary carriers could probably go alongside here at high tide. The presence of the pier and the general harbour conditions are considered well-founded. The pier is inflicted with problems of inertia; being from the early tenth century, it was built to meet needs that apply to a period much earlier than horizon 2. And as we only have the very pier-structure as a source for the function of the pier, the pier cannot be used as a source to illuminate

whether or not the users of site 30 consciously met the demands of eleventh century carriers. If the pier met the demands of eleventh century carriers, this was merely a coincidence since it was built years before the carriers were thought of. The pier therefore cannot be used as a source relating to the present question. No tools of trade, indicators of international contact nor storage buildings were assigned to horizon 2. But then hardly any finds have been assigned to horizon 2 at all, and the lack of finds cannot be used as a source.

To sum up, harbour conditions were perhaps not the main priority for the initiator behind the regulation of the northern town area into plots. The improvement of working conditions at the Vågen waterfront on plot 6/D indicates that sea transport in general was considered important for the users of this plot. There are no indications that trade was carried out in the town area during horizon 2

Table 64. *Horizon 2 (c 1020/30-c 1070), trade-indicating sources*

Plot/ site	Improvement of harbour conditions	Tallystick	Owner's mark	Weight	Balance	Multifunctional Storage building	England	Germany	Low Countries	France	Iceland/Greenland
6/D	**X**										

Numbers and **X** in **bold** refer to basic sources, numbers and x in plain refer to supplementary sources

Horizon 3 (c 1070-c 1100)

During horizon 3 the natural harbour conditions in the northern town area were identical to the conditions in horizon 2 (Figures 55a and b); Both by and along the Vågen shoreline (at site 6) carriers would have had to moor beyond the underwater shelf. In the middle town area, the coast and seabed has been documented at sites 26 and 27 only. The beach sloped gently with a gradient of about 1:20 between the +1 and the +/- 0 contours, the seabed had a gradient of about 1:10 between +/-0 and –2 m below the sea level (B, S). The reconstruction of the natural is based mostly on basic sources and is considered reliable.

At the present state of research, the introduction of a new plot system is believed to have taken place during horizon 3 (cf p 183). Plots along Vågen were extended towards the Vågen waterfront and thereby gained immediate access to the Vågen Bay in both the northern and the middle town areas. The new plot system's focus on the Vågen shoreline may indicate that those who regulated the land considered access to the sea and sea transport in general as important.

A gravel layer (S) was probably spread on the beach by the jetty (plot 6/D), it may have stabilised the beach, and made work here easier. This may indicate that sea transport in general was considered important for the user of the plot, but as the material stems from one supplementary source only it cannot act as a source in isolation. In the middle town area, activity was documented at sites 26 and 27 only (when disregarding site 30, that is inflicted with problems of inertia). There was probably activity in the vicinity of the two sites (S), but the character of the activity is uncertain, and no attempts to improve harbour facilities have been documented (S). The improvement of working conditions on the beach was documented through one supplementary source only in the northern and middle town areas, when excluding the material from site 30. Accordingly I find that the tendency in the material that sea transport in general was considered important for the users of the plots, is not well-documented. Still as seen in Chapter 9 a reliable tendency in the material is that occupied plots were mostly located at the Vågen shoreline. This may in itself be an indication that access to the sea and thus that sea transport in general was considered important for the users of the town plots.

The pier from horizon 1 at site 30/A, Vetrlidsalmenningen (B) probably still functioned as a pier, but is not used as a source for the present question due to problems of inertia.

No tools of trade, international contact-indi-

cating finds nor storage buildings were assigned to horizon 3. A hone from eastern Norway, tentatively assigned to horizon 3 (S) on plot 9-10/B, indicates direct or indirect contact between Bergen and eastern Norway. However, as the material stems from a single supplementary source only it is not considered reliable as a source to indicate such contacts, and is not included in further discussions. Pollen of plants that did not grow in contemporary Norway may have been found as early as horizon 3 on plot 6/E or 6/F (S), indicating that foreign grain was landed in Bergen. This information also stems from a single supplementary source only, and cannot stand alone, it is therefore not considered in further discussions.

Table 65. *Horizon 3 (c 1070-c 1100), trade-indicating sources*

Plot/ site	Improvement of harbour conditions	Tallystick	Owner's mark	Weight	Balance	Multifunctional storage building	Eastern Norway	Western Norway	England	Germany	Low Countries	France	Iceland/Greenland	Pollen
6/D	x													
6/E or 6/F														x
9-10/B							(1)							

Artefact category II in brackets

Numbers and **X** in **bold** are basic sources, x and numbers in plain are supplementary sources

To sum up, sea transport in general may have been a consideration when the town area was redesigned. Access to the sea and sea transport in general may also have been a priority for those who had a plot in the town area. Direct or indirect contact between Bergen and eastern Norway and the import of grain was indicated in supplementary sources but the information is considered too uncertain to be included in the further discussions (Table 65)

Horizon 4 (c 1100-1120s)

In the northern town area (Figure 56) a pier (S) may have been constructed (14/A) and extended into the Vågen Bay reaching a water depth of -2.5 to -3.0 m. The pier was dimensioned for heavy loads and contemporary coastal as well as seagoing carriers could berth here directly. The pier was assigned to horizon 4 as a supplementary source only, its presence in the landscape this early is thus not well-documented, and cannot be used as concluding evidence that the needs of contemporary carriers were met during this horizon.

On plots 6/B-6/F several layers of small stones (B) were laid out, providing a firm surface for the unloading and loading of ships and for other work on the beach and in the tidal zone (Herteig 1991, 111). Larger ships would, however, still have to be unloaded and loaded by means of smaller boats. On plot 6/C further steps were taken to improve working conditions across the tidal zone and by the waterfront; a row of 2 m x 2m stone-filled caissons (B) were constructed forming the foundations for a quay along the waterfront and a passage that ran from the waterfront to the rear part of the plot. The quay front was located by the +/- 0 contour, thus contemporary carriers were probably not able to berth here, but would have to moor in deeper water further out in the harbour basin and unload by means of barges. The passage, however, provided better access from the waterfront to the buildings at the rear part of the plot. Similar passages and quay fronts may have been constructed at plots 9-10/B, 9-0/C and 12/A (S), where the seabed was quite shallow, it has been reconstructed with a gradient of about 1:10 between the +/-0 and the -1 m contours (B, S), and contemporary carriers could probably not go alongside the quays directly. From site 27 in the middle town area, waste-layers (B) had accumulated on the sea bottom beyond plots 26-27/B and 27/C, thereby reducing the depth of the Vågen Bay. At site 26 a triangular stone-filled caisson (B) may have been part of a passage that led across the tidal zone from the built-out part of the plot to the waterfront, probably a situation identical to that documented on plot 6/C. It is interpreted as an attempt to give access across the tidal zone on plot 26/A or 26-27/B and thereby

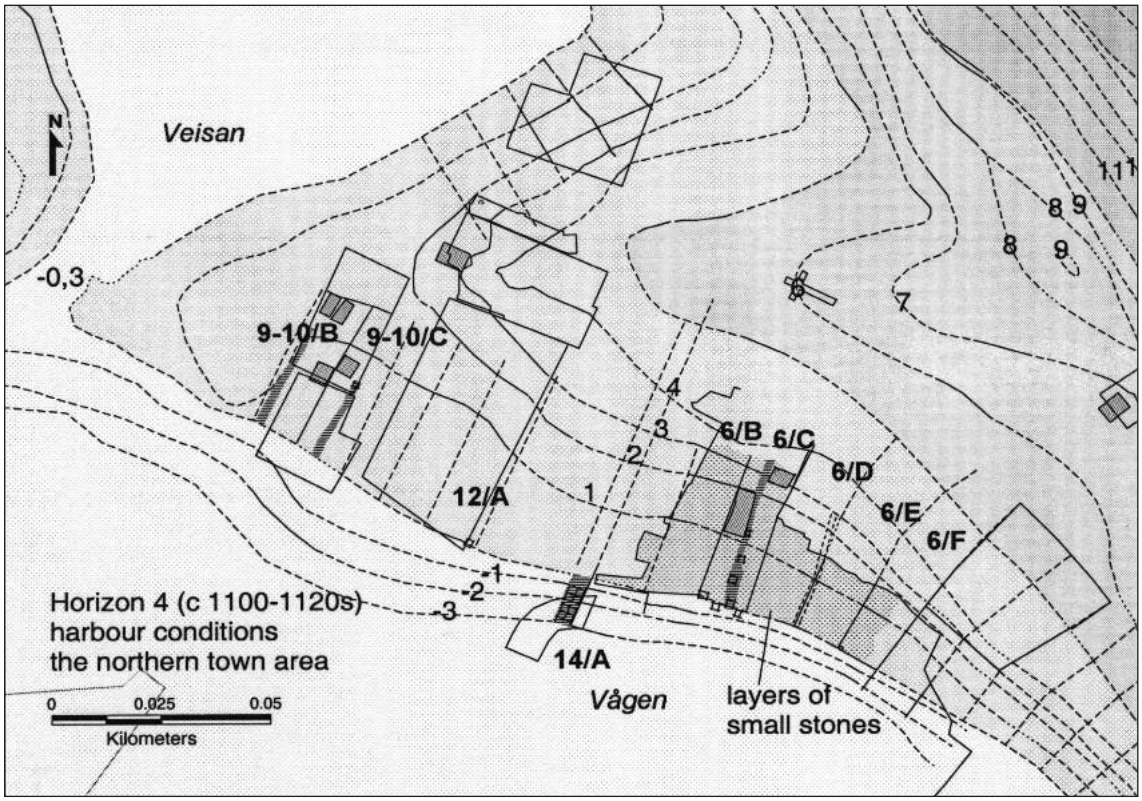

Figure 56 a. *Horizon 4 (c 1100-1120s), harbour conditions, the northern town aera*

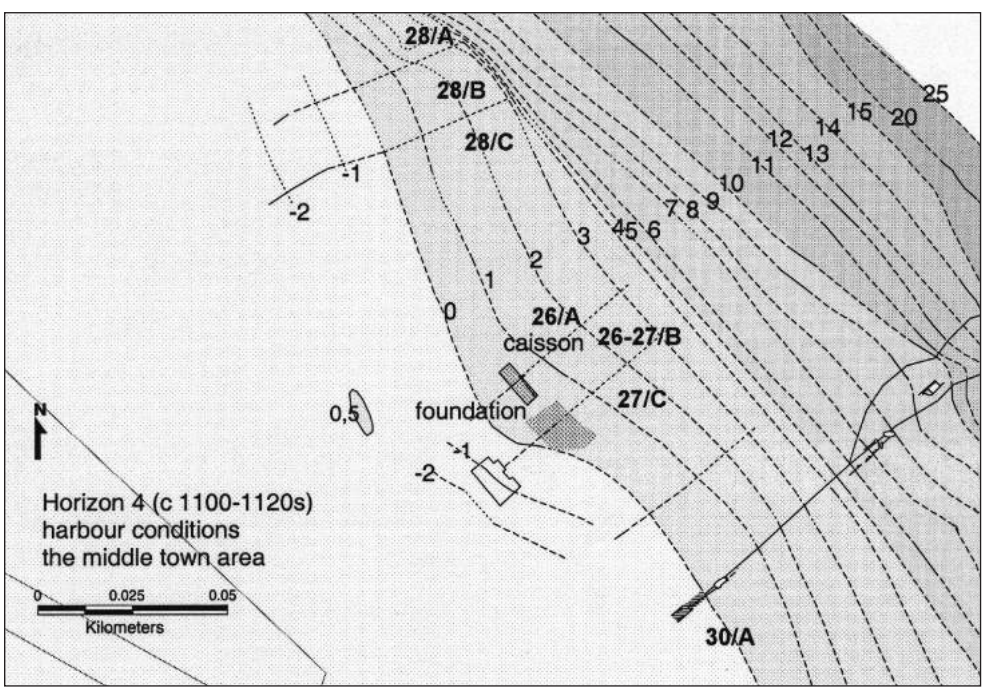

Figure 56 b. *Horizon 4 (c 1100-1120s), harbour conditions, the middle town aera*

improving working conditions by the waterfront. The improvement of working conditions and access to the waterfront was documented through basic sources in both the northern and the middle town areas, and the general tendency in the material that these activities took place in both the northern and middle town areas is considered reliable. The improved access to the waterfront and working conditions are taken as an indication that sea transport in general was important for the users of the town plots. The pier (B) in unit 30/A may still have been in use as a pier, but is not used as a source here due to problems of inertia.

A tallystick, found in building 45 on plot 6/C in the northern town area, reflects trade with bulk commodities on this plot. The building (B) has been interpreted as a warehouse or a boathouse through construction details (Herteig 1969, 98ff, 113; Moldung 2000, 24). Artefacts of category I from the building show that general cooking and small-scale stoneworking also took place here. It thus may seem that the building was 'multifunctional', that is it had other functions in addition to being a warehouse.

Direct or indirect contacts with Germany and the Low Countries are documented through pottery on three or four plots. On one and four plots respectively hones from eastern and western Norway indicate contact between Bergen and these areas. Pollen from weeds not native to Norway were found on either plot 6/E or 6/F (B) and indicate that grain was a commodity imported to Bergen. The tallystick, the contact-indicating sources and the pollen stem from five basic sources and two supplementary archaeological sources, in addition a multifunctional warehouse was also recorded through a basic source. The tendency in the archaeological and botanical material that trade was now part of the townspeople's economy is considered reliable on this basis.

Passages in the Orkneyinga saga tells that Ragnvald Kale from Agder went to Grimsby in England about 1115-20, he was in the company of salesmen and carried along goods for sale. Upon his return to Norway he went to Bergen and later he sailed from Trondheim to Bergen (Orkn 1913-16, 141; Holtsmark 1970, 93-94). These passages may imply that Bergen was a node in a network for both coastal traffic on the Norwegian coast and traffic across the North Sea to England about 1115-20, corresponding to horizon 4. This information corresponds with the tendency in the archaeological and botanical sources, and is considered reliable.

In conclusion, sea transport in general seems to have been considered important for the users of several plots in Vågen in the northern and the middle town areas and the sources altogether imply that trade with bulk commodities was now part of the economy of the townspeople of Bergen.

Horizon 5 (1120s-c 1170)

Sometime during horizon 5, Veisan was probably not fit as a harbour anymore (cf Hjelle 1986, 67). In the northern town area (Figure 57) waste-layers (B) deposited during horizon 4 and amounting to a thickness of 0.5 m at site 6 had accumulated along the Vågen shoreline (cf also Figure 8). This had an impact on the water depth close to the shore. The pier by site 14 (B) was in use and the water depth was most likely sufficient for even large carriers to berth here, the source is considered reliable and is an indication that the needs of contemporary carriers were met.

Passages and quay front structures, like those seen at plot 6/C in horizon 4, were now built on most documented plots along the Vågen shoreline in both the northern and the middle town areas. In the northern town area the quays were mostly located between the +/-0 and -1 m contours, on plot 6/G (B) the outermost caissons in the quay, however, extended to the -2 m contour. Mooring posts (B) were located beyond the quay fronts between the -1 m and -2 m contours. In spite of the decreased water depth, due to the deposition of waste-layers in the bay, the seabed along Vågen in the northern town area was probably deep enough, even at low tide, for contemporary seagoing carriers like Lynæs to be moored by the mooring posts. The boats could then be loaded and unloaded by the use of a gangplank between the vessel and the quay.

In the middle town area, at site 26, waste-layers deposited during horizon 4 and layers deposited intentionally (B) had raised the land.

Table 66. *Horizon 4 (c 1100-1120s), trade-indicating sources*

Plot/site	Improvement of harbour conditions	Tallystick	Owner's mark	Weight	Balance	Multifunctional storage building	Eastern Norway	Western Norway	England	Germany	Low Countries	France	Iceland/Greenland	Pollen
6/B	**X**						**(1)**	**(1)**						
6/C	**X**	**1**				**1**								
6/D	**X**													
6/E	**X**													
6/E or 6/F														**X**
6/F	**X**													
6/G	**X**													
9-10/B	x													
9-10/C	x													
14/A	x													
26/A	**X**									**1**				
26-27/B•							**(1)**			**2 (1)**	**3**			
26-27/BC•										**(1)**				
27/C							(2)							
30/E							(1)				(3)			

Numbers and **X** in **bold** refer to basic sources, numbers and x in plain refer to supplementary sources
• Artefacts from both basic and supplementary sources

On plots 26-27/B, 27/C the quay front caissons (B) were thus located 7-11 m from the original shoreline between the original +/-0 m and -1 m contours, on plot 26-27/B and 27/C this gave a water depth of less than 1 m in front of the quay (B) (Figure 58). Mooring posts were documented beyond the quay at plot 26-27/B about the -1 m contour (B). On plots 29/A and 29/B a similar location of the quay front (S) may be seen. On plots 28/A, 28/B and 28/C the quay front (B) was located about 20 m from the original shoreline (S), between the -1 m and -2 m contours (S). A pier extended almost to the -2 m contour on plot 28/B and mooring posts (B) were located immediately beyond the quays. At normal tide or low tide the quays and mooring posts of plots 26-27/B and 27/C were not located in sufficiently deep water for a vessel with the draught of Lynæs. Boats with a draught of more than 1 m would thus probably have to be moored further from the shore and unloaded and loaded by the help of barges (Figure 58). On plots 28/A, 28/B and 28/C, the depth by the quay front was sufficient for vessels with a draught of 1.5 m at normal and high tide to go alongside the mooring posts and use a gangway during unloading and loading. On plot 28/B the pier provided sufficient depth for large vessels to land even at low tide. In unit 30/A, the pier from horizon 1 was now incorporated in dry land structures (B).

In the southern town area, structures (B) interpreted as a quay front and the foundation of a counterbalance hoist, were found on site 38. The sea bottom at the head of the Vågen Bay probably sloped gently with a gradient of 1:30 between the +/-0 m and the -1 m contours. Data for this reconstruction are scarce, so it may not be entirely reliable, nevertheless the structures on site 38 were located above the +/-0 m contour in the tidal zone (B) and even at high tide larger boats cannot have gone alongside the quay here. Larger boats must have moored beyond the quays and

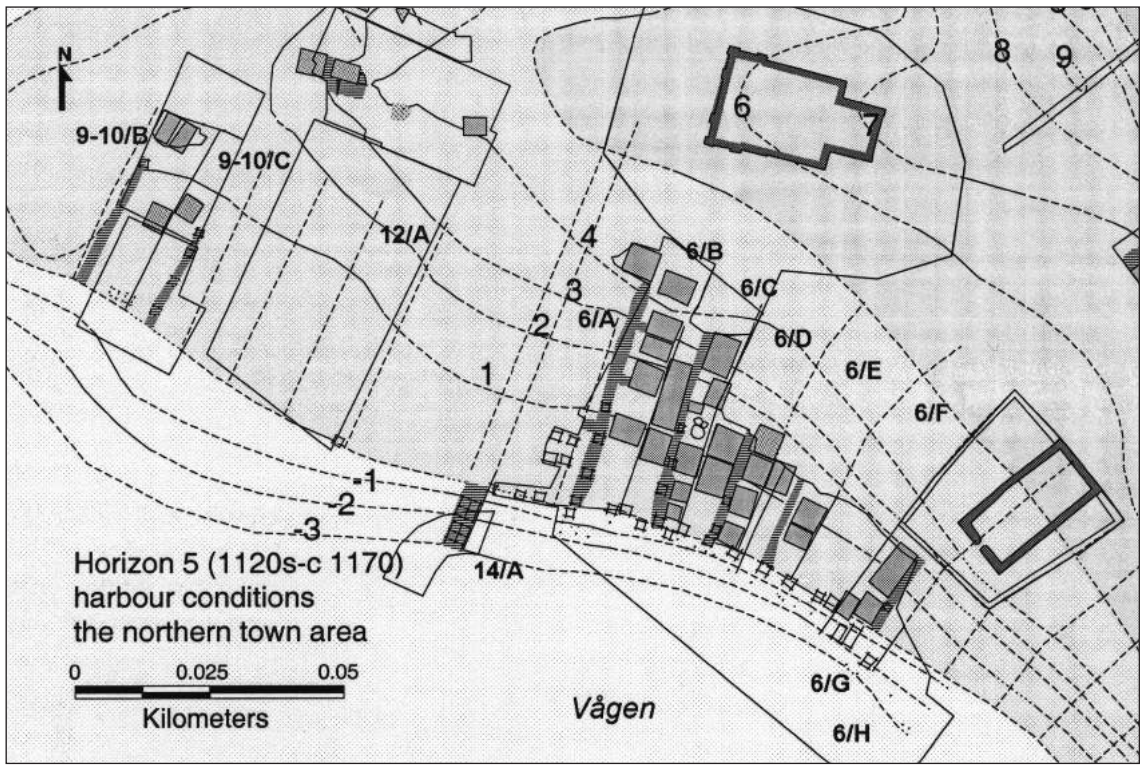

Figure 57 a. *Horizon 5 (1120s-c 1170), harbour conditions, the northern town aera*

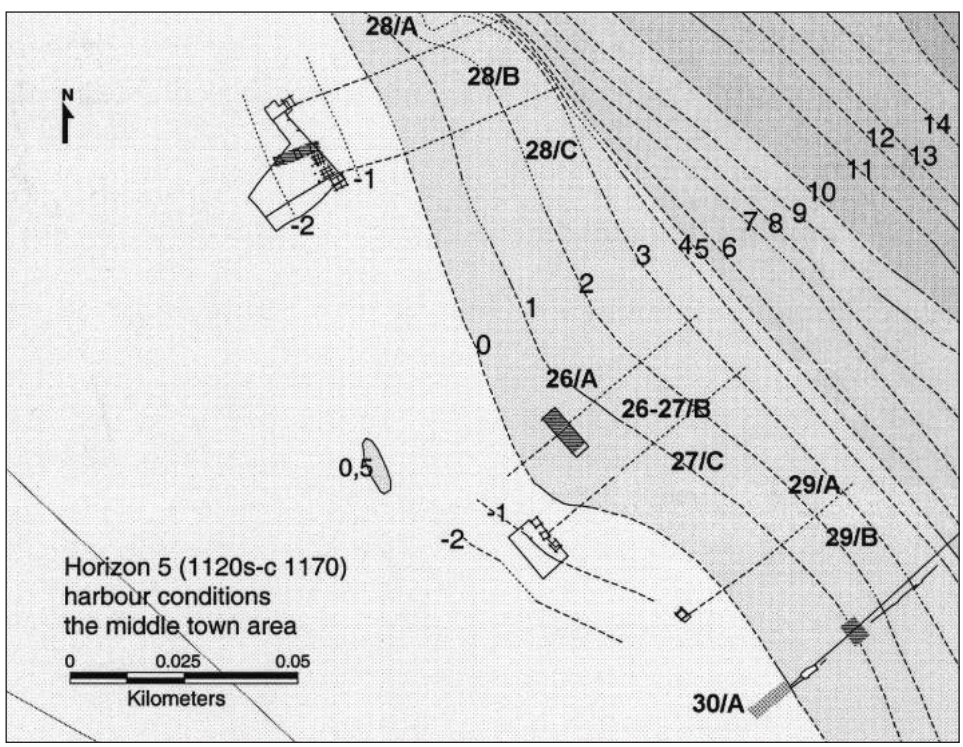

Figure 57 b. *Horizon 5 (1120s-c 1170), harbour conditions, the middle town aera*

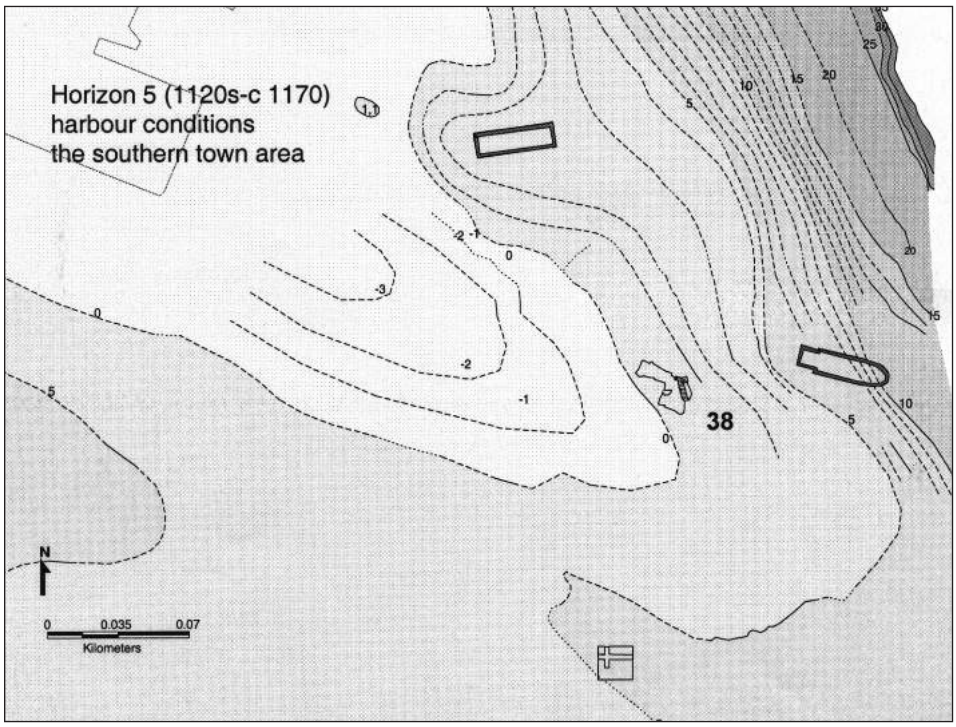

Figure 57 c. *Horizon 5 (1120s-c 1170), harbour conditions, the southern town aera*

unloading and loading must have been carried out by the help of smaller boats.

The sources that elucidate improvements of working and harbour conditions during horizon 5 in the three town areas are almost entirely based on basic sources. The tendency in the material that substantial improvements in working conditions in the tidal zone were undertaken, and that harbour conditions were improved to meet freight carriers' demands for deeper water, is considered reliable.

Tools of trade were found in four of the 24 artefact-yielding units in the northern town area and on plot 26-27/B or 27/C in the middle town area (Table 67). On plot 26/A a balance arm was found, the function of the balance arm is ambiguous and as waste from metalworking was also found on the plot, the balance arm may stem from metalworking rather than trade (cf p 214ff). The tools of trade were assigned to horizon 5 through basic sources, so their association with the horizon is considered reliable.

Table 67. *Horizon 5 (1120s-c 1170), tools of trade*

Plot	Tallystick	Owner's mark	Weight	Balance
6/B	**3**			
6/C	**3** **(5)**	**(1)**	**(1)**	
6/D	**5** **(3)**	**3** **(3)**		
6/E	**(4)**			
26/A				**(1)***
26-27/B-C	**(1)**			

Numbers in **bold** are basic sources, in plain supplementary sources
* possibly from metalworking

Some of the tools of trade were found in buildings (B), implying that the buildings were either warehouses for commodities or houses where commodities were accounted for. In addition, buildings 41 and 66 on plot 6/B have been interpreted as storage rooms on the basis of construction details; these buildings had open corners that may have provided ventilation for stored

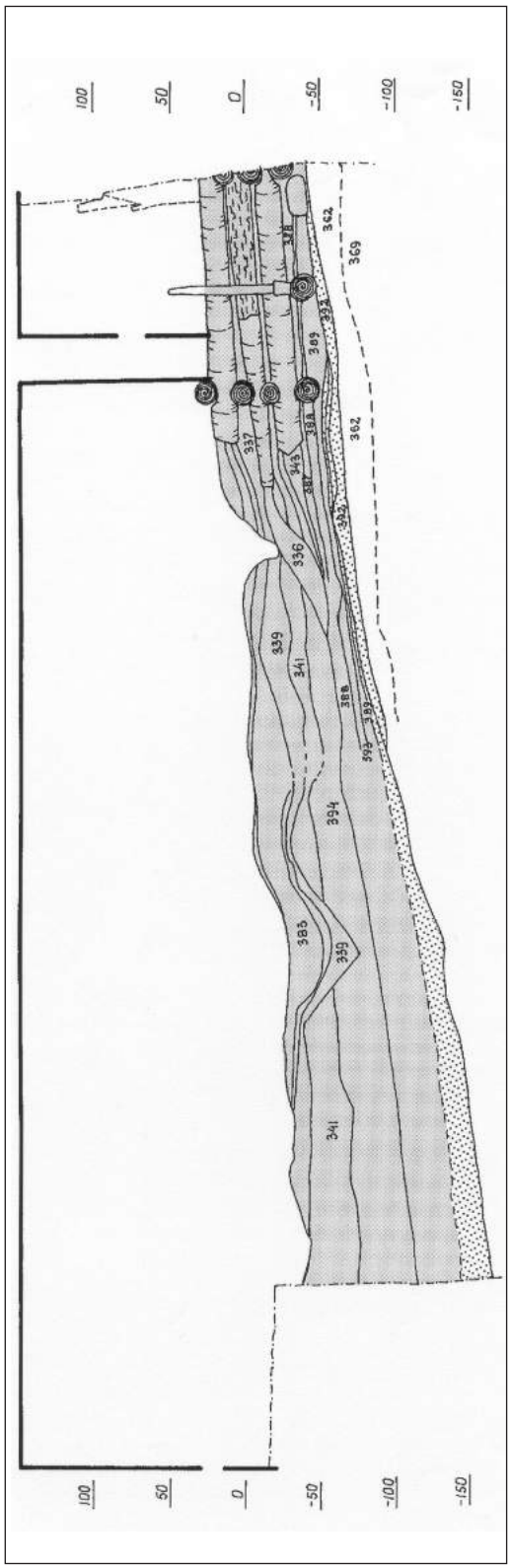

Figure 58. *Site 27, Finnegården 3a. Water depth by the quay front. (Modified from Golembnik 1993, Figure 5)*

goods such as stockfish, and were unfit as permanent dwellings (Herteig 1969, 94ff; Helle 1982, 126). Table 68 shows the five buildings that could be associated with trade and the productive activities represented by artefacts of category I in the buildings. Both buildings and artefacts were assigned to horizon 5 as basic sources and their association with the horizon is considered reliable.

Three buildings belong to plot 6/D and two to plot 6/B making up half the documented buildings on these plots. This large proportion of trade-related buildings implies that trade was very important to the users of these plots. In addition, to being associated with trade or storage of commodities, the trade-related buildings were all used for purposes that we do not traditionally relate to trade. In four of the buildings sausage pins were found; but since sausages were often dried and stored, the finds are not incompatible with the interpretation of the buildings as storage houses. Fishing/textile tools comprising weights only were also found in four of the buildings. If the weights represent fishing, their presence corresponds well with the function of the buildings as storage rooms, though perhaps not what we understand as storage rooms for commodities of trade. As in building 45 (from horizon 4), there were traces of general cooking in all the houses and furthermore the activities of antler, bone, horn and whale/walrus bone working, shoemaking and/or small-scale stoneworking were represented in two houses. According to the finds, the five trade-related buildings seem to have been used for several purposes and were not meant for storage of commodities alone, they were thus 'multifunctional'. This modifies somewhat the impression of trade as very important for the townspeople.

In 22 of the 24 artefact-yielding analytic units in horizon 5 (Table 69) artefacts indicating direct or indirect international contacts have been found. And in 16 and 7 units respectively, hones from Eastern and western Norway have also been found. The artefact groups are all represented by basic sources, and the tendency that international, as well as national contacts were a reality is considered well-founded. The wide distribution of items transported over long distances indicate

that long-distance trade was important to people on most of the plots in the town. This impression is supported by the mention in written records of a number of coastal carriers that visited Bergen on their way northwards to Trondheim with commodities in 1162 (Hkr 1893-1901, III 438-439; Helle 1982, 162; Hkr 1982 (1979), 656).

Table 68. *Horizon 5 (1120s-c 1170), the function of buildings containing tools of trade or interpreted as storage rooms*

Horizon 5 Plot/ building	Antler, bone, horn and whale/walrus bone working	Shoemaking	Textile/fishing?	Food and beverage processing	General cooking	Small-scale Stoneworking	Tallystick	Owner's mark
6/B/66			**X**		**X**			
6/B/41			**X**	**X**	**X**		**X**	
6/D/484			**X**	**X**	**X**		**X**	**X**
6/D/485	**X**	**X**	**X**	**X**	**X**			**X**
6/D/486		**X**		**X**	**X**	**X**		**X**

X in **bold** are basic sources, x in plain supplementary sources

In conclusion it is well-founded that harbour and working conditions were improved in all the town areas. Thus it seems likely that good landing possibilities for contemporary carriers were considered important by the users of the town plots. Tools of trade and the wide distribution of contact-indicating artefacts throughout the whole town area are also well associated with horizon 5 and their presence may indicate that trade had become an important activity to the inhabitants of Bergen.

Table 69. *Horizon 5 (1120s-c 1170), trade-indicating sources*

Plot	Improvement of harbour conditions	Multifunctional storage building	Tools of trade	Eastern Norway	Western Norway	England	Germany	Low Countries	France	Iceland/ Greenland?
6/A	**X**									
6/B	**X**		**3**	**1 (2)**	**2 (1)**	**15 (7)**	**40 (17)**	**20 (26)**		
6/C	**X**	**2**	**3 (6)**	**5 (6)**	**1 (2)**	**1 (134)**	**44 (138)**	**15 (46)**	**1**	**(1)**
6/D	**X**	**3**	**8 (6)**	**1 (16)**	**1 (8)**	**59 (13)**	**74 (193)**	**32 (87)**		**1**
6/E	**X**		**(4)**	**(8)**	**(1)**	**(12)**	**8 (77)**	**(44)**		
6/F	**X**			**(1)**		**(8)**	**(24)**	**(22)**		
6/G	**X**			**5 (1)**		**(2)**	**42 (54)**	**15 (21)**	**1**	
6/H	**X**									
8/A				**1**			**1**	**1**		
8/B				**(3)**			**(2)**			
8/D				**1**	**5**		**2**	**1**		
15-16/A				(2)	(1)	1	(4)	(5)		
20/A				(3)		(4)	(4)			
21/A									1	
22/A									**(1)**	
26/A	**X**		**(1)**	**(5)**		**6 (22)**	**37 (46)**	**14 (32)**		
26-27/B	**X**			**(1)**		**(4)**	**3 (21)**	**1 (8)**		
26-27/BC				**(3)**		**(3)**	**(10)**	**(10)**		
27/C	**X**			**(1)**		**(2)**	**(9)**	**(11)**		
28/B	**X**				**(1)**	**(2)**	**(2)**	**(1)**		
28/C	**X**					**(2)**	**(3)**			
29/A	**X**									
29/B	**X**									
30/A								(1)		
30/E				(1)				(2)		
30/E						(1)	(1)	(4)		
38/A	**X**							**1 (1)**		

Numbers and X in bold refer to basic sources, in plain supplementary sources

Conclusions

The natural landing conditions for contemporary carriers were not especially favourable during horizon 2 so harbour conditions were probably not the only priority for the initiator behind the regulation of the northern town area into plots. Improvement of the working conditions at the Vågen waterfront on plot 6/D indicates that sea

transport in general was considered important to the users of this plot. It could not be determined whether trade was an activity carried out during the horizon.

During horizon 3 access to the sea, and sea transport in general may have been a priority for the users of at least one plot in the town area. Direct or indirect contact between Bergen and eastern Norway and the import of grain was indicated in supplementary sources but the information is considered too uncertain to be included in the further discussions.

Working conditions in the tidal zone as well as access to the waterfront were improved in both the northern and the middle town areas during horizon 4 and sea transport in general seems to have been important to the plot users along Vågen. Trade-indicating sources show that long-distance national and international trade in bulk commodities was now part of the economy of the townspeople of Bergen.

Substantial improvements of harbour- and working conditions across the tidal zone in the three town areas were carried out during horizon 5. It thus seems likely that good landing possibilities for contemporary carriers were considered important to the users of the town area. Tools of trade, trade-indicating buildings, and contact-indicating artefacts widely distributed throughout the whole town area indicate that trade had become an important activity for the inhabitants of Bergen.

13 THE CHARACTER OF THE SETTLEMENT IN THE TOWN AREA

In the oldest phase of occupation at the Folkebibliotekstomten (The Library site) site in Trondheim the settlement was interpreted as temporary because of the provisional character of structures identified and the limited accumulation of culture-layers (Christophersen and Nordeide 1994, 267). In studies of eighth century Ribe (Denmark) and Viking Age Kaupang in Tjølling (Norway) the character of the constructions has been used as an archaeological criterion when elucidating the character of the settlement (Frandsen, Madsen, and Mikkelsen 1988, 8; Jensen 1992; Ferveile 1994; Skre, Pilø, and Pedersen 2001, 10). Due to the fragmentary state of the sources, especially in the earliest horizons, such criteria cannot be adapted here. Instead the character of the settlement on the town plots is studied through the presence of certain daily activities and groups of artefacts. Daily activities may reflect the character of the urban community, they may elucidate whether settlements on the town plots were well established and had a permanent character, or whether the town plot was used seasonally or occasionally by people on assignment to the town for a limited period of time or people that were just passing through.

I find it likely that if food and beverages were processed on a plot this may be an indication that the settlement here was well established and had a permanent character. The distribution of sources for food and beverage processing (cf p 235ff) is drawn upon here.

I also find it likely that the presence of women and young children indicates a settlement that was well established and had a permanent character. In the earliest and 'seasonal' phase in Trondheim no traces of women or children were found (Nordeide 1989, 34; Christophersen and Nordeide 1994, 237, 269; Nordeide 1999, 46), lending support to this notion. Textile tools have typically been associated with female activities in medieval studies (Øye 1988; Rui 1993; Nordeide 1999; Hagen (1988) 1994) and are used here as indicators of women. I will only use artefacts in the category 'textile tools' (cf p 226ff) as a source for the presence of women as only these finds are positively identified as textile equipment.

Toys and shoe sizes are used as sources to indicate the presence of young children. Medieval authors most commonly divided childhood into *infantia*, 0-7 years, *puertia,* 7 to 12 years for girls and 7-14 years for boys and *adolescentia* 12 or 14 to adulthood. The view of *infantia* as a period in which the child was helpless and dependent on adults is expressed by several medieval writers (Shahar (1990) 1992, 22ff). In my study a young child is a person that was still dependent on its parents/adults and who was still not fit for work.

This would seem to correspond with the period of *infantia*. Young children in the present context are 7 years of age or younger. Today size 28, 185 mm, is the average size shoes for children 7 years of age (Ruth 2000).[86] On average, medieval men and women were about 4.3 % shorter than their modern counterparts (Bennike 1993).[87] As the proportions of the human body are unchanged, the average size for the shoe of a seven-year-old child ought to be 177 mm or about size 26-27.[88] I choose to apply 175 mm as the division between shoes for small children and shoes for older children and grownups. This figure does not take into consideration individual variations and must be considered a working hypothesis rather than as an accurate measurement. I have measured the length from toe to heel on 345 soles or uppers. On shoes with a pointed or an elongated toe the toe was not included. Thirteen soles or uppers were 175 mm, size 26-27, or smaller. Toys are identified through parallel material from medieval contexts.

No sources for the present question could be safely associated with horizon 2.

Horizon 3 (c 1070-c 1100)

A child's shoe (S) from plot 9-10/B and pollen of myrica gale (S) from plot 6/E or 6/F may indicate that the settlements here were well established and had a permanent character (Table 70). The evidence of beer brewing and the presence of young children respectively is, however, documented through only one supplementary source each and is thus considered too uncertain to be included in the further discussion.

Table 70. *Horizon 3 (c 1070-c 1100), sources for the character of the settlements*

Plot	Food and beverage processing	Textile production	Child's shoes	Toy-horse-figure	Toy-boat	Toy-sword	Whipping top (lathe-turned core)
9-10/B			(1)				
6/E or 6/F	(x)						

Artefact category II in brackets
X and numbers in **bold** are based on basic sources,
x and numbers in plain are based on supplementary sources

Horizon 4 (c 1100-1120s)

Food processing was documented on four of the seven artefact-yielding plots/units, two plots were located in the northern town area and two plots in the middle town area (Table 71). The presence of this activity is considered reliable, being documented through both basic and supplementary sources. The sources thus indicate that well-established settlements of a permanent character were present in the northern and middle town areas.

Table 71. *Horizon 4 (c 1100-1120s), sources for the character of the settlements*

Plot	Food and beverage processing	Textile production	Child's shoes	Toy-horse-figure	Toy-boat	Toy-sword	Whipping top (lathe-turned core)
6/B	**(X)**						
6/C	**X**						
26/A	**X**						
27/C	(x)						

Artefact category II in brackets
X and numbers in **bold** are based on basic sources,
x and numbers in plain are based on supplementary sources

Horizon 5 (1120s-c 1170)

Textile tools indicating the presence of women were found in nine of the find-bearing analytic units in horizon 5, covering the northern, middle and the southern town areas. Finds indicating the presence of young children were found on six of the find-yielding plots covering the northern and the middle town areas, and food processing was documented in 12 or 13 units, covering the three town areas. As shown earlier, the presence of the activities of textile production and food processing is considered well established, as the activities are mainly indicated in basic sources. The presence of children is documented through eight basic sources and is thus also considered well-founded. All in all, well-established settlements of a permanent character were reflected in the sources from 15 of the 24 find-yielding analytic units, covering all the three town areas and their presence is considered well-documented.

Table 72. *Horizon 5 (1120s-c 1170), sources for the character of the settlements*

Plot	Food and beverage processing	Textile production	Child's shoes	Toy-horse-figure	Toy-boat	Toy-sword	Whipping top (lathe-turned core)
6/B	**X (X)**	**X (X)**		**(1)**			**(1)?**
6/C	**X (X)**	**X (X)**	**(2)**	**1**			**(3)?**
6/D	**X (X)**	**X (X)**	**1 (5)**				**(1)?**
6/E	**(X)**	**(X)**	**(1)**		**(2)**	**(1)**	
6/F	**(X)**						**(1)?**
6/G	**X (X)***		**1 (1)**				
8/D		**(X)**					
20/A	(x)	(x)					
21/A	x						
26/A		**(X)**					
26-27/B	**(X)**						
26-27/BC	**(X)**	**(X)**					
27/C			**(1)**				
28/B	**(X)**	**(X)**		**(1)**			
28/C	**(X)**		**(1)**				
38/A	**(X)**						

Artefact category II in brackets
X and numbers in **bold** are based on basic sources,
x and numbers in plain are based on supplementary sources
* Only 0.55 % of the total number of artefacts (cf p 260ff)
? May have been used as a toy

Conclusions

From the available sources it is difficult to have a qualified opinion on the character of the settlements that most likely occupied at least some of the plots or units in the town area during horizons 2 and 3. From horizon 4 and onwards the presence of well-established and permanent settlements is well-documented. Well-established and permanent settlements were found in both the northern and the middle town areas during horizon 4. In horizon 5, well-established permanent settlements were documented in all three town areas.

PART III

THE SYNTHESIS

14 HOW, WHEN, BY THE INITIATIVES OF WHOM, AND WHY DID BERGEN EMERGE AS A TOWN?

Six part studies have now elucidated major initiatives and daily activities that took place in the Bergen area from the ninth century to c 1170. The insight and conclusions from the part studies are drawn upon in the synthesising discussions of how, when, by the initiative of whom and why Bergen emerged as a town. This is the theme for the last part of the thesis.

I have inferred that action in a hierarchic society like that of the early Norwegian central kingdom, was initiated top-down and bottom-up. Resourceful actors, the king or representatives of the king, took the top-down initiative, whereas the bottom-up initiative was taken by people from lower levels of society, here represented by 'the townspeople' and visitors of the town. Through the narrow time scopes represented by the horizons some of the initiatives and daily activities can be linked to historically known persons and the activities can be seen in the context of the wider society. Groups of actors are thus going to be linked to major initiatives and daily activities, adding 'by the initiative of whom' and also 'why' to the list of questions addressed.

The first questions to be addressed are how and when the town of Bergen first saw the light of day. Was Bergen founded or did the town grow organically out of an older urban settlement? If founded, how and when did this happen, and by the initiative of whom? And how and by whom was the town settled through the years?

How, when – and by whom?

Settlement traces have been located in two places in the Bergen area during horizon 1 (c 800-c 1020/30). Activity traces were found in Veisan and have been tentatively associated with a settlement where agrarian activities were carried out. The settlement was perhaps located at Holmen with its fields in the general area around Vågen Bay. In the middle town area, a pier was documented and interpreted as a landing-place. The pier was not part of a wider built-up area. When the northern town area was divided into plots, it seems that this happened on a piece of land not previously occupied by a non-rural settlement. The location of the plots was respected in the years to come, this shows that the layout of the northern town area was considered as an act of a fundamental character by the eleventh and twelfth century users of the Bergen area. The old Norse verb *setja* denotes the act of founding something from the ground and thus applies well to the act of laying out the northern town area (cf p 25ff).

What can the material assigned to horizon 2 tell us about the type of place that was founded? Land parcelled into plots is commonly seen as an indicator of the founded town or marketplace, the latter being characterised by occasional as opposed to permanent settlement (cf pages 20ff and 38). It cannot be determined on an empirical basis whether the initiator of the layout of the northern town area had a town or a seasonal market place in mind when regulating the land. However, because Bergen in time developed into a permanently settled urban centre I find it most likely that the initiator had plans for a town and

not a seasonal marketplace when laying out the land. Thus I presume that when plots were laid out in the northern town area the idea of a town was materialised and a town was founded from the ground in the Bergen area.

Who did this planning? Former research on the history of Bergen has shown that the Bergen area was most likely owned by the king before a town emerged here (Helle 1982, 77-79 with references). If this was the case, it is likely that only the king could possess the authority to divide the land into plots. Furthermore the plots seem to have been laid out according to an overall plan reflected in the regularity of the plot-widths. Both these factors suggest that a central authority - the king - should be seen as responsible for the layout of the northern town area. As we have seen, the dating of the first plot system in the northern town area is not based on very firm evidence, but an assignment of the system to horizon 2 (c 1020/30-c 1070), is the most reliable alternative at the present state of research (cf p 183).

The pit-house in unit 7/A was probably constructed about 1020 according to a wide ^{14}C date, the jetty on plot 6/D was constructed shortly 'after 1029', according to dendro dates from the construction. Both the pit house and the jetty were of the same orientation as the plots in their surroundings and it is reasonable to assume that both constructions were built in correspondence with the plot layout and not *vice versa*. It is therefore also reasonable to assume that the pit house and the jetty were constructed shortly after the regulation of the land. If so, the northern town area may have been part of a plan for a town that materialised sometime about 1020/30.

Between 1015 and 1026/27 Olav Haraldsson (later St Olaf) aimed to win recognition as king by the Norwegians and create a central kingdom. The Norwegian aristocracy seems to have been divided between supporters of Olav and a central Norwegian monarchy and those that wished to uphold the older system where the overlordship of a distant foreign (Danish) king was exercised through native lords. From the middle of the 1020s resistance to Olav seems to have grown. Norwegian aristocrats collaborated with the Danish/English King Knut den Mektige (Knut the Powerful), who came to Norway in 1028, gained recognition as king and drove Olav Haraldsson into exile. Norway then became part of Knut's Scandinavian Empire (1028-34) (Rumble 1994, 6). In 1030, Olav returned to Norway, but fell at the battle of Stiklestad, where people from Trøndelag, western and northern Norway are known as his opponents. Breaking the tradition of 'distant overlordship', Knut after a few years imposed his young son Svein (Swein) under the tutelage of his mother Alfiva (Ælfgifu) as king in Norway (1030). This direct rule and probable attempt at enlargening royal rights in Norway was probably less acceptable than distant overlordship for the native aristocracy and in the years between 1030 and 1034/35 a change of policy within the Norwegian aristocracy appears to have emerged. If we can trust the written records, the leading aristocracy now saw the advantages of an independent Norwegian central monarchy, a monarchy that was at service to the aristocrats. By 1034, Svein and Alfiva were forced to leave the country and soon after Olav Haraldsson's young son Magnus Olavsson was set up as king and sworn allegiance to by Norwegian aristocrats (Andersen 1977, 128-146; Sawyer 1994, 20-22).

If the date of the laying out of the land was about 1020/30, both Olav Haraldsson and Knut den Mektige or their representatives are possible founder-candidates. Can arguments that make one more probable than the other be presented?

During the reign of Olav Haraldsson the central kingdom was strengthened and more land than ever was under the king. Olav may have introduced royal administration and control on a local level, and he is known for his introduction of Christianity as the official religion in Norway (Andersen 1977, 134ff). The sagas Fagerskinna and Heimskringla relate that Olav founded the town of Borg (Helle and Nedkvitne 1977, 212), today's Sarpsborg in eastern Norway. Apparently, Olav was a person with wide-ranging ideas and he may have had the capacity to plan and found a town in western Norway. The historian Per Sveaas Andersen characterises the written sources on Olav as the richest of any medieval Norwegian king (Andersen 1977, 109). The fact that Olav is not mentioned in connection with Bergen in the otherwise rich written sources,

may count in disfavour of Olav as a founder here, but cannot be given decisive weight.

Knut is not known as a town founder in the written sources. The historian Alexander Rumble has listed datable political events in the reign of Knut, based on the written records (Figure 59). According to his studies there is no mention of events between 1028 and 1035 (Rumble 1994), this may indicate a lacuna in the records, and the lack of mention of Knut as a founder of Bergen should not be given decisive weight. England, to which Knut succeeded, had a complex urban network comprising towns with markets and administrative functions, as early as in the eleventh century (Hill 1994, 101). In his English background Knut could very well have found the inspiration for founding a town in other parts of his empire. During the reign of Knut plots were laid out in Lund in medieval Denmark and this town was thus redesigned (cf Andrén 1980, 49; Carelli 2001, 107ff). In Denmark, influence from England is seen in the organisation of the Danish church, in the introduction of a royal coinage based on the English pattern and probably in the administrative division of the land (Skovgaard-Petersen 1977, 191-204; Lund 1994, 27-46). There is no doubt that Knut was a king with wide-ranging ideas and initiative and as such may have had the capacity to plan and found a town in western Norway.

It seems that no decisive arguments can be presented pro or contra Olav or Knut through the kings' historical contexts, and the relatively wide date of about 1020/30 for the earliest documented activities on the plots cannot settle the question. What is the central conclusion here then is that the plan - probably for a town - was materialised and Bergen was probably founded when the northern town area was divided into plots by a king. According to the most plausible interpretation of the available sources, this most likely happened during the first decades of the eleventh century, that is in the years about 1020/30.

Who occupied and invested in the plots, who were the 'townspeople'? In order to elucidate these questions I shall discuss the material across horizons 2 to 5. Several circumstances indicate that activity and settlement on the plots in the town area were established through bottom-up initiative, and not under the direct control of the respective kings, during horizons 2 to 5. First of all according to the trends in the material, it took a long time before a majority of the documented plots in the northern and middle town areas were actually settled and used. This may in itself be an indication that the individual plot users from horizon 2 through horizon 5 built on plots when they wanted and, at least on some level, on their own initiative. Furthermore, there are examples that the individual plots were built on/settled independently of each other and not according to an overall plan, when a passage and a quay structure were built during horizon 4 on plot 6/C (B) to get better access from the rear part of the plot to the waterfront, a similar improvement of working conditions was observed on plot 26/A in the middle town area (B), using a different type of substructure as foundation. Passages and quay fronts identical to those constructed on plot 6/C during horizon 4 (c 1100-1120s) were later built on several plots along the Vågen waterfront, but not until horizon 5 (1120s-c 1170) (sites 6, 27, 28 and 29). These examples demonstrate individual bottom-up initiative from the plot users implying that private plot owners/users as opposed to the king should be seen behind the actual occupation of the plots in the town area from horizon 2 through horizon 5.

But who were the plot users - the townspeople? Or who were they representatives for? In early medieval Norway, giving away land or money was a common way of creating and securing alliances. Knut den Mektige is, as a relevant example, known for his large monetary gifts to Norwegian lords prior to 1028 (KLNM, IX 26-28). When the king during horizon 2 laid out the northern town area, he may have given plots to influential people in return for their past and future loyalty. When the king in early medieval Norway gave away land he also gave away the allodial rights to the land and the piece of land would thus stay in the family of the receivers for generations to come (KLNM, IX 26-28). This may probably also apply to the period under study here. According to written sources from the high and later Middle Ages, land in Bergen was then owned by private magnates, the king

England		Denmark		Norway	
	Archbishop Ælfheah's relics from London to Canterbury (8–11 June)	1025 1026	Ulf (regent) plots against Cnut. Battle of the Holy River (Sept.) against Anund Jakob of Sweden and Olaf Haraldsson of Norway	1025 1026 1027 1028	Cnut invades. Olaf Haraldsson driven out; takes refuge in Russia. CNUT KING
1024					
1025					
1026					
1027	Cnut visits Rome for coronation of Conrad II as emperor (March–April). Second letter to English subjects (on return journey). Expedition to Scotland; submission of Scots to Cnut	1027 1028	?Harthacnut king	1029 1030	Olaf Haraldsson returns and is killed at the battle of Stiklestad (29 July). Swein and Ælfgifu of Northampton regents ('Alfiva's time')
1028		1029			
1029		1030			
1030		1031			
1031		1032			
1032		1033			
1033		1034		1031	" " "
1034		1035	On death of Cnut, King Magnus of Norway attacks Denmark	1032	" " "
1035	CNUT DIES (12 Nov.). Harthacnut becomes king, Harold Harefoot regent			1033	" " "
1036	'Invasion' of the ætheling Alfred (?and his brother Edward). Alfred is blinded and dies at Ely	1036		1034	Swein and Ælfgifu driven out. Magnus, son of Olaf Haraldsson, proclaimed king
1037	Harold Harefoot becomes king. Emma exiled to Bruges (autumn)	1037 1038 1039	peace with Norway	1035	
1038	Archbishop Æthelnoth of Canterbury dies	1040		1036	Swein dies
1039	Harthacnut joins Emma at Bruges	1041		1037	
1040	Harold Harefoot dies (17 March). Harthacnut takes up kingship (June)	1042	Harthacnut dies. Magnus king	1038 1039	peace with Denmark
1041	£21,099 paid to the fleet. Edward the ætheling [the Confessor] arrives in England and is accepted as Harthacnut's heir			1040 1041	
1042	Harthacnut dies (8 June). Edward the Confessor becomes king			1042	

Sweden
*c.*995–*c.*1022 Olof Skötkonung king
*c.*1022–50 Anund Jakob king

Figure 59. *Select list of political events, 1024-42. Based on written records. (Modified from Rumble 1994, Table 1.1)*

or by the monastic institutions (Lorentzen 1952, 76; Helle 1982, 78, 281-284; Ersland 1994, 75-77). Ersland has shown that along the Vågen shoreline, in what corresponds more or less to the northern and middle town areas, land was mostly in private hands in the late Middle Ages (Ersland 1989, 241, 249, 271, 279; Ersland 1994, Figure 12, 75ff). Due to allodial rights attached to land, the ownership in the high and later Middle Ages may go far back in time, perhaps to the period studied here.

Returning to horizon 2 one may argue that if the king gave away at least some of the plots in the northern town area during horizon 2, this would explain why the plots in the horizon 2 plot system seem to have structured the width of the plots in the system introduced during horizon 3 (cf p 180ff). In fact, if some of the plots in the northern town area did not already have different owners before horizon 3, (c 1070-c 1100) the founder of the horizon 3 system could have been free to layout the northern town area without having to consider the earlier system. Accordingly I suggest that at least some of the plots in the northern town area were given away during horizon 2. The plots may, with reference to later medieval land ownership, have been given to influential people - in return for past and present loyalty. These people or their families may still have owned the plots when a new plot system was introduced in horizon 3 in the middle town area and the northern town area was re-regulated. The townspeople of early Bergen may thus have been magnates or their representatives.

How did the townspeople receive the king's idea of a town? Traces of occupation were found on a few plots during horizon 2, but pressure on building land was low. The scarce sources indicate that after the foundation hardly any major initiatives were carried into life by the townspeople. The king's plans were apparently not well received.

A new major initiative, horizon 3 (c 1070-c 1100)

The story of how, when and by whom Bergen was founded does not end here. Another major initiative was taken some years later, when a new plot system was introduced in the northern and middle town areas (cf Figure 33). The dating evidence is not quite satisfactory, but dating the new plot system to horizon 3 represents the

best-sustained alternative at the present state of research (cf p 183).

The middle town area was now probably parcelled into plots. In the northern town area the horizon 2 plot system was respected in terms of the width of the plots. The boundaries of the short side of the plots were, however, moved and focus seems to have shifted towards the shore of Vågen Bay. The new town plan may perhaps have included space for a church where St Mary's (site 23) was later built and for a thoroughfare, but this is not so well substantiated and should merely be considered as a hypothesis. Again, a king should be seen behind the initiative; the Bergen area was, as referred to earlier, most likely royal property (Helle 1982, 77-79 with references) so it is likely that only the king could parcel out the middle town area. The time span represented by horizon 3 corresponds more or less with the reign of Olav Kyrre (1066-1093). According to Heimskringla, Olav Kyrre founded Bergen (*sejta*) (cf p 25ff). The archaeological sources suggest that Olav did not found the town from the ground, rather he invested further in the townscape when parcelling out and including a virgin piece of land in the townscape. Furthermore Olav built Christchurch minor (site 3) and founded the Christchurch Cathedral (site 2) at Holmen, thus including this area in the townscape.

Along the same line of thinking as presented above Olav may, like his predecessor, have donated plots in Bergen to present and future allies among native magnates or other allies. According to Snorre Sturlason's Heimskringla, Olav gave land to his entrusted man Skule Kongsfostre in Bergen. This land stayed in Skule's family for years to come (Hkr 1911, 511; Holtsmark and Seip 1975, 584). Snorre was familiar with Bergen and Skule's descendants and was probably well informed on this matter, we should therefore be able to trust the saga here (Helle 1982, 105). This gives additional support to the suggestion that Olav gave away land in Bergen to present and future allies.

How did the townspeople receive the king's plans for a town? According to the general trends in the material assigned to horizon 3, most of the occupied plots were located along the Vågen shoreline. Along Veisan some plots were most likely still vacant, and at the foot of Fløyfjellet settlement was only seen at one site. Along the Vågen waterfront documented buildings were constructed above the tidal zone, indicating low pressure on building land. In conclusion, one is left with the impression of little initiative from the hands of the townspeople. It seems that the king's plans were not so well received by those that were given a plot. With the king's investments at Holmen and his division of the middle town area into plots, the main investments in the new town were apparently in the hands of the king.

Horizon 4 (c 1100-1120s)

During horizon 4 several monumental buildings were initiated at Holmen as well as in the northern and middle town areas and at Nordnes. Horizon 4 coincides more or less with the reign of Øystein Magnusson (1103-1123) and Sigurd Jorsalfar (1103-1130). Øystein has been ascribed as the founder of the Church of the Apostles (site 4) and a large timber hall (site 5), both at Holmen. He is also ascribed as the founder of the Munkeliv Benedictine abbey at Nordnes (site 43) and as the possible founder of the Church of St Nicholas in the middle town area (site 23). With the foundation of Munkeliv one may argue that the Nordnes area was added to the townscape. The possible predecessor of the standing St Mary's (site 23) and the pier at site 14 may possibly also belong to horizon 4. According to archaeological investigations the pier represents the first of many generations of a thoroughfare, a street. Every time the street was rebuilt or maintained, construction work was carried out according to one overall plan and in one turn. The thoroughfare and constructions to either side of the street were built independently of each other. This suggests that the street was a common thoroughfare, an *allmenning*, administrated by the 'public' as opposed to private individual owners (Marstrander 1983). In later sources the common thoroughfares in Bergen are referred to as the king's patrimony (NgL III 25; Helle 1982, 79, 282). Seen together with the archaeological observations, this may suggest that the king should be seen behind the construction of the common thoroughfare and its predecessor, the

pier. As we shall see below, the standing Church of St Mary may be tentatively associated with a royal initiative. If a king was involved in the foundation of the standing St Mary's during horizon 5 it is likely that a king was also involved in the possible predecessor.

St Nicholas', the pier and the possible predecessor to the standing St Mary's are assigned to horizon 4 as supplementary sources. Even if one or all of these sources are erroneously associated with horizon 4, it is still well-documented through the remaining sources that further investments in monuments, institutions and on the infrastructure of the town were made in Bergen on the king's initiative.

Regarding major initiatives taken by the townspeople, some plots along Veisan were now occupied, and along the Vågen shoreline occupation was indicated on most plots. Within the plots in the northern town area there was apparently low pressure on building space, as the documented buildings were all confined to the area above the tidal zone or had just barely crossed into the tidal zone. In the middle town area there may have been pressure on building land. On some plots along the Vågen shoreline substantial improvements of working conditions on the beach were carried out, and in some cases passages and quay structures were built. In the northern town area, at the foot of Fløyfjellet, there was settlement but still ample building space. Well-established households of a permanent character were documented on several plots. All in all, it seems that pressure on building land in the town area and within the plots was not intense. However, investments were made to improve working conditions in the tidal zone on the Vågen-bound plots and permanent households were established throughout the northern and middle town areas.

To sum up, the king now invested further in Bergen, founding ecclesiastic institutions and including the Nordnes area in to the townscape. Townspeople on their side invested in the town plots by establishing permanent households and improving working conditions by the Vågen shoreline.

Horizon 5 (1120s-c 1170)

The period represented by horizon 5 falls more or less within the time of the civil wars where joint kings and claimants to the crown fought each other. When discussing the initiatives of the king in the following it is only possible to pin a name on the king in a few cases.

Two monasteries and a church were founded in the Nordnes and the Nonneseter areas and settlement was documented in the southern town area for the first time. The southern town area and the Nonneseter areas were in this way included in the townscape. Furthermore, seven churches were built or rebuilt during horizon 5. As in the northern and middle town areas it is likely that the king owned the Nonneseter area and the land in the southern town area (Helle 1982, 77ff with references), and therefore only the king could possess the authority to include these areas into the townscape. The Church of St Olav on the Hill (site 25) was built by King Harald Gille (Gilchrist) after his victory over King Magnus the Blind in 1134-1135 (cf p 130). Regarding the initiators behind the remaining monumental constructions the sources are vague, but some suggestions can be made.

Based on records of later medieval land ownership, the Nonneseter Convent (site 46) was then in posession of land formerly owned by the king. Helle suggests that the convent may also have been founded by royal initiative (Helle 1982, 140) I will follow this interpretation. St Johns abbey on Nordnes (site 44) was of the Augustian order, and it has been suggested that the abbey was founded as a support for the cathedral church at Holmen (Helle 1982, 142 with references). As the Christchurch Cathedral (site 2) was under construction due to royal initiative, it would seem likely, if we hold as a premise that the augustinian abbey was founded as a support for the cathedral, that the king was also involved in the foundation of St John's.

Based on the size of the churchyard, the size of the church buildings, the elaborate west front of the standing St Mary's (site 23) and a possible large west front on St Cross (site 40), it has been suggested that the king, in collaboration with the townspeople founded (the standing) St Mary's and St Cross (Lidén 1993, 78). I have

argued that space for a church where St Mary's was later built may have been part of Olav Kyrre's town plan/ the plot system introduced in horizon 3. This suggestion is not so well-founded empirically, but would certainly support the notion that the king was somehow involved as an interested party when the standing St Mary's was erected. The correct east-west orientation of St Cross implies that the church was constructed while there was still ample space for the building and its churchyard, and this may perhaps suggest that St Cross was part of a superior town plan when the southern town area was included in the townscape. If so, this may support the idea that the king was involved also as a founder also of St Cross. Along the same line of thinking the orientation of St Olav's in Vågsbunnen (site 39) might indicate that the church was part of an initial plan for this town area. Therefore, if the town area, as suggested here, was included in the townscape by initiative of the king, the king might well be associated with this church. The fact that the king was probably still the owner of the area around St Olav's in the high and late Middle Ages (Helle 1982, 78; Ersland 1994, Figure 12, 75ff) may support this notion. In addition, data from site 38 suggest that the area by St Olav's was used under strict control; no garbage was dumped here during the first phases on the site. Furthermore, a piece of jewellery made of cut quartz crystal and found in the construction layers of the phase following horizon 5, may have belonged to a person of high social status (Komber, Dunlop, Sigurdsson, and Hjelle 1994, 216). All in all, the sources may imply that St Olav's in Vågsbunnen was founded involving royal initiative. All Saints in the Nonneseter area (site 45) (S) is mentioned as a royal chapel in later sources (Helle 1982, 145 with references) and may therefore have been founded on royal initiative perhaps as early as horizon 5.

Lidén suggests that St Columba (site 33) (S) and St Peter's (site 24) (S) were built as corporate churches. The suggestion is based on the name of the patron saint for St Columba and on the incorrect orientation of St Peter's (Lidén 1993, 79). The circumstance that St Peter's apparently was built on two 'model plots' in the northern town area (cf p 180ff) shows that the church was not part of the plot system that was probably laid out in horizon 3 by the king. This may support that the church was built by one or more 'private' founders. Since both churches are classified as supplementary sources for horizon 5, no strong conclusions can be made as goes the erection of 'private churches' during horizon 5, and the question of the founders of St Peter's and St Columba's cannot be settled on firm evidence.

Even if some of the initiatives ascribed to the king above were not actually associated with the king, but rather were a result of bottom-up initiatives it ought to be a trustworthy tendency in the material that considerable investments were made in the town by the king(s) during horizon 5. A top-down initiative with a connection to the king may thus be argued for the inclusion of new land into the townscape and for the foundation of several of the monuments known from the horizon. A bottom-up initiative or 'private' founders may perhaps be seen behind at least two of the churches.

From the hands of the townspeople, secular settlement was seen in the whole town area (Figure 27 and Figure 39). Along the Vågen shoreline almost all the investigated plots/sites in the northern and middle town areas now appear to have been occupied. Only at site 17 in the middle town area, was there a lack of traces of occupation. Along the Vågen shoreline buildings were constructed throughout the whole length of the plots, and the tidal zone was taken into use. This shows pressure on building land here. Settlement had expanded into the Vågen basin seeking deeper water on several plots, achieving new building space and indicating high pressure on the building land. At the foot of Fløyfjellet, secular settlement had expanded some in the northern town area but there were still major open areas with vacant building land. Between site 30 and the churches of St Nicholas (Site 32) and St Columba (Site 33) the few sites investigated were not settled, indicating that also this area was still vacant.

In the southern town area settlement was only documented at one site. The sources in the southern town area are mostly well-founded, but the representativity of the sources here is, as discussed earlier (cf p 157), not satisfactory. The

orientation of the churches in this part of town may indicate that the area was not densely built on when the churches were established in horizon 5. This may in turn indicate that there was not much pressure on building land in this part of town. Well-established households of a permanent character were documented in all three town areas.

To conclude, the king(s) seem to have invested further in the town by adding two new areas to the townscape and founding several ecclesiastic institutions. The townspeople now invested more extensively in their town plots. From the hands of the townspeople an intensified pressure on secular building space was seen in the northern and middle town areas, especially along the Vågen waterfront. The townspeople perhaps also invested in churches.

Conclusions

The story of how, when and by the initiative of whom contains a successive chain of major events. Bergen was probably founded through royal initiative on land where agricultural activities were carried out. At the present state of research it seems most likely that this happened when plots were laid out in the northern town area, in the years around 1020/30. The idea of a town was, it seems, not well received by the 'townspeople' - probably magnates - who were given plots in the planned town. The town area was thus barely taken into use. During horizon 3, corresponding to the reign of Olav Kyrre, it appears that the northern town area was redesigned, Holmen and the middle town area were added to the townscape, and monuments were initiated at Holmen. Plots in the town area were probably given to native magnates or other allies of the king, but again the idea of a town was apparently not so well received by the users of the town plots; it seems that pressure on building land was sparse in the town area. During horizon 4, Øystein Magnusson built a royal hall at Holmen and founded several ecclesiastic institutions including one at Nordnes, thereby adding this area to the townscape. The townspeople were now getting more active on the plots and well-documented settlements of a permanent character were established. During horizon 5 the southern town area and the Nonneseter area were added to the townscape, and two monestaries and perhaps as many as eight churches were built, most of these initiatives were probably by the king. The townspeople invested more intensively in their town plots and perhaps also built some of the churches. It is interesting to notice how the town grew in steps and expanded physically, as still more areas were included in the townscape (Figure 60).

Why was Bergen founded? And how did the town develop?

Why was the town founded and why did the kings, and in time also other actors, invest in the town? When listing important deeds carried out by kings or other important actors, the medieval chroniclers always emphasise towns that were founded or strengthened, churches and monasteries that were built or received large gifts. There should be no doubt that, in addition to practical reasons for such investments, prestige as well as other forms of social profit were important motives when founding a town and investing in monuments. For the townspeople investing in, or perhaps just living on a plot, a town plot may also have had more than practical purposes; the town may for instance have attracted people in search of a different lifestyle.

For the king, founding and investing in a town must be seen on a practical level as one of several means in a larger plan to centralise activities and/or functions that hitherto were decentralised, or to introduce new activities or functions. Such activities and functions may have been economic, jurisdictional, administrative, religious or cultural (cf p 20), military functions may also have been relevant. The motives for founding and investing in a town vary according to the historical context of the initiators, but it is likely that 'the larger plan' at any time would be advantageous for the initiator. For the townspeople using a plot in the new town may have been an asset. Or perhaps the king may have implemented strong incentives to encourage the plot owner to take a town plot into use. The king(s) must have had sufficient resources not only to materialise the physical infrastructure of the planned town,

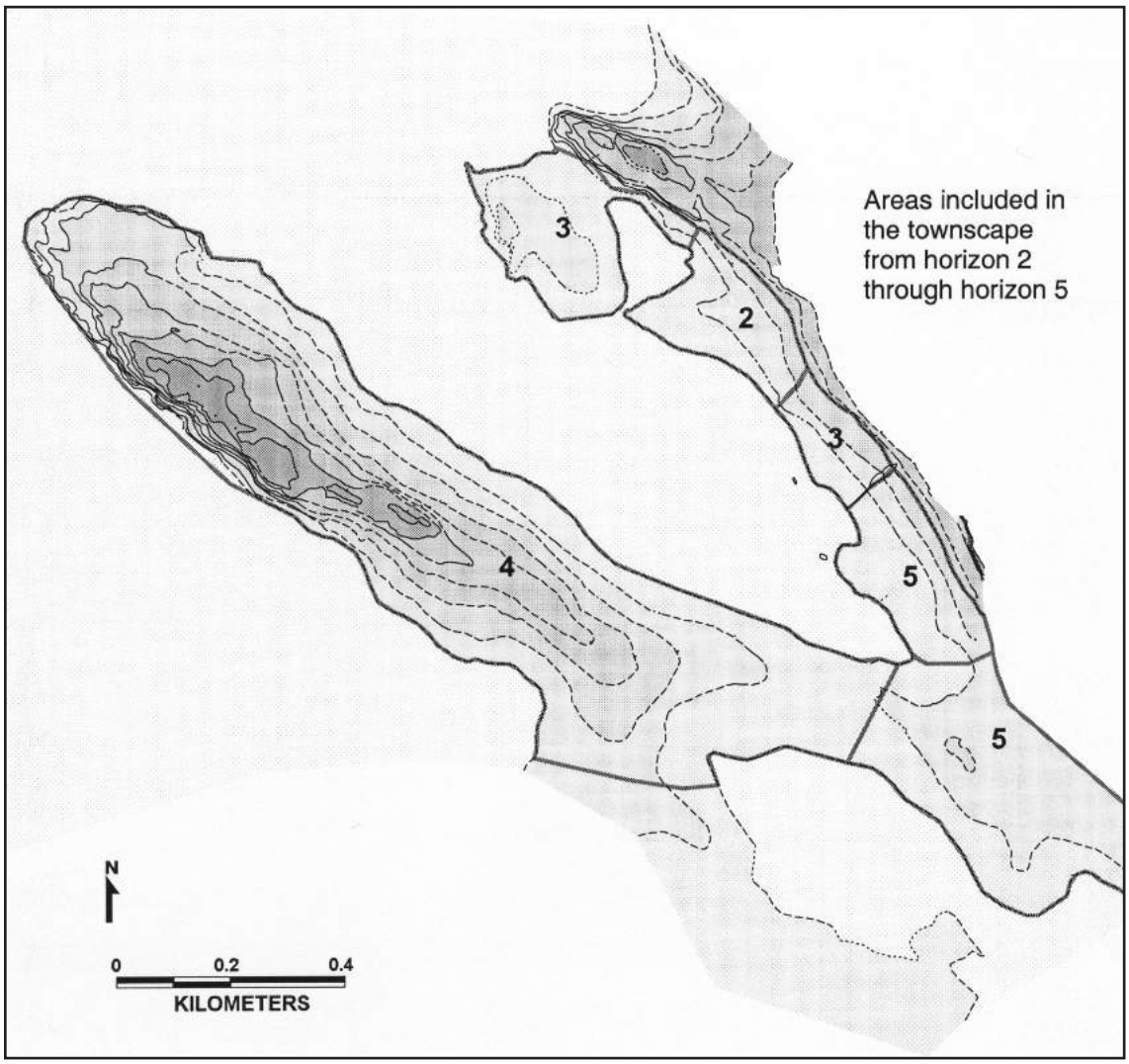

Figure 60. *Areas included in the townscape from horizon 2 through horizon 5*

but also to make people use the town. Positive as well as negative means of enforcement may have been used.

In order to elucidate why Bergen was founded and invested further into the intended and actual functions of the town are discussed. Focus is mainly on the practical functions. The intended functions are those that the king(s) had planned for the town, whereas the actual functions are those that were carried into life by townspeople or visitors of the town. It is reasonable to assume that the townspeople in the early years used the plots in accordance with the functions intended by the king(s). In time the town may have begun to live a life of its own and new functions may have been introduced.

I hold as a premise that sources that can be associated with royal initiative reflect the intended functions of the town, whereas initiatives carried out by the users of the plots and daily activities carried out in the town reflect the actual functions of the town. Major initiatives and daily activities carried into life by the actors are seen in relation to the actors' contemporary historical context.

The new town in the Bergen area, horizon 2 (1020/30-c 1070)

What can be understood about the intended and actual function of the planned new town in the Bergen area through the sources for horizon 2 (1020/30-c1070)? Occupation has only been documented on a few plots or units and the sources could not provide a reliable picture of daily activities actually carried out there. In other words, traces of settlement and activity assigned to the northern town area in this horizon are so vague that we can hardly establish how the area actually functioned in a practical sense through these sources. I will thus turn to 'circumstantial evidence' that may shed some light on the intended function of the area in horizon 2. These are: (1) The circumstance that at least some of the plots were probably given away to magnates, (2) the physical layout of the plots in the horizon 2 system and the bottom-up use of the plots, and (3) the townspeople's investments in improved working conditions on the waterfront.

Ad (2): I find that the facts, that palisade fences delimited the plots and the suggested bottom-up or 'private' use of the plots, both imply that the functions of the plots were intended to include 'private' activities or activities carried out by the individual plot owner - as opposed to public or official business or activities supervised closely by the king, or intended to serve the king directly. It is therefore unlikely that the northern town area was regulated for for example military purposes.

Ad (3): at first sight the horizon 2 plot system appears to be directed towards the safe natural harbour of the Veisan inlet and gives the impression that access to the sea was important. However as we have seen earlier, the landing conditions in Veisan were, probably unfavourable for larger ships. May this imply that transport of goods by boat was considered unimportant when founding the town? This is hardly a trustworthy implication from the material. Because, when the location of a future town was chosen one could, most likely, not pick out just any piece of land. The circumstance that the king, as we have seen, probably owned the Bergen area and the fact that the royal estate Alrekstad lay close by may have been more important for the localisation of Bergen than a harbour with optimal landing conditions. Furthermore, long traditions for using the Veisan inlet as a harbour may have existed; the inlet may still, or until recently, have served as a landing place for the suggested agrarian settlement here. The relatively poor natural landing conditions in horizon 2 should thus not be given too much emphasis when judging the king's plans for the town.

According to the main trend in the material, occupation during horizon 2 was mainly located by the shores of Veisan and Vågen. The jetty at plot 6/D indicates that access across the tidal zone to the waterfront was considered important by the users of the plot. Assuming that in the beginning the townspeople used their plots in accordance to the king's plans, their investments in better working conditions by the waterfront may reflect the king's initial plans for the town.

Thus, the following can be inferred about the intended function of the town plots in horizon 2: 1) The plots were probably going to be used by magnates. 2) Activity of a private character was going to be carried out there. 3) Good working conditions on the waterfront were important for the activities. In addition I hold as a premise that the king would benefit from such activities if it was centralised.

Christophersen has suggested that the kings of the early Norwegian central monarchy sought to control the redistribution of goods traditionally controlled by the local elite. By transferring the redistribution of goods from the local elite's staples to new urban centres the king would both weaken the local elite and he could get his share of the wealth (Christophersen 1989, 129, 144). This hypothesis presupposes a strong central king and the use of negative means of enforcement. Others have suggested that the king attracted merchants to the early towns by offering plots and protecting market peace. The king would profit from this by collecting dues in return for protection (eg Skovgaard-Petersen 1977, 140ff; Ros 2001, 19). This hypothesis offers an example of a positive means of enforcement. The two hypotheses may be regarded as exponents of different ways of understanding social change (cf p 33ff) and there is a disagreement in their understanding of the king's role and more

subtle motives for the town foundation and his means of enforcement. But both hypotheses see 'the redistribution of goods' or trade as important functions of the early towns. A hypothesis that Bergen was founded by the king as a central place for long-distance trade to be carried out by the local elite, finds an echo in the 'circumstantial evidence', that is the suggested private ownership of the town plots, the private character of activities intended for the town plots, and in the townspeople's investments in improved working conditions on the waterfront. Accordingly I suggest that one of the king's intentions was to establish a central staple where goods, disposed of by individual plot owners - probably native magnates - were collected and entered in a national or international trading network. Soapstone vessels, dark grey schist hones, and Hyllestad quernstones from western Norway (Mitchell, Askvik, and Resi 1984; Myrvoll 1986; Christophersen 1989; Jensen 1990; Carelli 2001; Baug 2002) may have been potential goods. The king could benefit from this arrangement by collecting dues on the protection of market peace or trade.

In addition, the king could benefit from a centralisation of the collection of the king's own dues and *veitsler* to Bergen (cf p 21ff). Surplus from such incomes could be entered in an international trading network when shipped out from Bergen. If the pier in analytic unit 30/A represented a landing-place for the royal estate at Alrekstad it may already have functioned as a landing-place for royal incomes paid in kind and it may well have been intended to have a new role as the king's landing-place by the town of Bergen. Unfortunately, the available sources cannot reveal the intended or actual function of the pier and associated constructions, so the function of the pier in relation to the planned new town is merely hypothetical.

If we consider the location of Bergen on a macro scale, the area was well located to serve as a central staple for western Norway. Bergen was closer to England and the continent than Trondheim. The king may have seen the advantage of a town closer to Europe and perhaps also at some distance to Trondheim and Trøndelag, where the powerful Lade earls resided. In the eleventh century Viking raids as a way to raise an income had to be replaced by other means for kings or pretenders to the crown. The early central kings thus needed to find new ways of raising an income to secure their position in society (cf Bagge 2002, 204-207). Investing in a new town in western Norway may have been an attempt to raise an income.

The circumstance that the planned town - apparently - was barely taken into use during horizon 2 calls for further discussion. A piece of land divided into plots is not 'a town' until people use it as a such. Whatever the motives behind founding Bergen, the foundation must have been just one of several initiatives planned by the king, because the suggested centralisation of functions that were traditionally in the hands of magnates, would have to include a new set of rules for these activities. However, considering that the plans according to the trends in the material were not a real success it is probable that the founding king did not possess sufficient resources for the new rules to be effected or accepted. The period around 1020/30 was rather turbulent and neither Olav nor Knut were in power for long. There may not have been enough time for new traditions to be established within the time span of Olav's or Knut's reigns respectively. Furthermore, the young King Magnus Olavsson, who succeeded Knut, was under the tutelage of Einar Tambarskjelve of the Lade earls. This strong association with Trøndelag and Trondheim may have halted further investments by the king in the Bergen town project.

To sum up, I suggest that the king about 1020/30 planned and founded a town in western Norway. The hypothesis that one of the towns planned functions was to serve as a centre where magnates and the king could have goods in a long-distance trading system finds some support in the sources. It is suggested that the king planned to collect dues in return for protection of market peace or as a tax on trade. The king, however, did not have the sufficient resources to carry his plans into effect within the short time span of his reign.

Olav Kyrre's Bergen, horizon 3 (c 1070-c 1100)

When Olav Kyrre invested further in Bergen during horizon 3. What were his intentions with

the town? And how did the town actually function? Olav initiated the construction of Christchurch Minor and the Christchurch Cathedral at Holmen, he re-designed the northern town area and included the middle town area in the townscape.

The investments at Holmen have been seen as part of a plan for Bergen to become the bishop's residence and an ecclesiastic centre for western Norway (Helle 1982, 90 with references). The combination of royal seat /bishop's seat is common in the Nordic countries, in Orkney, and in Ireland. Against this background, Lidén suggests that Olav had intentions of building a royal residence at Holmen in addition to the churches he initiated there (Lidén and Magerøy 1990, 10). If the pier at site 30/A was originally a landing-place for the royal estate at Alrekstad, and if the pier was intended to function as the king's landing-place during horizon 2 as suggested as a hypothesis above, then the fact that Olav Kyrre's plan probably included the pier into the townscape during horizon 3 lends some support to Lidén's hypothesis. Because if the royal pier was included into the townscape, the functions of this pier most likely would have had to be relocated to somewhere else - Holmen being a likely alternative. Again, the sources are too vague for any strong conclusions to be made. However they may lend some tentative support to the hypothesis that Olav also had a royal administrative centre in mind when investing further in Bergen. If so, he may also have planned for Bergen to be the kings staple for royal dues paid in kind.

Olav also invested in the town area: I have suggested that, in the horizon 3 plot system, space may have been reserved for a street and for a church where St Mary's was later located. The plot for St Mary's was clearly located in the most central place in the northern town area and must have been intended for a 'town church' as opposed to the churches at Holmen. The existence of space for the street and a church already during horizon 3 is not so well-founded empirically, so too much emphasis should not be placed on these sources. Nevertheless, it seems well-founded that the northern town area was re-designed, and with the layout of the middle town area the town also grew considerably, and now extended at least to the area that was occupied by the pre-urban landing-place at site 30. It is thus clear that Olav invested in the town area and must have had plans for the town area in addition to the plans for a bishop's seat and the suggested royal administrative centre.

I have argued above that the town plots in Olav Kyrre's Bergen were probably given away to influential allies, most likely native magnates. But not all plots were occupied and they were not used in a similar way. I have suggested that the plots were intended for 'private' activities as opposed to activities directed by the king. Olav's plot system was seemingly directed more towards the Vågen Bay than the older system and the need for more plots with better landing conditions may have triggered the planning of the middle town area when investing further in Bergen. Again, investing in a town must be seen as part of the king's larger plan to centralise new or old functions. Following a similar line of thinking as above, the focus on favourable landing conditions and the private character of activities to be carried out on the plots, may suggest that Olav like his predecessors planned Bergen as a central staple where goods, disposed by magnates, could be entered in a long-distance trading network. According to ecclesiastic rules bishops should have their seat in a town (Helle 1982, 111). Olav's investments in the secular parts of town therefore correspond well with a greater plan for Bergen to become a bishop's residence.

How do the king's suggested plans correspond to the actual function of the town? Settlement and activity traces in the town area are vague in horizon 3, but as we have seen some of the plots in the northern and middle town areas were settled. The distribution of occupied plots indicate that the Veisan-bound plots were 'second choice' as opposed to Vågen-bound plots and that better landing conditions were considered important by the townspeople. The priority of landing conditions may indicate that sea transport in general was part of the townspeople's strategy for using their plots in Bergen.

At Holmen professional large-scale woodworkers and to some extent also large-scale stoneworkers must have worked on the monumental sites. These people probably belonged to the king's

household and their presence must have had a certain synergetic effect on the development of the town. Where the workers lived, and their actual importance for the growth of the town can, however, not be established. The sources for the actual function of the town area are vague, hinting that sea transport was considered important for activities carried out by the townspeople.

To sum up, it is suggested that Olav Kyrre invested further in Bergen, planning the town to become an ecclesiastic and perhaps also a royal staple/administrative centre. He may also have planned the town as a central staple for goods disposed by magnates and entered in a long-distance trading network. The scarce sources imply that sea transport was important for using a town plot. No factual activities that could serve as a fundamental economic basis for the town have been recorded. The limited extent of the activities in the town area implies that the royal plans for the town area were not successful. The townspeople apparently did not have strong incentives to use a plot in the new town. Either the king did not follow up his plans for activities in the town area with the necessary means of enforcement, or he did not possess the resources to apply the new rules and develop new traditions for using the town plots.

Bergen during horizon 4 (c 1100-1120s)

As we have seen, the king invested substantially in Bergen during horizon 4 (c 1100-1120) as well, and the townspeople started using plots to a wider extent than before. What were the king's plans for the town? Øystein Magnusson's construction of the great hall at Holmen shows that a royal residence, and along with it probably royal administrative functions, were now located in Bergen. He thus introduced - or perhaps strengthened already existing – royal functions of the town. The foundation of the Church of the Apostles at Holmen, the Munkeliv Abbey at Nordnes and probably St Nicholas in the middle town area suggests that Øystein also wished to strengthen Bergen as an ecclesiastic centre. The location of the Church of St Nicholas in the geographical centre of the existing town area may be Øystein's contribution to the town plan or the town's infrastructure as one may argue that the church ties the northern and the middle town areas together across the natural topographical barrier of the protruding rock on the coast of Vågen. St Nicholas was the patron of sailors and merchants and this choice of patron saint for the church may imply that Øystein planned to encourage trade in Bergen (KLNM, XII 288-291; Helle 1982, 116).

Why so many churches? Not only Øystein but also the other twelfth century kings probably invested strongly in ecclesiastic institutions. How can the kings' investments in churches and monasteries in Bergen be interpreted? It has been argued that the many new churches built during the twelfth century in Bergen bear witness to the strong physical expansion of the town (Helle 1982, 149; Helle 1992, 26). Here there is a presupposition that the churches were built as 'parish' churches to serve an already existing population. The limited pressure on building land in the town areas up until horizon 4 and, in the case of the southern town area, probably also into horizon 5, however, suggests that the churches were built while the town's physical extent, and thus probably also its population, was still quite limited. Accordingly, the churches cannot have been built to serve an already existing population. Lidén has discussed the original status of the churches built or re-built during horizon 5. On the basis of the size, shape and location of the churches he suggests that St Mary's and St Cross were principal churches used by the townspeople in general. The other churches might have been built as votive churches (St Olav's on the Hill was built to fulfil a vow) or as churches for individuals or groups of people who wished to have their own place of worship (Lidén and Magerøy 1990, 17ff; Lidén 1993). Both Helle and Lidén thus implicitly suggest that the churches were built mainly to serve as places of worship.

As we have seen, Øystein invested in one or perhaps as many as three churches and an abbey, and in horizon 5 the king(s) invested in perhaps as many as five churches in addition to two abbeys. It is likely that there may have been other more subtle motives behind the initiatives than mere dedication to Christianity and the aim to provide the townspeople with a place of worship.

With references to Torstein Veblen's theory

of 'conspicuous consumption' the archaeologist A Jan Brendalsmo suggests that building large stone churches in Trøndelag in the eleventh and twelfth centuries was a way for the church founders to show off the extent of their social position or capacities (Brendalsmo 2001, 262ff). The many twelfth century churches (mainly stone) in Bergen were built at a period of time when several joint-kings, rivalling kings, and pretenders to the crown naturally had a strong desire to show off their social capacities. It may therefore not be irrelevant to explain the many churches in Bergen in relation to conspicuous consumption. However there may also be additional explanations.

Until at least the middle of the twelfth century the church founder/patron (private or the king) had great influence on matters concerning the election of priests and perhaps more importantly on matters concerning the disposal of land and income under the church (Helle 1995, 22-23; Krag 1995, 201-203). The churches may have had incomes from land (Helle and Nedkvitne 1977, 221; Helle 1982, 151) and after the first decades of the twelfth century perhaps also tithe (Andersen 1977, 335ff). One may argue that, if the king established churches and other ecclesiastic institutions in the town and gave them land to collect income from, he created a new group of landowners. Since these landowners had their basis in the town they would probably use the town as a staple when canalising surplus from dues into a long-distance trading system. This would in turn strengthen the town's position as a staple and a centre of commercial activities involving among other the export of stockfish from northern Norway to Europe (see further below). Establishing churches in the town could thus be the king's means of enforcement to make the wheels go round. Explanations of the great ecclesiastic investments from the kings' side may also be found along this line of thinking.

This explanation finds parallels in Anders Andrén's 'congested countryside' theory, which on a more general level applies to Scandinavian towns that emerged between c 1000 and 1150. Andrén sees the erection of so many churches in Scandinavian towns during this period as a product of the central kings' de-centralisation of the right to execute sovereignty (Andrén 1985, 77-81; Andrén 1989). The kings' investments in Bergen, including the foundation of the many churches and other ecclesiastic institutions in the town, should not be seen in isolation. On a more general level they should be seen as investments made in connection with overall strategies, where probably a strengthened position for the central king(s) is crucial.

Returning to Bergen and the period represented by horizon 4, Øystein is known as the founder of churches and other monuments along the sailing route between Bergen and the fishery districts in northern Norway. This has been seen as an investment in facilities and infrastructure between the rich fisheries in the north of the country and Bergen (Helle 1982, 116, note 78). Øystein and his brother Sigurd Jorsalsfar taxed people who went fishing in Vågan in northern Norway (F, XVI 2; Helle 1982, 116) and obviously had vested interests in developing the fishing activities. In the light of this, Øystein's investments in Bergen may also be seen as part of a plan to strengthen and control the export of stockfish to Europe. In addition, following the arguments presented for the earlier horizons, it may still have been in the king's interest that Bergen functioned as a staple for goods in the hands of magnates.

Does the actual function of the town area correspond with the king's suggested plans? As seen above, building activities on the town plots indicate that pressure was not intense on building space from the townspeople; substantial efforts to improve working conditions on the shore, and access to the waterfront are, however, discerned. The first tool of trade was found in horizon 4 and the trade-indicating sources imply that trade with bulk commodities, both internationally - as indicated by pottery from today's Low Countries and Germany - and along the Norwegian coast, was now part of the townspeople's economy. The saga's description of Ragnvald Kale's journeys adds English harbours to the list of places that had contacts with Bergen. Trade from the town plots may reflect that goods were now transferred through the magnates' town plot in Bergen and into a long-distance trading system. Potential goods may, as earlier, have been soapstone ves-

sels, dark grey schist hones, and Hyllestad quernstones, now stockfish was probably added to the list of goods. Trade from the plots in the town area corresponds well with Øystein's suggested plans.

The sources also suggest that professional shoemakers, metalworkers and antler, bone, horn and whale/walrus bone artisans worked in Bergen. They may either have been resident part-time artisans or ambulating artisans who visited Bergen for shorter periods. Either way, none of the activities can be seen as significant determinants for the rise of the town, as the production was so limited that it must have served an inter-urban market only.

To sum up, Øystein Magnusson may have planned to strengthen Bergen as an ecclesiastic and royal administrative centre. The king's investments in Bergen can also be seen as a positive means for his assumed plans to influence or control the export of stockfish from the north of Norway to Europe and his plans to strengthen Bergen as a staple where goods, in the hands of magnates, were directed through Bergen and into a long-distance trading network. The king's large investments in monuments and ecclesiastic institutions can also be seen as his attempt to show off his social capacity. Seen together, the sources show that the townspeople of Bergen were now involved in a wider international network where commodities were exchanged. The king's plans for the town area thus seem to have been quite successful. Øystein's investments in Bergen and between Bergen and the fisheries to the north may perhaps have triggered the growing interest among the magnates to use a town plot. The planned townscape was thus slowly developing into a living urban community.

Bergen during horizon 5 (1120s-c 1170)

Why did the kings invest further in Bergen? As we have seen the sources are vague regarding the initiator(s) behind most of the monuments founded during horizon 5. Kings may, however, be tentatively connected to many of the monuments and should most likely be seen behind the incorporation of the southern town area and the Nonneseter area into the townscape. If St John's abbey was founded on royal initiative this may be interpreted as yet another royal investment in Bergen as the bishop's residence. The relics of St Sunniva were transferred to Bergen in 1170 and placed in the Christchurch Cathedral (MHN 1880, 151-152). The construction of the cathedral may then have reached an end and the bishop's seat was formally attached to Bergen (Helle 1982, 92, 146; Lidén 1993, 10). The king's possible investment in the Nonneseter convent can also have been intended to strengthen Bergen's role as an ecclesiastic centre.

Seven churches were built or rebuilt in the town area and in the Nonneseter area, five of these may be tentatively associated with royal initiatives and are seen as the king's investment in the town. As argued above, the various kings' substantial investments in ecclesiastic institutions can be seen as both a way to show off social capacities and as a positive means to trigger and encourage trade activities in the town. The presence of the *gjaldker*, a royal delegate who collected income for the king in Bergen in 1159 (Hkr 1893-1901, 604; Holtsmark 1961, 692; Helle 1982, 8) shows that the townspeople now paid dues to the king, and implies that the king had an interest in blooming commercial activities. The inclusion of the southern town area into the townscape is also interpreted as a royal investment in the town. Analysis of ownership to land in medieval Bergen shows that the king still owned a large part of the southern town area in the thirteenth century (Ersland 1989, 257ff; Ersland 1994, Figure 12). This implies that the king did not give away land in large parts of this town area. Does this suggest that the king was now planning to engage himself in activities of a more 'common' character, activities that could not be conducted from Holmen?

In the town area, almost all the investigated plots/sites in the northern and middle town areas appear to have been settled in horizon 5. However, there was probably not much pressure on building land in the southern town area. Though Veisan was not suited as a harbour any more, several plots along Veisan now seem to be occupied. The same applies to the area at the foot of Fløyfjellet in the northern town area. The northern and middle town areas were thus getting more densely occupied and even less at-

tractive space was filled up. A plot in Bergen had apparently become an asset worth using for the townspeople. The large number of plots where well established and permanent settlements are documented supports this picture. The likely presence of privately founded churches may suggest that the town was now so established that townspeople invested in activities beyond those conducted from their individual plots.

In the northern and middle town areas substantial investments in harbour facilities suggest that good landing conditions for contemporary carriers were considered important for the townspeople. Trade was conducted both internationally and along the coast of Norway as witnessed by coastal carriers on their way to Trondheim from Bergen during horizon 5. Artefacts indicating direct or indirect contacts to eastern and western Norway and found in 16 and 7 of the 24 artefact-yielding analytic units respectively, also add to this picture; as do the international contact-indicating finds retrieved from 22 of the 24 artefact-yielding units and with a provenance to Greenlander/Icelandic, English, German, French ports and ports in the Low Countries. The sources thus show that trade was now an important part of the townspeople's strategies for using a plot. Five buildings could be connected to trade, however, the buildings were multifunctional and not solely constructed with the purpose of trade in mind. All in all, though, trade conducted from the town area now seems to be important. This corresponds well with the kings' suggested plans for the town area.

Professional sausage makers were probably active in Bergen during horizon 5 and represent a new urban trade aimed at serving townspeople or visitors of the town. Innkeepers and people who had premises to let for for example ambulating artisans may also belong to a new group of specialists that made a living in the town. These service-related trades are the only daily activities documented - beside long-distance trade - that can be argued to have played an independent economic role for the town, as they served an interurban as well as a wider market (visitors to the town) with their services.

On plot 6/C lime-slaking pits indicate that the residents of this plot delivered mortar, perhaps to the nearby church of St Mary's. And a smith may have had a permanent workshop in the northern town area. The material also suggests that ambulating artisans or workshops - combmakers and miscellaneous antler, bone, horn and whale/walrus bone workers, shoemakers that also repaired shoes, and fine metal smiths now paid frequent, but short, visits to Bergen. The presence of the ambulating artisans should primarily be understood as a consequence of the existing urban community rather than *vice versa,* and it may show that Bergen was now large enough for a visit, but not yet large enough to provide a market for full-time resident specialists of these trades.

The service-related trades and ambulating artisans cannot be associated with the king's initial plans for the town. The existence of such trades, however, shows that the planned townscape was beginning to live a life of its own and it had developed into a living urban community. This development was probably due to the synergetic effect caused by the town's role as a bishop's residence, an ecclesiastic centre, a central staple for royal and private goods, a centre for stockfish trade, and as a centre for royal administration.

To sum up, the kings in horizon 5 probably followed their predecessors' plans for Bergen as a bishop's seat and strengthened Bergen's role as an ecclesiastic centre. The kings may also be tentatively associated with the foundation or renewal of as many as five churches. It is suggested that the kings' possible ecclesiastic investments were aimed at both showing off the respective kings' social capacities and at strengthening the town as a central staple - to be used by both magnates and the king(s) - by canalising tithes or other incomes from the churches through Bergen and into a trading system. Long-distance national and international trade was now an important part of the townspeople's strategies for using a plot in the town area. The actual function of the town thus corresponds well with the kings' assumed plans for the town. In addition to investing in their private plots groups of townspeople may also have founded churches, and some townspeople had developed new strategies for maintaining a living in the town. The town had thus developed from a planned townscape into a diversified, living, urban community.

Conclusions

In horizon 2 (c 1020/30-c1070) a king, probably Olav Haraldsson or Knut den Mektige, may have carried into life the plans for a town in western Norway, the town may have been planned to function as a central staple for goods in the hands of magnates and the king himself. The king's motives for founding a town may have been to collect dues on trade or on protection of market peace. It seems that the plots in the planned new town were just barely taken into use during horizon 2, and it appears that the king's plans were not a success. The king probably did not have sufficient resources to carry into life his plans.

When King Olav Kyrre invested further in the town during horizon 3 (c 1070-c 1100) he planned to develop Bergen into an ecclesiastic and perhaps also a royal administrative centre. He may also have had plans for the town as a central staple for goods disposed by magnates and himself. Activity in the town area was scarce and the sources cannot elucidate the actual function of the town area. Altogether the limited amount of activity in the town area, however, suggests that the king's plans for the town area were not successful. Again the king apparently did not have the resources to carry out his plans, at least for the town area.

During horizon 4 (c 1100-1120s) King Øystein Magnusson planned to strengthen Bergen as a royal and ecclesiastic administrative centre. He may also have invested in the town as part of a plan to influence and control the trade in stockfish from northern Norway to Europe and may have wished to direct the surplus from royal and other manorial dues through the town and into a trading system. In the town area, trade was the only recorded daily activity that may have served as an economic basis for the townspeople. This corresponds well with the king's assumed plans for the town area.

The various kings strengthened Bergen as a royal and ecclesiastic centre during horizon 5 (1120s-c 1170). The kings' possible investments in the many ecclesiastic institutions may have been aimed at showing off the respective kings' social capacities and at strengthening the town as a staple. In the town area, trade was now a more visible part of the townspeople's strategy for using a plot in the town. New urban service-related trades cover a wide spectre, and various ambulating artisans found their way to Bergen. These factors show that Bergen had developed from a planned townscape into a diversified, living, urban community.

15 CONCLUSIONS

The questions of how, when, by the initiative of whom, and why a town emerged in the Bergen area have now been addressed and a case study of the process of urban development in early medieval Scandinavia has been given. The period between the ninth century and c 1170 was studied, with a main emphasis on the period between c 1020/30 and c 1170.

Through six part-studies of major initiatives and daily activities the overall questions have been elucidated. And initiatives and activities were eventually linked to actors from different levels of the social hierarchy and discussed with the wider historical context as a backdrop. The understanding of social change as a product of the interplay between people from different levels of the social hierarchy and their wider historical context has structured the discussions.

By using the archaeological and botanical material from various methodological approaches, the qualitatively diversified material could be activated whether excavated in the nineteenth century or more recently and the main parts of the extensive body of sources could be taken into use. The sources have been divided into categories according to their reliability and plots have served as the main analytic unit. The sources were studied spatially using the production of maps and a qualitative and contextual approach. Furthermore, the material has been studied through a diachronic approach where the narrow time scopes of five horizons gave the opportunity of studying the sources within very narrow historical contexts and in some cases linking major initiatives to historically known actors.

In the first part-study, activity and general land use in the Bergen area between the ninth century and c 1020/30 (horizon 1) was studied.

At this time the Bergen area was most likely occupied by a settlement where agrarian activities were carried out. This settlement is tentatively located at Holmen, and it may have had its fields in the Bergen area. A landing-place for boats, located in the middle town area, and perhaps associated with the royal estate Alrekstad, was also found in the Bergen area before the first decades of the eleventh century.

In the second part-study I showed that plots were laid out in the northern town area during horizon 2 (c 1020/30-c 1070). In horizon 3 (c 1070-c 1100) these plots were redesigned and the middle town area was also included in the townscape. The dates for these major initiatives are based on the best-sustained interpretation of the available sources at the present state of research.

The third study elucidated how the plots and other parts of the Bergen area in time were occupied and were used physically. The study showed that the areas along the Vågen shoreline were considered most attractive, and that the actual settlement of the town was a long and slow process.

In the fourth study the nature and organisation of crafts and production were studied in order to elucidate whether productive activities identified in early Bergen could have provided a fundamental economic basis for the rise of the town. Fishing, hunting, miscellaneous antler, bone, horn and whale/walrus bone working, some 'other leatherworking', small-scale wood and stoneworking, basic cooking and some food and beverage processing were probably all activities carried out on a household basis. And none of these could in themselves have been decisive for the rise of the town.

Ambulating professional shoemakers (who also repaired shoes), combmakers and metalworkers who probably came to Bergen for short visits only were most likely artisans supplying large areas with standardised non-luxury items. They may primarily have supplied the interurban market, while working in Bergen. Their presence in Bergen reflected in the material from horizon 5 was seen as secondary, and as a consequence of an established community. Their presence could not have served as a fundamental economic basis for the rise of the town.

It could not be established whether the activities of antler, bone, horn and whale/walrus bone working, and shoemaking during horizon 4 and antler, bone, horn and whale/walrus bone working during horizon 5 were carried out by resident part-time professionals or ambulating artisans. Regardless of the organisation of these activities during horizon 4, and for antler, bone, horn and whale/walrus bone working also in horizon 5, the small amounts of waste left behind suggest that the artisans produced for an interurban market only and the activities cannot have served as a fundamental economic basis for the rise of the town.

The only 'full-time professional' productive activity documented in early Bergen was large-scale stoneworking, carried out by craftsmen engaged in the construction of the many monumental buildings erected in horizons 3-5. Presumably, the artisans were integrated in the household of the monument founders during the period of construction. In spite of being professional, their production took place within a 'household', and their presence could not in itself be seen as a fundamental economic basis for the rise of the town. Along the same line of thinking, the presence of professional sedentary or ambulating large-scale woodworkers should not be seen as a fundamental economic basis for the rise of the town.

Innkeepers with beverages for sale and lodging for lease, probable sausage makers and people who let out premises for temporary workshops were seen as a group of urban professionals who were active in Bergen from horizon 5. The activities of these new urban service-related trades, carried out by part-time or full-time professionals, may in time have added value to the town community as the activities, in part, were paid for by visiting travellers. However, the new trades were also a consequence of the existence of a community rather than a trigger for the rise of the town.

In sum none of the productive activities documented in early Bergen were seen as fundamental for the initiation of the town. Rather they were present as a result of the existing community, although their presence must also have had a synergetic effect for the growth of the place.

In the fifth part-study the importance of long-distance trade in bulk goods as a fundamental factor for the rise of the town was studied. I showed that harbour conditions were a priority for the townspeople. This was taken as an indication that sea transport was considered important to the actors from the beginning. Concrete measures to meet the demands of water depth from contemporary cargo carriers were documented in horizon 5. Trade-indicating sources such as tools of trade, finds with a 'long-distance provenance' and storage buildings showed that long-distance trade with bulk commodities from horizon 4 and onwards was an important activity in the town.

In the sixth part-study the character of the settlements on the town plots was addressed in order to elucidate whether well-established settlements of a permanent character were found in the town area. From horizon 4 and onwards such settlements were well-documented and certainly present.

The conclusions from these studies were used in the synthesising chapter where the overall questions of the study have been addressed. In this chapter, actors from the different levels of the social hierarchy were connected to the major initiatives and the daily activities. The material from Bergen was interpreted with the actors' wider historical context as a backdrop. I argued that Bergen was most likely founded through royal initiative on land where agricultural activities were carried out. This probably occurred around 1020/30, in the reign of King Olav Haraldsson (c 1015-1028) or King Knut den Mektige (1028-1034/35), making either of these kings or their representatives likely founder candidates. The king may have wished to found Bergen as a central staple in western Norway for goods disposed by magnates and the king himself. The plan may have been that goods were to enter a national and international trading network from the new planned town. The king's motives for the foundation may perhaps have been to collect dues on trade or on the protection of market peace. The idea of a town was not well received by the magnates who were probably given plots in the planned town. Although some plots were occupied, it appears that the planned town in the Bergen area was just barely settled during horizon 2, and that the king's plans were not a success.

When King Olav Kyrre invested further in the town during horizon 3 (c 1070-c 1100) the northern town area seems to have been redesigned, Holmen and probably also the middle town area were added to the townscape, and monuments were initiated at Holmen. Plots in the town area were most likely given to magnates. The king planned to develop Bergen into an ecclesiastic and perhaps also a royal administrative centre. He may also have had plans for the town as a central staple for goods in the hands of magnates and himself. Again, activity in the town area seems to have been scarce, and the sparse sources could not shed light on the town's actual function. All in all, though, the apparently limited activity in the town area suggests that the king's plans for this part of the town were not successful. The king perhaps did not follow up his plans for the town area with the necessary means of enforcement, or he did not possess sufficient resources to enforce the new rules and develop new traditions for using the place.

During horizon 4 (c 1100-1120s), King Øystein Magnusson built a royal hall at Holmen and founded several ecclesiastic institutions including one at Nordnes, thereby adding this area to the townscape. The townspeople became more active on the plots and settlements of a permanent character were now clearly present. Øystein planned to strengthen Bergen as a royal and ecclesiastic administrative centre. He may also have invested in the town as part of a plan to influence and control the trade in stockfish from northern Norway to Europe and he may have wished to direct the surplus from royal and other manorial dues through the town and into a trading system. Trade was the only recorded daily activity that may have served as an economic basis for the town, this corresponds well with the king's assumed plans for the town area.

During horizon 5 (1120s-c1170) the various kings - it is not possible to name the individual kings in this horizon - probably included the southern town area and the Nonneseter area in the townscape and built several churches. The kings' investments in the many ecclesiastic institutions may have been aimed at showing off the

respective kings' social capacity and at strengthening the town as a staple. The townspeople now invested more intensively in their town plots and perhaps also built churches. Trade had become a more visible part of the townspeople's strategy for using plots in the town. The new urban service-related trades cover a wide spectre of activities and a wide spectre of most likely ambulating artisans found their way to Bergen. These factors show that Bergen had begun to live a life of its own and had developed into a diversified, living, urban community.

My study has had its basis in the contemporary archaeological, botanical and written sources. Previous studies have only shed a rather dim light on the earliest history of Bergen, mainly because the archaeological data until now has not been considered older than the first part of the twelfth century and there are few relevant written records. With fresh dating material, a critical review of the archaeological and botanical sources and new methodological and theoretical approaches I have suggested new answers to the classical questions of how, when, by the initiatives of whom and why a town emerged in the Bergen area. In many respects the answers that were suggested in the present study relate to a local or historical situation specific for Norway. Still they should prove valuable when discussing the emergence of towns on a more general level a well.

By the middle 1990s there was general consensus that Bergen was most likely founded by Olav Kyrre, perhaps juridically (Helle 1982, 1992), perhaps physically by parcelling out the northern and middle town areas into plots (Ersland 1994), but probably on a site previously occupied by a denser non-rural settlement. I have argued that Bergen was indeed founded by a king, but this most likely happened half a century before Olav Kyrre, and probably on a virgin piece of land. Later, Olav Kyrre invested further in the town, by redesigning the already existing plot system, by including more land in the townscape and by initiating ecclesiastic building projects at Holmen. In the years to come still more areas were included in the townscape; the town thus grew in steps.

Ersland has argued that Bergen, conforming to the 'typical process of town foundation' in northern Europe, may have consisted of many 'plan-units' added to the townscape at different times in history (cf p 25ff) (Ersland 1994). The picture that has emerged through my study coincides well with his plan-unit hypothesis as a principle, and in this respect the processes documented in Bergen may resemble the 'typical process of town foundation' in other northern European towns.

The successive addition of still more areas to the townscape also provides a practical explanation to the 'double nucleus situation' in twelfth century Bergen, suggested by several researchers (Dunlop 1985; Myrvoll 1987; Lidén 1993). However, the wide extent of Myrvoll's and Lidén's southernmost nucleus cannot be substantiated through the sources.

My study has first and foremost provided a more nuanced and varied picture of the processes involved from the foundation of a town towards a living urban community. I have shown that the story of how, when, on the initiative of whom and why Bergen came about contains chains of major initiatives and daily activities. The process of urban development was slow and involved royal investments as well as investments from the hands of the townspeople. In this interplay between actors from different levels of the social hierarchy and their wider historical context, Bergen in time developed from a planned townscape - a materialised idea - into a living urban community characterised by a diversity of functions.

APPENDIXES

APPENDIX 1

Sources for the natural topography about the year 1000 and discussion of the course of the contour lines in the reconstruction

The numbers in the list below refer to points or areas on the map in Figure 62 a-f. On the map basic sources (B) are numbered in **bold** numbers and contours based on these are drawn in an unbroken line: _____, supplementary sources (S) are in *italics* and contours are drawn in a dotted line: …… (cf Chapter 6). The sources on the list are not ordered in any consistent way, the reader should thus first look at the map then find the references of interest. The reconstruction is generally not discussed in detail; where the map is based on basic sources the contours speak for themselves, for some areas, however, a discussion of the course of the contours is given.

1) The reconstruction of this area is based on Fritzvold's map. The sources are boreholes and Fritzvold's survey of the area (Fritzvold 1976, 14ff) (S). The foundation plan for the building at Bradbenken 1 (Trumpy 1954) shows that a north-south oriented bedrock ridge ran across the mouth of Veisan. The bedrock threshold between Vågen and Veisan was at -0.3 masl (S).[89] Kari Loe Hjelle's investigation from Koengen shows that Veisan was a marine basin at least into the eleventh century (Hjelle 1986, 36, 67, 73; Hansen 1994b, 177). Therefore the threshold between Veisan and the Vågen Bay must have been below the sea level about 1000. (See also point 115).
2) Bryggen; Dreggsalmenningen 10-12, and Sandbrugaten 5. Reimers' reconstruction of the -1.5 to +5.5 masl contour lines for these sites, based on observations from archaeological excavations (Reimers 1974) (B).
3) Dreggsalmenningen 14-16: archaeological investigation, morainic deposits were encountered between 2.0 and 4.9 masl. Contour lines for the site have been reconstructed in the reports (Golembnik in prep-a; Golembnik in prep-b) (B).
4) Dreggsalmenningen 10-12: archaeological investigation, morainic deposits were encountered between 2.1 and 3.3 masl (Dunlop 1986b) (B).
5) The area south of St Mary's: archaeological investigation, morainic deposits between 4.0 and 5.5 masl (Reimers 1965) (B).
6) Dreggsalmenningen: archaeological investigation, bedrock was reached between -2.5 and -3.0 masl (Long and Marstrander 1980) (B).
7) Øvre Dreggsalmenning: archaeological investigation, morainic deposits between 5.3 and 4.8 masl (Dunlop 1989e) (B).
8) Kroken: archaeological investigation, morainic deposits were recorded at 5.0 masl (Dunlop 1987) (B). Culture-layers were recorded down to a level of 2.9 masl through test drilling (Krzywinski and Hjelle 1985) (S).
9) Nye Sandviksveien: archaeological investigation, bedrock and moraine deposits recorded between 6.1 and 12.0 masl (Sognnes 1974) (B).
10) Klingesmauet: Dunlop has reconstructed the contour lines for 11-14 masl on the basis of archaeological excavations in the area (Dunlop 1989f) (B). In the present reconstruction the level of the oldest recorded culture-layers at Klingesmauet BRM 299 are used as a supplement to Dunlop's reconstruction (S).
11) Øvregaten 43: archaeological investigation, moraine was encountered at 6.25 masl (Christensson 1980b) (B).

12) Øvregaten 43: archaeological excavation, bedrock was encountered at 7.0 masl (Dunlop 1989b) (B).
13) Øvregaten 41: archaeological excavation, bedrock was recorded between 11.9 and 12.7 masl (B) (Larsen 1975).
14) Øvregaten 39: archaeological excavation, morainic masses and bedrock were encountered between 6.5 and 8.4 masl (Dunlop 1982) (B).
15) Øvregaten 37/39: probe boreholes, moraine was recorded between 6.0 and 6.5 masl (Larsen and Reimers 1978) (S).
16) Wesenbergsmauet: Dunlop has reconstructed the contour lines for 11-14 masl on the basis of archaeological data (Dunlop 1989d) (B). The level of the oldest recorded culture-layers in profiles 1-6 and profile 13 are used as a supplementary source in addition to Dunlop's reconstruction (S).
17) Koren-Wibergs Plass: archaeological investigation, bedrock was encountered between 14.1 and 13.0 masl (Reimers 1971a) (B).
18) Koren-Wibergs Plass: archaeological investigation, moraine was recorded at 8.7 masl (Myrvoll 1980) (B).
19) Nikolaismauet: archaeological investigation, bedrock was encountered at 15.0 masl (Dunlop 1984h) (B).
20) Øvregaten 25: boreholes, bedrock was recorded between 7.3 and 8.2 masl (Larsen 1978) (S).
21) Øvregaten 23: boreholes, bedrock encountered at 10.0 and 15.0 masl (Reimers 1977) (S).
22) The Church of St Peter: Reimers has documented part of the northern wall around the churchyard of St Peter's. The level of the oldest culture-layers are used here as a supplementary source for the natural topography (Reimers 1979) (S).
23) The Church of St Peter: Reimers documented the SW corner of the church ruin. The top of the ruin was recorded at 5.68 masl in (Bertelsen and Larsen 1971). According to Koren-Wiberg this part of the wall was preserved up to about one m above the ground level of the church (Koren-Wiberg 1921). On this basis the level of 4.7 masl is used as a supplementary source for the topography (S).
24) Bugården N 4: archaeological investigation, culture-layers were recorded down to a level of 3.6 masl (Bertelsen and Larsen 1971) (S).
25) Koren-Wiberg recorded a building to the south of St Peter's during his excavation here (Koren-Wiberg 1921). According to Koren-Wiberg the lowest floor level recorded in the building was 3.67 m lower than Øvregaten. Generalkart 1879-80 shows that Øvregaten at this time had an elevation of about 8.5 masl, on this basis the lowest recorded floor level in the building south of St Peter's must have been at a level of about 5.3 masl. This measurement is used as a supplementary source for the natural topography (S).
26) Bugården S and Bredsgården N: archaeological investigation, culture-layers were recorded down to a level of 3.4 masl (Reimers 1973b) (S).
27) Enhjørningegården: archaeological investigation, culture-layers were recorded down to a level of 4.1 masl (Dunlop 1984f) (S). Remains were also found of a building K1 which is identical with K19 at the excavation at Bryggeparken BRM 287 (Dunlop 1989a). The orientation of this building probably reflects the curve of an early seafront (S).
28) Stallen, Svendsgården: archaeological investigation, moraine and bedrock were recorded between 1.5 and 3.2 masl (Christensson, Dunlop, and Göthberg 1982) (B).
29) Bryggeparken: Dunlop has reconstructed the 2-9 masl contours through information from archaeological investigations (Dunlop 1989c) (B). From profiles 1-6 at the Bryggenparken BRM 287 site (Dunlop 1989a) the level of the lowest recorded culture-layers is used as a supplementary source for the natural topography (S).
30) Øvregaten by Nikolaikirkealmenningen: archaeological investigation, moraine was recorded at 9.0 masl (Christensson 1980a) (B).
31) Bellgården Steinkjeller: archaeological investigation, bedrock recorded between 4.9 and 6.5 (Reimers 1973a) (B).
32) Rosenkrantzgate 7: bedrock was recorded in connection with construction work (Lindholm 1916) (S).
33) Rosenkrantzgate 4: archaeological investigation, by the help of earth auger the level of the morainic deposits was measured at between -1.9 and -1.4 masl (Lindh 1979) (S). The constructions in the later phases at the Rosenkrantzgate 4 site reflect the curve of an early seafront (Lindh 1979) (S). (See discussion below).
34) Lodin Lepps Gate: archaeological investigation, culture-layers were recorded down to a level between 3.3 and 6.6 masl (Dunlop 1990) (S).
35) Nikolaikirkealmenningen: archaeological investigation, the level of the oldest culture-layers in profiles 1-4 (Dunlop 1983a) serves as a sup-

plementary source for the natural topography (S).

36) Forstandersmauet 4: archaeological investigation, bedrock was recorded at 27.3 masl (Dunlop 1991a) (B).

37) Below Forstandersmauet 4: Bendixen documented the Church of St Nicholas, built on a terrace on the mountain slope. The south wall of the nave was founded on boulders, which rested on the bedrock, and the north wall of the nave was founded directly on or in the morainic masses. The wall around the churchyard was uncovered on a terrace below the church (Bendixen 1896). This information is used as a supplementary source for the natural topography (S). The area between the present day Øvregaten and Forstandersmauet has a gradient of 0.8:1 on an even slope. The slope is, however, not even and today the area is characterised by artificial terraces, so it is difficult to recognise other than the general outline of the pre-urban landscape. On the basis of Bendixen's description of the natural subsoil on the plot of St Nicholas', I have reconstructed two terraces on the mountainside. One upper terrace large enough for the Church of St Nicholas to be built as a church with nave and a southern side aisle, and a lower terrace where the churchyard was placed. This reconstruction of the area around St Nicholas' must be taken with some reservations, as we do not have many basic sources in the area.

38) Øvregaten 11: Koren-Wiberg excavated the building closest to Øvregaten, he found two levels of building remains and two fire-layers before he reached the moraine. The latest fire-layer (1) was recorded almost directly under the modern (c 1900) level, fire-layer 2 was recorded 1.5-2.0 m under fire-layer 1 (Koren-Wiberg 1908b). If we assume that each fire-layer was about 10- 20 cm thick the moraine masses must have been found about 2 m below the c 1900 building level. According to Generalkart 1879-80 Øvregaten 11 was built at about 13 masl. The moraine masses must then have been measured at about 11 masl (S).

39) Øvregaten 9: archaeological investigation, moraine was recorded between 11.0 and 14.6 (Solberg 1969; Reimers 1972a) (B). This data is supplemented by measurement of bedrock up to 15 masl through boreholes (Strømmen 1969) (S). Information from Koren-Wiberg's investigation in the vicinity, shows that bedrock was covered by moraine in this area (Koren-Wiberg 1908b) (S) so we must add some to the 15 m bedrock contour line.

40) Finnegårdsgaten/Øvregaten: archaeological investigation, moraine was recorded between 9.0 and 13.4 masl (Christensson 1980c) (B).

41) Øvregate 4: in the area, which was Dramshusen's backyard until the c 1900 regulation Koren-Wiberg found 'timber remains' about 1.5 m below the surface (Koren-Wiberg 1900). The place is found between contour lines 9 and 10 masl on Generalkart 1879-80. The timber remains must therefore have been found at a level about 7.5-8.5 masl and sterile moraine or bedrock must have been under this level. This information is used as a supplementary source for the natural topography (S).

42) Finnegården: archaeological investigations, moraine and bedrock was recorded between 0.5 and 0.8 masl at Finnegården 6a (Dunlop 1982 (1998)) (B) and between -0.3 and -1.7 at Finnegården 3a (Golembnik 1993) (B). The surface of the natural subsoil has a WNW-ESE (geographical) orientation (Dunlop and Golembnik in prep). (See discussion below).

43) Bedrock was recorded by Koren-Wiberg in 1900 during the demolition of the seawards building of the Dramshusen tenement. It is not straightforward to pin down the exact position or height of the observation (see Hansen 1994b for an elaborate discussion of this). However, it is quite certain that Koren-Wiberg did observe bedrock above the water level (about + 0.5 masl) in the area around present day Bryggen 3-4 (Hansen 1994b, p 182). (See discussion below).

Discussion of the area around points 33, 42 and 43:
Koren-Wiberg incorporated the bedrock as part of the pre-urban shoreline (Koren-Wiberg 1921), so does Fritzvold but he relies on Koren-Wiberg on this point (Fritzvold 1976, 12). Koren-Wiberg did not have information about the natural topography in the area to the north of his bedrock observation, according to his own outline of the sites he investigated in this area (Koren-Wiberg 1908a). His reconstruction of the shoreline should consequently be taken with reservations. Dunlop and Golembnik have reconstructed the shoreline in this area without incorporating Koren-Wiberg's bedrock observation (Dunlop and Golembnik in prep). I think it is most realistic to reconstruct the -/+ 0 contour line on the basis of data from the Rosenkrantz 4 BRM 76 site (see

point 33). That is, the gradient of the seabed and the orientation of the buildings in later phases, coupled with data on the natural subsoil from the sites at Finnegården (see point 42). If this is done Koren-Wiberg's bedrock appears as a rock in the sea.

44) Vetrlidsalmenningen: archaeological investigation, Dunlop has reconstructed the shoreline, contour lines 5-14 masl and the course of a stream which ran down the sloping terrain. (Dunlop in prep) (B). Between 1 and 4 masl the natural subsoil was not reached. The measurements of the lowest culture-layers in profiles 25, 28 and 29 are used as supplementary sources (S). (See discussion below).
45) The tower of the St Cross-church was founded on bedrock, while the side aisles 'had no natural foundation' (Lorentzen 1952, 27). According to Generalkart 1879-80 the church is placed between the 3 and 4 masl contour lines which, when leaving some depth for the foundations places the natural subsoil at about 2.5- 3.0 masl around the church (S). (See discussion below).
46) The churchyard of the St Cross-church: Archaeological investigation, moraine was recorded at 1.0 masl. Medieval fill-masses in this area had a north-southwards orientation (geographical) (Dunlop 1984j) (B). (See discussion below).
47) Hollendergaten 2: excavation by hand and boreholes: Fritzvold documented the +/-0 masl contour line (B). (See discussion below).
48) Hollendergaten 9: archaeological investigation, bedrock was recorded at 1.14 masl (Reimers 1973c) (B). (See discussion below).
49) Outside Hollendergaten 8-10: groundwork, remains of a boat was found about 3.5 m below the modern surface (Lorentzen 1952, 27). This information implies that the natural subsoil was below or about this level. According to Grunnkart Bergen the present day Hollendergaten lies at a level of between 2.0 and 3.0 masl, the natural subsoil then, most likely, was found at or about a level of -1.5 to -0.5 masl (S). (See discussion below).

Discussion of the area around points 44 to 49: The sources behind the reconstruction of the natural topography between Vetrlidsalmenning and the Church of St Cross are few. The slope of the fill-masses at St Cross churchyard (point 46) indicates that there was a small bay between Finnegården and the St Cross (Dunlop 1984j, 47; Dunlop and Golembnik in prep). The course of the +/-0 to 2 masl contours is, however, quite uncertain. Fritzvold reconstructs a rather large promontory by the St Cross, incorporating the bedrock at Hollendergaten 9 (point 48) as part of the mainland. I think it is more realistic to interpret the bedrock as a rock in the sea since the observations outside Hollendergaten 8-10 (point 49), however vague they may be, indicate that the +/- 0 contour lies between this point and the St Cross. This assumption is supported by the structure of the building topography, as we know it from older maps such as P J Wilster's map from the end of the seventeenth century (Harris 1991, 29). On this map the predecessor of Hollendergaten was curved, as it is today, and it may, convincingly, reflect the pre-urban topography.

50) The area around Sparebankgaten, Bankgaten, Nedre Korskirkealmenningen and Skostredet: boreholes, Fritzvold has reconstructed the natural topography between -4 and +/-0 masl (Fritzvold 1976) (S). (See discussion below).
51) Skostredet 10: archaeological investigation, moraine was recorded at -1.5 masl. The deposits slope from north-east towards the south-west (geographical). There were fluvial deposits on the site. The archaeological data was supplemented by information from boreholes. Golembnik has reconstructed the +/-0 to -2 contour lines for the area (Golembnik in prep-c) (B) (S). The fluvial deposits at the site imply that a stream had its outlet in the vicinity (S).
52) Skostredet 17: oral information from construction work, "sea sand" about +/-0 and bedrock about +/-0 (Fritzvold 1976, 9) (S)
53) From Domkirkegaten 6 to Kong Oscarsgate: Komber *et al* have reconstructed the +/-0-7 masl contours for this area on the basis of data from the Domkirkegaten 6 BRM 245 and the Lille Øvregaten/Domkirkeplassen BRM 246 sites (B), supplemented with data from boreholes in the area between Kong Oscarsgate, Øvre Korskirkealmenningen, Lille Øvregaten and Domkirkeplassen (Komber, Dunlop, Sigurdsson, and Hjelle 1994) (S). The reconstruction, of the +/- 0, 1 and 2 contours does not present the natural topography before human activity took place in this area, but rather the topography after some filling in of the Vågen Bay had taken place as a result of erosion caused probably by a combination of human and natu-

ral processes (before phase 10, which began about 1130/40) (Komber, Dunlop, Sigurdsson, and Hjelle 1994, 75-81). The +/-0-2 contours are considered representative for c 1000-1100 (B). Fritzvold's 1979 reconstruction of the +/- 0 contour probably reflects the natural topography long before c 1000-1100 and corresponds with the level of the 'sterile' blue clay layer 508 at the Domkirkegaten 6 site (Komber, Dunlop, Sigurdsson, and Hjelle 1994, 77). Fritzvold's reconstruction of +/- 0 is therefore not used here.

54) Kong Oscarsgate 15-17: construction work, 'sea sand' was found about 3 m under the modern surface in the gateway at Tanks Skole (Lorentzen 1952, 172). This gateway lies between the 5 and 6 masl contour lines (Grunnkart Bergen 1992), the natural subsoil should thus be at about 2.0 or 3.0 masl here (S).

55) Kong Oscarsgate 36: archaeological investigation, the moraine was encountered between 7.2 and 7.5 masl and at 10.7 masl in Heggebakken (Reimers 1971b) (B).

56) Nedre Hamburgersmauet 5: archaeological investigation, moraine masses were recorded at 5.9 masl (Dunlop 1981b) (B).

57) The 15-20 m contour lines are visible as bedrock several places. These contour lines have been drawn according to Grunnkart Bergen 1992 (B). From the Church of St Olavs in Vågsbunnen and north towards Øvre Korskirkealmenningen the reconstruction of the contour lines is a guide only, on the basis of the building topography as we see it on Generalkart 1879-80 (S).

58) Lille Øvregaten: archaeological investigation, contour lines 7 and 8 masl are reconstructed in the report (Hansen 1995b) (B).

59) Information on the natural bedrock surface of Nordnes is taken from Generalkart 1879-80. The measurements have been checked west of Krudthuset by the aquarium (Dunlop and Hansen 1994c) and at Nordnesgaten 47 (Dunlop 1991b). The old measurements were quite accurate at these points. (B). Where bedrock is not visible, I have modified the contour lines from Generalkart 1879-80 according to my survey of the landscape. While doing this I have taken into consideration the elaborate building activity the area has been exposed to during history (S)

60) Strandgaten 3, 7, 19, 21-23, 17/Strandkaien 14 and Strandkaien 2, 4, 8/11, 16, 18/20: boreholes and observations in connection with groundwork (S), Fritzvold has reconstructed the bedrock contour lines for this area (Fritzvold 1976). However the contours for the seabed are drawn with the data from point 117 in mind on the present reconstruction, at point 17 gyttja at -3.10 masl shows that loose sediments had filled up the head of the bay.

61) Strandgaten 55-57: archaeological investigation, information on the natural topography between +/- 0 and 2.6 masl (Dunlop 1986a) (B).

62) Klostergaten 16: archaeological investigation, observation of moraine and bedrock between 15.0 and 15.8 masl (Dunlop and Hansen 1994b) (B).

63) St Hansstredet: archaeological investigation, bedrock observed between 7.1 and 8.3 masl (Hansen 1994c) (B).

64) Bekketomten: archaeological investigation, bedrock was observed between 6.4 and 7.17 masl. The natural topography sloped from southeast towards northwest (Dunlop 1988b) (B).

65) Nagelgården 6: archaeological investigation, bedrock was observed at 0.7 masl (Dunlop 1988b) (B).

66) Tollbualmenningen by the western corner of Tollboden: archaeological investigation, the lowest culture-layers observed were at a level of 1.0-1.1 masl (Dunlop 1988c). This can be used as a supplementary source for the natural topography (S).

67) Strandgaten 80: archaeological investigation, sterile sandy clay was observed at 5.8 masl (Dunlop 1988a) (B).

68) Nordnes 33: boreholes, the contour lines for bedrock from +/- 0 to 10 masl are reconstructed (Dunlop 1983b) (S).

69) Østre Muralmenning: boreholes, moraine was observed between 6.4 masl and 12.5 masl (Christensson 1981) (S).

70) Nøstegaten 65a-91: archaeological investigation, bedrock was observed at about 1.2 masl (Sletten 1984) (S).

71) Knøsesmauet: archaeological investigation, bedrock was encountered between 0.4 and 1.0 m under the street level (Dunlop 1991d). According to Generalkart 1879-80 the street runs at an elevation between 2 masl and 22 masl. I deduct about 0.5 m from the measurements at the Generalkart and draw contours 2 to 22 masl for the natural topography on this basis (S).

72) Det Gamle Rådhus: archaeological investiga-

tion, moraine was measured between 3.8 and 3.97 (Dunlop 1980) (B). Bedrock was observed at 4.7 masl to 5.1 masl (Dunlop 1985b) (B).

73) Alle Helgensgate 3, Magistratsbygningen: archaeological investigation, bedrock observed at 6.9 masl (Dunlop 1984i) (B).

74) Manufakturhuset: archaeological investigation, moraine was measured between 1.55 and 3.7 masl (Dunlop and Koch 1985) (B).

75) Alle Helgensgate 3-5: archaeological investigation, moraine was documented between 3.8 and 4.4 masl (Dunlop and Hansen 1993) (B).

76) Chr Michelsensgate: archaeological investigation, moraine was documented at 8.5 masl (Hansen 1991) (B).

77) Grønnevollen 2: archaeological investigation, bedrock was recorded between 0.2 and 0.5 m under the floor of the building, there was no basement (Dunlop 1984g). According to Generalkart 1879-80 the building is placed between 4 and 5 masl. Accordingly bedrock should be found at about 4.5 masl (S).

78) Rådstuplassen: archaeological investigation, moraine deposits were recorded at 4.0 masl (Dunlop 1991e) (B).

79) Torggaten 1c-1d: archaeological investigation, sterile blue clay about 1.5 masl (Koch Undated) (S).

80) Lidohjørnet, Nedre Torgalmenning: archaeological investigation, sterile masses were recorded between -0.2 and 1.7 masl (Koch Undated) (B).

81) Walkendorfsgate 5: archaeological investigation, a well, dug into the natural subsoil was recorded. The bottom of the well was at 3.75 masl (Christensson 1985), according to photos of the well moraine masses appear to begin at about 5.0 masl (S).

82) Strømgaten towards Vestre Strømkaien: archaeological investigation, a trench 0.50 to 0.60 m deep, was dug and sterile masses were encountered along the bottom of the trench (Dunlop 1984m). According to this the natural subsoil must be quite close to the surface as we see it on Generalkart 1879-80 (S).

83) Vincent Lunges gate: boreholes, bedrock and moraine were encountered between +/- and 2.0 masl (Fritzvold 1976) (S).

84) Bergen Rådhus 1956 and 1972: information on the 1-3 masl contours based on archaeological investigations and boreholes (S) (Fritzvold 1976).

85) Ole Bulls Plass 3: excavation by hand, +/- 0 was recorded (Fritzvold 1976) (B).

86) Starvhusgaten between Torgalmenningen 14 and Olav Kyrresgate 11: archaeological investigation, information on moraine at 0.6 masl (Fritzvold 1976) (B).

87) Olav Kyrresgate 31: boreholes, the contour lines for 1-2 masl are given (Fritzvold 1976) (S).

88) Permanenten, between Foreningsgaten and Nordahl Bruns gate: groundwork, information on the +/- 0 to 3 m contours (Fritzvold 1976) (S).

89) Grieghallen: boreholes, the +/- 0 contour is drawn by Fritzvold (Fritzvold 1976) (S).

90) Strømgaten 21: boreholes, the +/- 0 contour is drawn by Fritzvold (Fritzvold 1976) (S).

91) Torgalmenningen: archaeological investigation, bedrock was measured between 2.57-5.7 masl and 4.5-0.6 masl (Bjørndal and Dunlop 1992) (B).

92) Kaigaten: archaeological investigation, the level of the oldest recorded culture-layers is at 0.5 masl (Koch 1982b), sterile masses must be found below this level (S).

93) Kaigaten 1c-5: archaeological investigation, bedrock was encountered almost directly under the present day surface (Dunlop 1984k). The contour lines for this area are therefore drawn according to Generalkart 1879-80.

94) Kaigaten 4-6: archaeological investigation, moraine was recorded between 0.2 and 0.6 masl (Göthberg 1982) (B).

95) Badstuestredet 2: archaeological investigation, bedrock was encountered directly under the floor level of the building, the building had no basement (Dunlop 1984d). The contour lines for this area are thus drawn according to Generalkart 1879-80.

96) The contours for the seabed are here drawn on the basis of data from points 51, 53, 106, 110 and 117 and must be taken as a suggestion. According to Fritzvold 1976, the seabed was much deeper, but Fritzvold's contours probably represent the bedrock surface, whereas the present reconstruction suggests the surface of loose sediments.

97) Olav Kyrresgate: groundwork, bedrock was measured between 3.5 and 4.4 masl (Dunlop and Hansen 1994a) (S).

98) Lungegårdsgaten, Marken: archaeological investigation, bedrock was encountered just below today's surface (Dunlop 1984l) (B).

99) Lungegårdsgaten 2: archaeological investigation, bedrock was encountered at about 9.2 masl (Christensson 1980d) (B).

100) Marken 3: archaeological investigation, bed-

rock and moraine were encountered between 6.8 and 7.2 masl (Dunlop 1984e) (B).

101) Marken/Tverrgaten: archaeological investigation, bedrock was observed just below today's surface (Dunlop 1984b) (B).
102) Marken/Tverrgaten 4-6: archaeological investigation, bedrock was recorded between 8 and 10 masl (Dunlop 1984c) (B).
103) Nygaten 5: archaeological investigation, bedrock was recorded between 5.9 and 8.7 masl (Johnson 1988) (B).
104) Heggebakken/Sentrum: archaeological investigation, bedrock and moraine were recorded between 1.0 and 5.5 masl (Koch 1982a) (B).
105) Nygaten 2: archaeological investigation, bedrock was recorded between 3.0 and 6.5 masl (Dunlop 1991c) (B).
106) Vågsalmenningen and Olav Kyrres gate: boreholes, the +/- 0 and 1.0 masl contour lines can be drawn (Fritzvold 1976) (S).
107) Halfdan Kjærulfs gate: archaeological investigation, bedrock and moraine were recorded between 3.3 and 4.0 masl (Dunlop 1993) (B).
108) Kong Oscars gate 67: archaeological investigation, moraine masses were recorded 0.8 m below today's surface (Dunlop Undated-b), that is about 8.0 masl (S).
109) Klosteret: archaeological investigation, moraine masses were recorded between 0.8 and 1.1 m below today's surface (Dunlop Undated-a), that is about 25.0 masl (S).
110) Rådstueplass 2-3: boreholes, the -4-2 contour lines have been reconstructed for bedrock (Fritzvold 1976) (S). Archaeological investigation, the natural topography was documented between +/- 0 and 3.0 masl (Næss 1963) (B).
111) Sverresborg area: the contours for bedrock are taken from Generalkart 1879-80 (today parts of the bedrock formations between Sverresborg and Holmen are blasted away). I have surveyed the area and compared today's terrain with Generalkart 1879-80. My impression is that the map gives a fairly trustworthy picture of the natural topography especially of course where bedrock is visible. Where bedrock is not visible, I have modified the contour lines from Generalkart 1879-80 according to my survey of the landscape. While doing this I have taken into consideration the elaborate building activity, which the area has been exposed to during history (S).
112) Holmen: the contours for bedrock are taken from Generalkart 1879-80. I have surveyed the area and compared today's terrain with Generalkart 1879-80 my impression is that the map gives a fairly trustworthy picture of the natural topography where bedrock is visible (B). Where bedrock is not visible, I have modified the contour lines from Generalkart 1879-80 according to my survey of the landscape. While doing this I have tried to take into consideration some of the elaborate building- and levelling activity the area has been exposed to during history (Fischer and Fischer 1980, 11) (S). (See discussion below).
113) The shoreline around Holmen: on older maps several rocks in the sea are seen along the Holmen shoreline. The shoreline on the present reconstruction is combination of /compromise between *Kart Over Nordnes og Fæstningen* from 1872-73 (Harris 1991) and Generalkart 1879-80 (S).
114) The shoreline towards Bradbenken: boreholes, contour lines -8.0-1.0 are taken from Fritzvold (1976) (S).
115) Veisan's shoreline is mostly taken from Fritzvold 1976. Fritzvold's reconstruction is based on test drilling carried out by him, and on test drilling carried out in 1915 and 1916. (Fritzvold 1976) (S). Fritzvold's reconstruction of the Veisan shoreline is adjusted through information from archaeological investigations (see points 1, 119, 123 and 124).
116) Skuteviken: all contour lines are copied from Generalkart 1879-80, the map does, however, not give information on the height of all the contour lines, which makes the copy work difficult and somewhat imprecise, the contour lines should be taken as a guide only.
117) Nedre Korskirkealmenning/ Vågsalmenningen: archaeological investigation, a deposit of gyttja ^{14}C dated to between 810-970 was recorded at -3.10 masl (Hjelle 1998) (B). This level is most likely representative for the level of the natural subsoil about 1000.
118) From Heggen to Kaigaten: boreholes, moraine was recorded between -4 and 6.0 masl (NOTEBY 1978) (S).
119) Koengen: archaeological investigation, 'beach sand' was encountered at 1.25 masl (Dunlop 1981a) (B).
120) Slottsgaten 3A: archaeological investigation, the 'sea bottom' was recorded at -2 masl and 'gravel which seems to be the sea bottom' at -1.0 masl (Enger 1957, 5) (B).
121) Bryggen BRM 0 area: the contours for -2 to -3 are drawn on the basis of information on the level of the oldest culture-layers on the site

(Herteig 1990, 56, 90) (S) and on documentation of the natural topography published in Krzywinski and Kaland 1984, Figure 3 (B).

122) Holmen: archaeological investigation, the 4, 5 and 6 masl contours are drawn on the basis of the Håkonshallen BRM 474 site (Hansen 1995a) (s). The 2 and 5 masl lines are supplemented with data form Gerhard Fischer's investigations in the area (Fischer and Fischer 1980) (S).

123) Bergenhus-Bontelabo: archaeological investigation, greenish-blue marine sand was found at 2.2 masl (Dunlop 1989g) (B). (See discussion below).

124) Bontelabo-Veisan: boreholes, in connection with Fritzvold's reconstruction of the natural topography, 7 boreholes were drilled in this area. On the basis of these boreholes, of bedrock visible on the surface, General kart 1879-80 and other (unspecified, but probably test drilling carried out in 1915-16 at Koengen Rangerstasjon by NSB see further references in Fritzvold 1976, 16) information from the area, Fritzvold reconstructs a bedrock gully from Bontelabo to Veisan (Fritzvold 1976, 16) (S). (See discussion below).

Discussion of the area around points 123 and 124: in old Norwegian the place name Holmen means 'islet' or 'a small hill on a flat piece of land' (Fritzner 1973 (1867)).[90] Whether or not Holmen in 'early historic time' was completely surrounded by the sea has been a subject of discussion. Stressing the first meaning of the word, Munch (1855) and Koren-Wiberg (1908) assumed that Holmen in early historic time was surrounded by water (Grimnes 1937). Against this view Grimnes (1937) argued that the general outline of the topography between Bontelabo and Veisan rather favours the second meaning of the name. In 1976 bedrock measurements from test drilling provided more information on the bedrock formations between Bontelabo and Veisan. The measurements indicated a below +/- 0 gully between Bontelabo and Veisan (Fritzvold 1976, 16). If this gully was not filled in with loose deposits, the sea may have accessed Veisan from the Bontelabo-side about 1000, thus making Holmen an islet. Other measurements, however, showed that moraine or sand has generally filled up gullies in the bedrock formations of the Holmen area to a level of +/- 0 or 1 masl (Fritzvold 1976, 16). This implies that the gully between Bontelabo was likewise filled with loose masses to a level above the sea level. Having this information at hand, Fritzvold still concluded that it is not possible to exclude the possibility that seawater could enter Veisan from the Bontelabo side about 1000 (Fritzvold 1976, 16).

Since Fritzvold did his reconstruction of the natural topography, more observations of pre-urban deposits have been made. At the Bergenhus-Bontelabo site (1989) (point 123) marine sand was encountered at 2.2 masl. The point of this excavation is so close to the gully, as reconstructed by Fritzvold, that it is hard to imagine that a stream could have flown here, without eroding away the marine sand documented at the archaeological site (Figure 61). Thus I suggest that there has not been a stream between Veisan and Bontelabo since prehistoric time when the sea level was higher, and that the threshold between Bontelabo and Veisan was most likely about 2.2 masl or higher about 1000.

125) Holmen towards Veisan: archaeological investigation, moraine was recorded between 1 and 1.3 masl (Hommedal 1999) (B).

126) Dreggsalmenningen 20: archaeological investigation, moraine was recorded between 4.1 and 0.9 masl (Larsen 1967b) (B). The +/- 0 contour is reconstructed on the basis of the gradient of the natural subsoil and on the orientation of the oldest structures on the site (S).

127) Øvregaten 25-29: archaeological investigation, bedrock was encountered at 9.1 masl (Dunlop 1996b) (B).

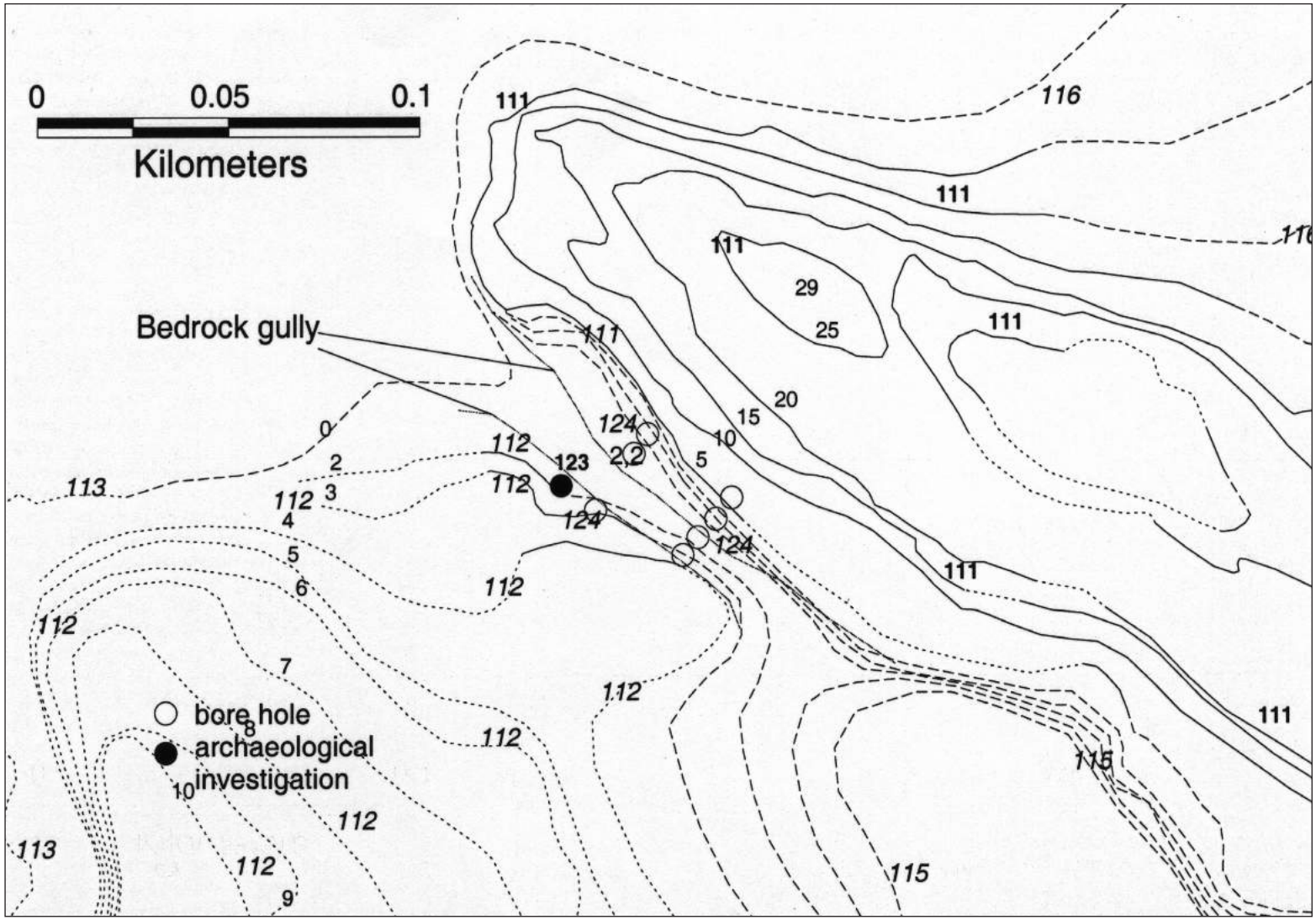

Figure 61. *Detail of the area between Bontelabo and Veisan*

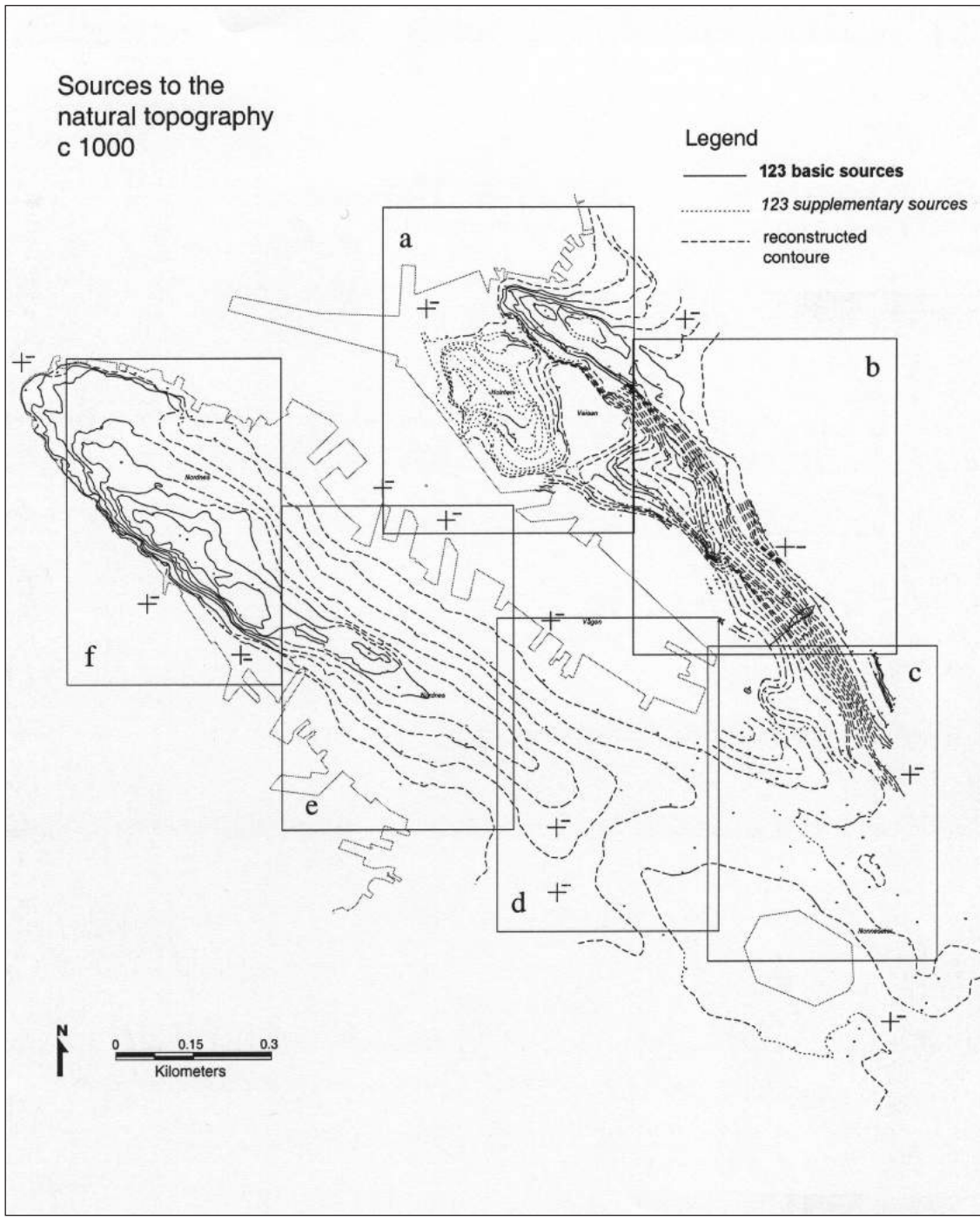

Figure 62. *Sources for the pre-urban topography 'the natural topography'.*

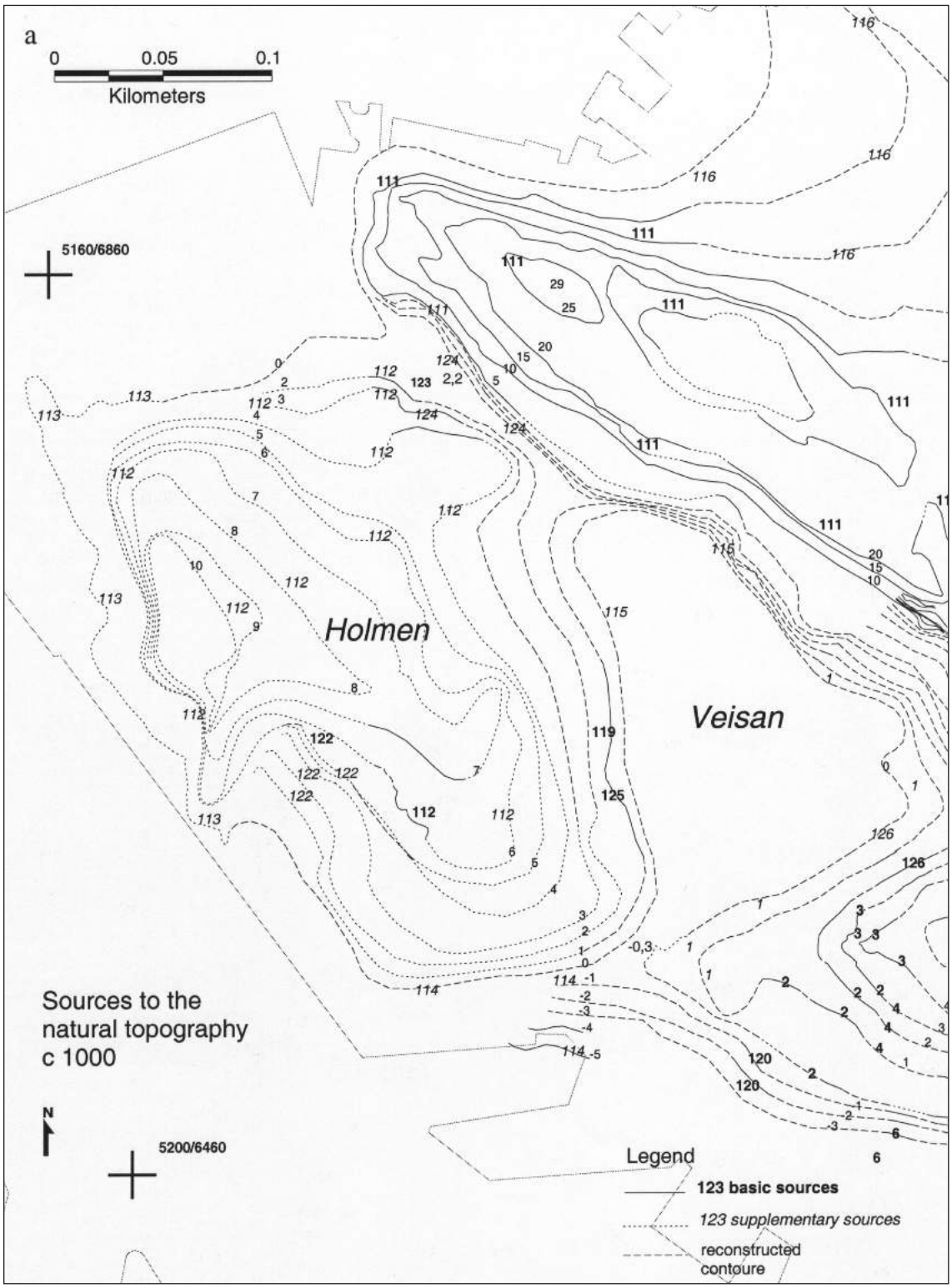

Figure 62 a. *Sources for the pre-urban topography 'the natural topography'.*

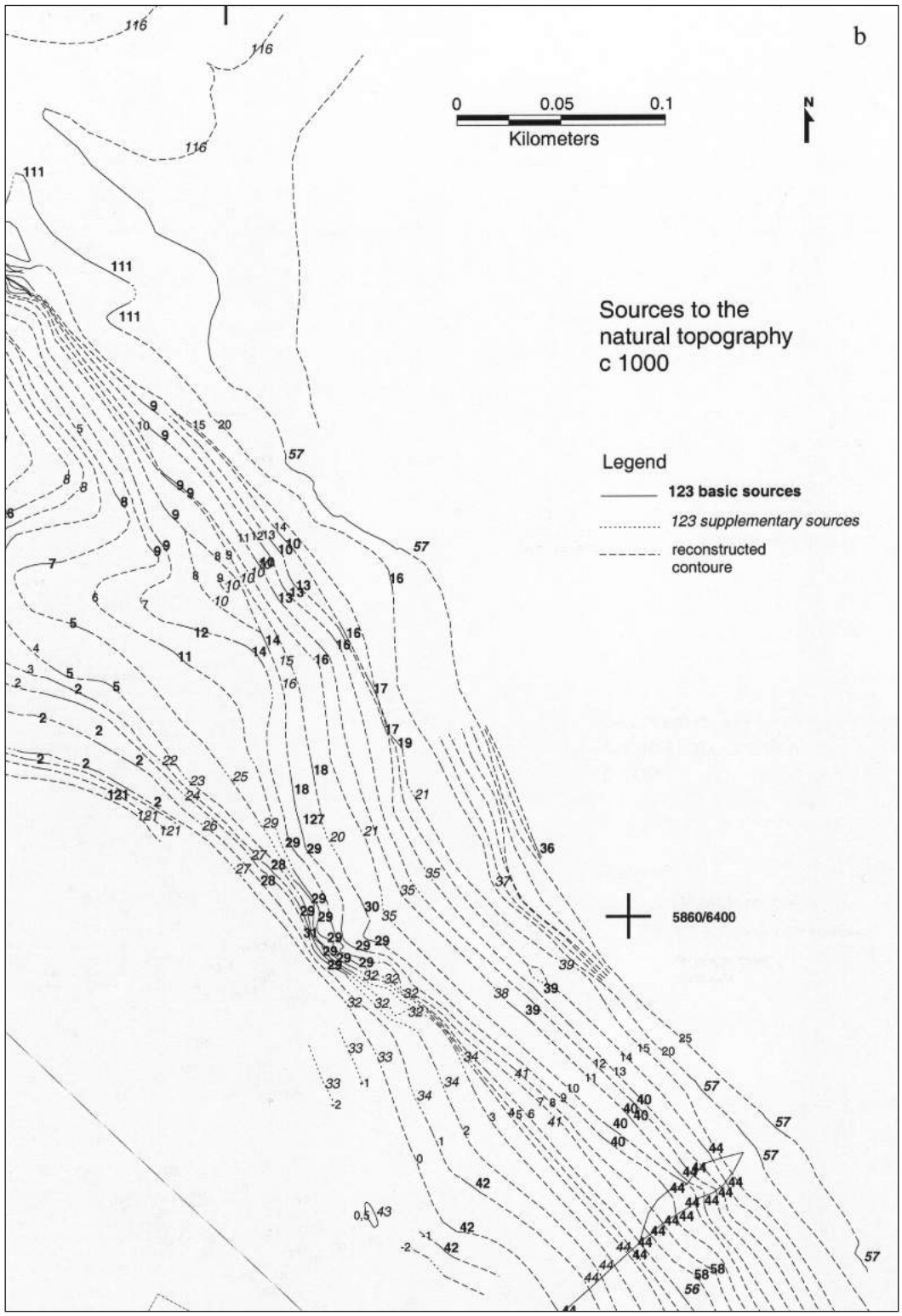

Figure 62 b. *Sources for the pre-urban topography 'the natural topography'.*

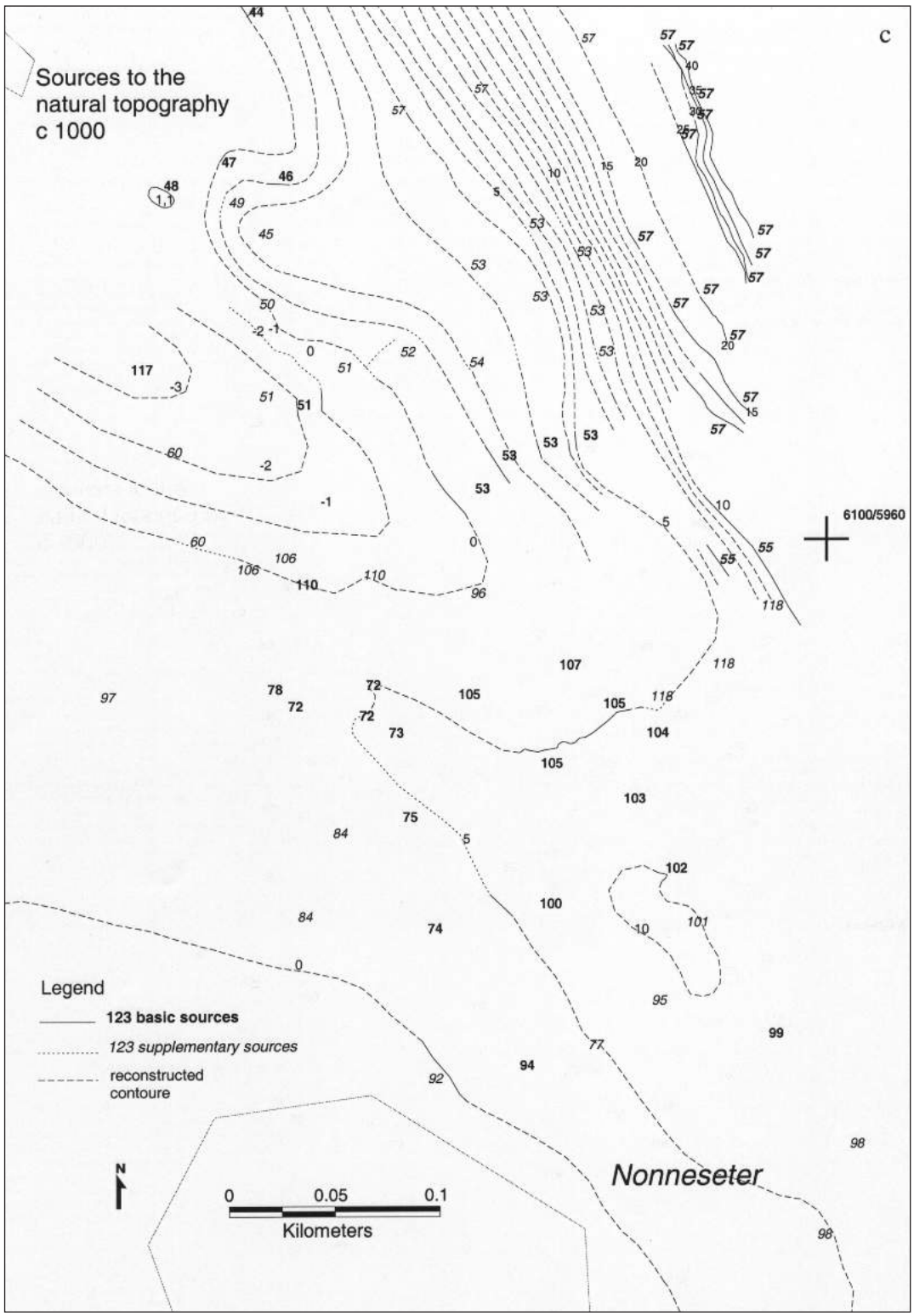

Figure 62 c. *Sources for the pre-urban topography 'the natural topography'.*

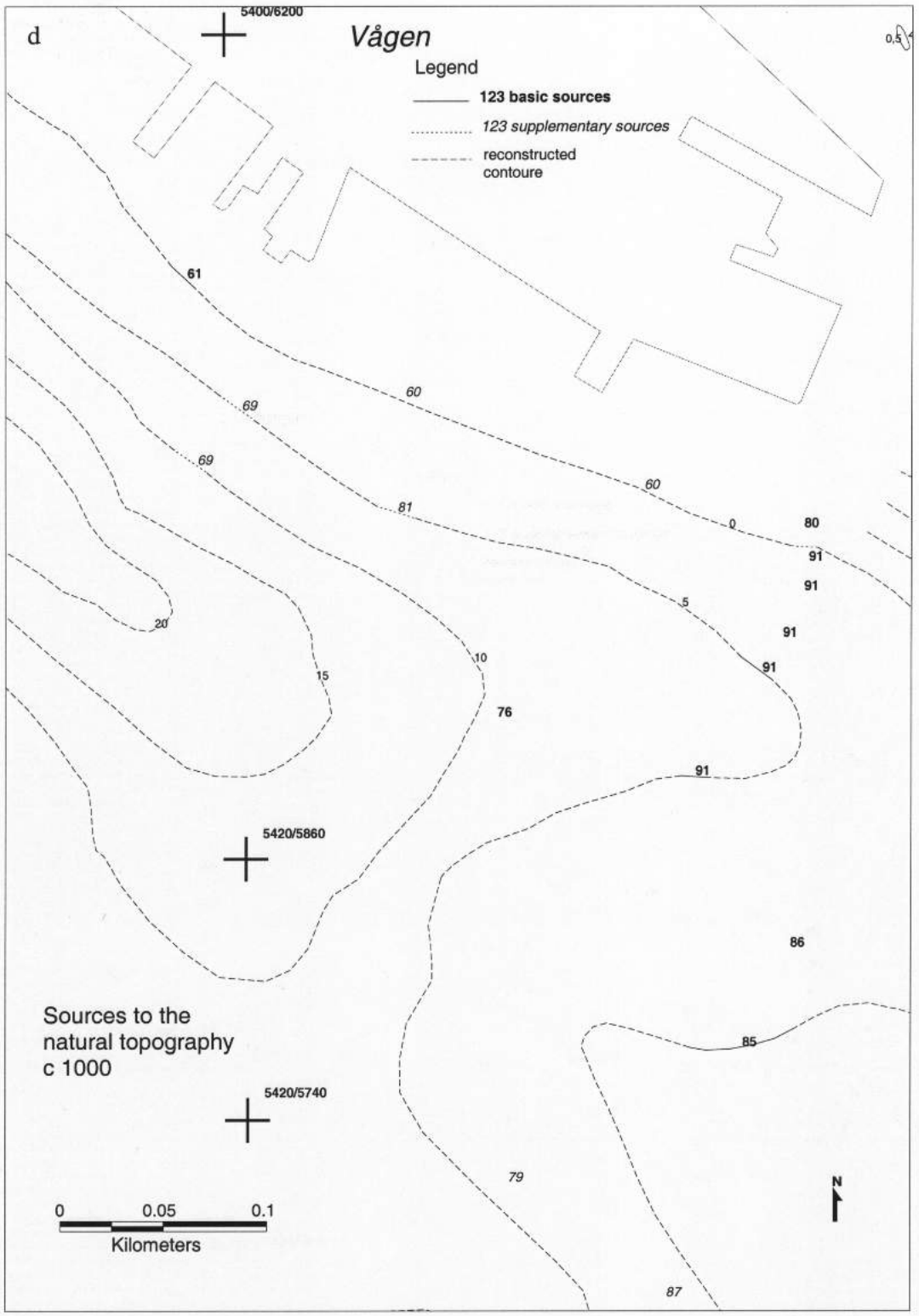

Figure 62 d. *Sources for the pre-urban topography 'the natural topography'.*

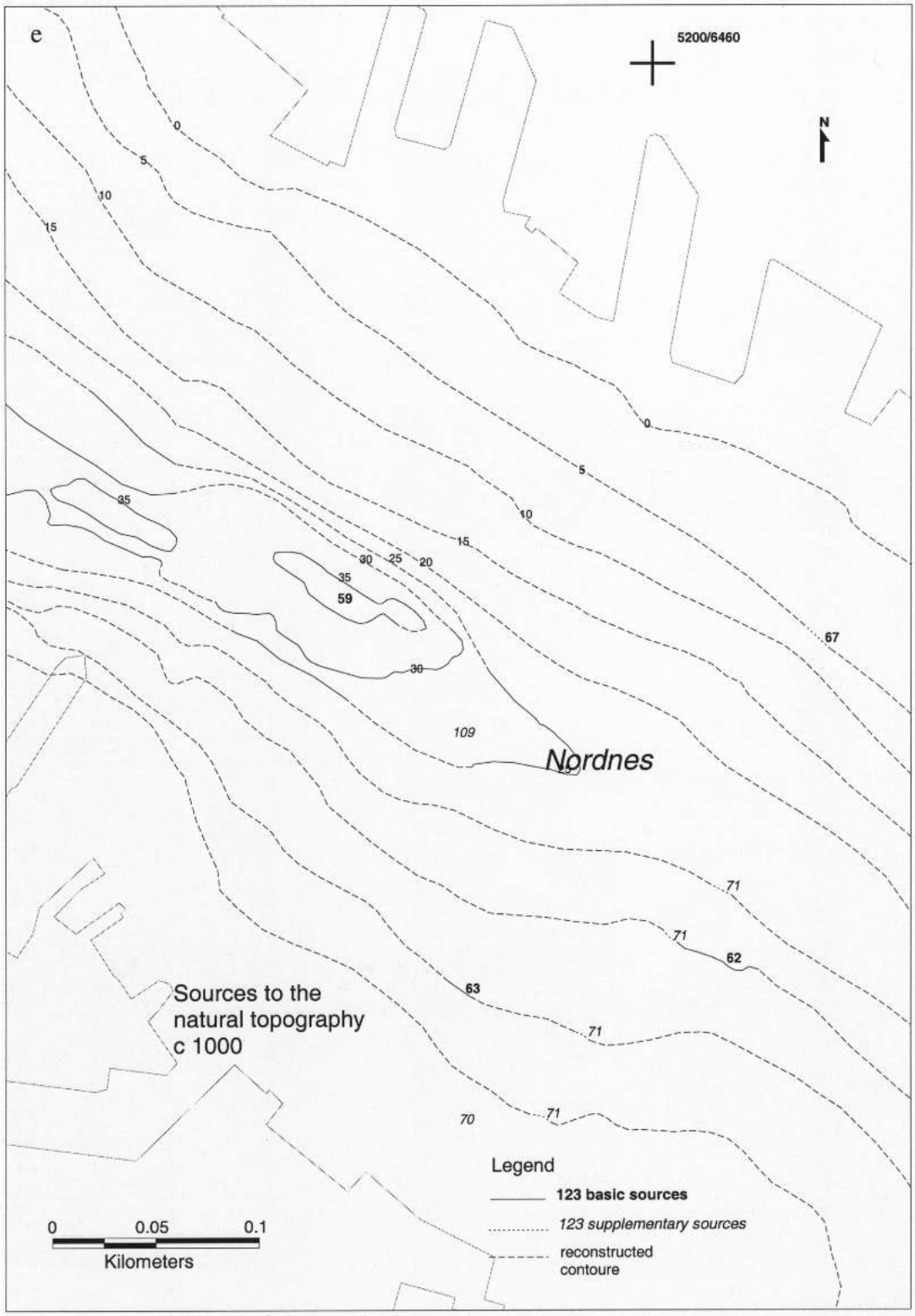

Figure 62 e. *Sources for the pre-urban topography 'the natural topography'.*

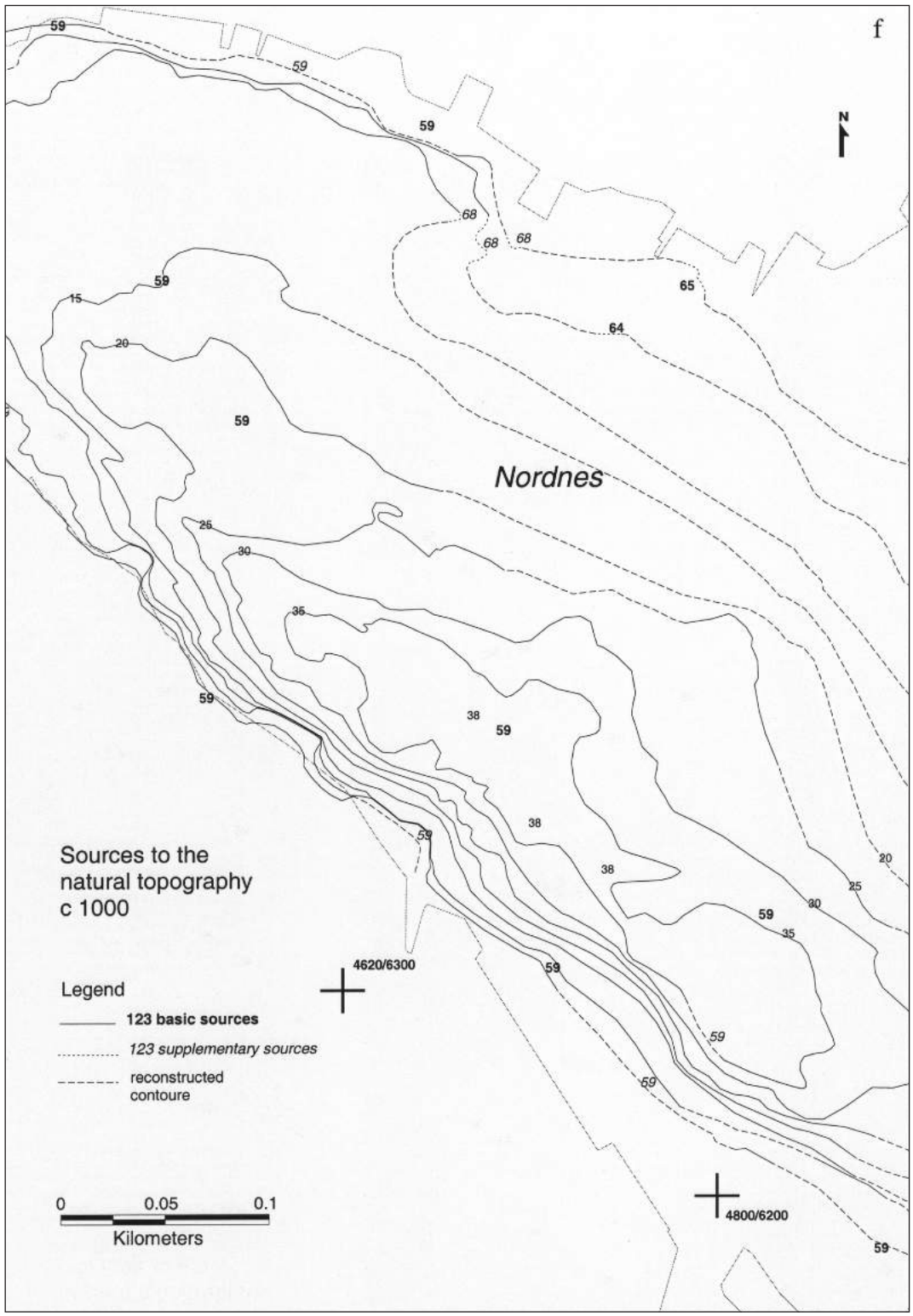

Figure 62 f. *Sources for the pre-urban topography 'the natural topography'.*

APPENDIX 2

Dated dendrochronological samples from early Bergen

Legend:
'after 1144' - some tree rings may be missing, the felling year for the tree cannot be established. '1128/1129' - the preserved outer tree ring represents the last year of growth. 'j' - yes, 'n'- no. 'surface work? - surface work on the spot where the sample was taken

Dendro number	*Plot number*	*Horizon*	*Construction type*	*Construction number*	*Phase in site report*	*Date*	*Signs of reuse?*	*Surface work?*	*Sample taken by*
0/92688	6/B		building	044	2.1	after 1080	j	?	Hansen and Reimers
0/92689	6/B		building	044	2.1	after 1100	j	?	Hansen and Reimers
0/92687	6/B		building	044	2.1	after 1100	j	n	Hansen and Reimers
0/92685	6/B		building	044	2.1	after 1008	j	j	Hansen and Reimers
0/92542	6/B	5	building	038	2.0	1104/05	j	?	Hansen and Reimers
0/91006	6/B	5	building	038	2.0	after 1100	j	?	Hansen and Reimers
0/Dno 01325	6/B	5	building	038	2.0	after 1141			During excavation
0/92832	6/B	5	building	041	2.2	after 1127	n	n	Hansen and Reimers
0/92835	6/B	5	building	041	2.2	after 1131	n	n	Hansen and Reimers
0/92836	6/B	5	building	041	2.2	after 1133	n	n	Hansen and Reimers
0/92696	6/B	5	building	041	2.2	after 1134			During excavation
0/92694	6/B	5	building	041	2.2	after 1135	n	n	Hansen and Reimers
0/92786	6/B	5	building	066	2.0	after 1024	n	n	Hansen and Reimers
0/92785	6/B	5	building	066	2.0	after 1040	n	n	Hansen and Reimers
0/92798	6/B	5	building	066	2.0	after 1127	n	j	Hansen and Reimers
0/93053	6/B	5	caisson	025	2.2	1121/22	n	n	Hansen and Reimers
0/93054	6/B	5	caisson	025	2.2	after 1083	n	n	Hansen and Reimers
0/Dno 01413	6/B	5	caisson	026	2.0	after 1120			During excavation
0/92914	6/B	5	caisson	038	2.0	1138/39	n	n	Hansen and Reimers
0/92916	6/B	5	caisson	038	2.0	after 1138	n	n	Hansen and Reimers

Dendro number	Plot number	Horizon	Construction type	Construction number	Phase in site report	Date	Signs of reuse?	Surface work?	Sample taken by
0/Dno 01537	6/B	3	post		1.1	after 1069			During excavation
0/Dno 01382	6/B	5	quay structure		2.0	after 1125			During excavation
0/Dno 01253	6/B	5	quay structure		2.0	after 1126			During excavation
0/Dno 01254	6/B	5	quay structure		2.0	after 1128			During excavation
0/Dno 01395	6/B	5	quay structure		2.0	after 1134			During excavation
0/Dno 01398	6/B	5	quay structure		2.0	after 1137			During excavation
0/92714	6/C	4	building	045	1.2	1108/09	n	j	Hansen and Reimers
0/92717	6/C	4	building	045	1.2	after 1100	n	j	Hansen and Reimers
0/92705	6/C	4	building	045	1.2	after 1107	n	?	Hansen and Reimers
0/92704	6/C	4	building	045	1.2	after 1109	n	n	Hansen and Reimers
0/92716	6/C	4	building	045	1.2	after 1110	n	n	Hansen and Reimers
0/Dno 01415	6/C	4	caisson	027	2.0	after 1106			During excavation
0/93040	6/C	4	caisson	028	2.0	1108/09	n	n	Hansen and Reimers
0/93039	6/C	4	caisson	028	2.0	after 1098	n	n	Hansen and Reimers
0/92936	6/C	4	caisson	029	2.0	after 1074	n	n	Hansen and Reimers
0/92935	6/C	4	caisson	029	2.0	after 1104	n	n	Hansen and Reimers
0/Dno 01075	6/C	5	building	040	2.0	after 1103			During excavation
0/Dno 01170	6/C	5	building	040	2.0	after 1149			During excavation
0/Dno 01110	6/C	5	building	498	2.0	after 1122	j		During excavation
0/92907	6/C	5	quay structure		2.0	1124/25	n	n	Hansen and Reimers
0/93029	6/D	2	post		1.1	after 1026	n	n	Hansen and Reimers
0/93028	6/D	2	post		1.1	after 1029	n	n	Hansen and Reimers
0/Dno 01155	6/D	5	building	042	2.0	after 1068			During excavation
0/92909	6/D	5	post		2.0	after 1149	n	n	Hansen and Reimers
0/Dno 01466	6/E	5	building	130	2.0	after 1112			During excavation
0/Dno 01471	6/E	5	building	130	2.0	after 1117			During excavation
0/Dno 01469	6/E	5	building	130	2.0	after 1128			During excavation

Dendro number	Plot number	Horizon	Construction type	Construction number	Phase in site report	Date	Signs of reuse?	Surface work?	Sample taken by
0/Dno 01470	6/E	5	building	130	2.0	after 1129			During excavation
0/Dno 01460	6/E	5	building	402	2.0	after 1117			During excavation
0/Dno 01474	6/E	5	building	402	2.0	after 1123			During excavation
0/Dno 01476	6/E	5	building	402	2.0	after 1125			During excavation
0/Dno 01478	6/E	5	building	402	2.0	after 1128			During excavation
0/Dno 01479	6/E	5	building	402	2.0	after 1128			During excavation
0/Dno 01517	6/E	5	building	482	2.0	after 1116			During excavation
0/Dno 01518	6/E	5	building	482	2.0	after 1120			During excavation
0/Dno 01515	6/E	5	building	482	2.0	after 1120			During excavation
0/Dno 01516	6/E	5	building	482	2.0	after 1124			During excavation
0/Dno 01514	6/E	5	building	482	2.0	after 1125			During excavation
0/Dno 01454	6/E	5	caisson	041	2.0	after 1126			During excavation
0/Dno 01512	6/E	5	passage		2.0	after 1124			During excavation
0/Dno 01485	6/E	5	post		2.0	after 1113			During excavation
0/Dno 01449	6/E	5	post		2.0	after 1123			During excavation
0/Dno 01484	6/E	5	post		2.0	after 1123			During excavation
0/Dno 01459	6/E	5	post		2.0	after 1124			During excavation
0/Dno 01480	6/E	5	post		2.0	after 1124			During excavation
0/Dno 01513	6/E	5	post		2.0	after 1124			During excavation
0/Dno 01468	6/E	5	post		2.0	after 1128			During excavation
0/Dno 01427	6/F	5	passage		2.0	after 1029			During excavation
110/06096	26-27/B-C	5	caisson	053	2	after 1144	n	n	Hansen and Reimers
104/02489/VIII	26/A	4	caisson	037	12	after 1090	j	n	Hansen and Reimers
104/02489/VII	26/A	4	caisson	037	12	after 1099	n	n	Hansen and Reimers
104/02489/X	26/A	4	caisson	037	12	after 1100	n	n	Hansen and Reimers
104/02489/II	26/A	4	caisson	037	12	after 1102	n	n	Hansen and Reimers
76/15190	28/B	5	caisson	001	1	after 1137		n	During excavation

Dendro number	*Plot number*	*Horizon*	*Construction type*	*Construction number*	*Phase in site report*	*Date*	*Signs of reuse?*	*Surface work?*	*Sample taken by*
76/15163	28/B	5	caisson	001	1	after 1139		n	During excavation
76/15161	28/B	5	caisson	002	1	after 1127			During excavation
76/15175	28/B	5	caisson	002	1	after 1128			During excavation
76/15162	28/B	5	caisson	003	1	after 1140			During excavation
76/15209	28/B	5	caisson	003	1	after 1141			During excavation
76/15207	28/B	5	caisson	003	1	after 1141			During excavation
76/15195	28/B	5	caisson	004	1	after 1141			During excavation
76/15168	28/B	5	caisson	004	1	after 1141			During excavation
76/15197	28/C	5	post		1	after 1141			During excavation
490/00026	29/A		post	16	4	1128/29	j		During excavation
245/02985	38/A	5	post	343	10	after 1128	n		During excavation

APPENDIX 3

Eleven artefact assemblages from site 9, Sandbrugaten 5 (1967) BRM 3

The date of eleven artefact assemblages are discussed in order to throw light upon the absolute date for the material at site 9, Sandbrugaten 5. The assemblages have been selected by comparing information from the artefact database from site 9,[91] the original drawings, comments to the drawings and the report from the excavation (Larsen 1967a). The assemblages were selected with the specific aim of dating structures in the lowest level at the site. However, in order to obtain a reliable picture of the absolute chronology of the site an attempt was made to date all closed contexts found through the documentation. A closed context is defined as an artefact assemblage with a relatively clear connection to a structure. In the original documentation the structures were not given numbers. Instead, structures were described by square and levelling number and a general label for example 'floor', 'drain'. Contexts for artefacts were described according to the original field information. The Norwegian description of the context is cited in brackets and translated. Shoes are classified according to Schia 1977, Grew and de Neergaard 1988, and Larsen 1992. In Figure 14 the 11 assemblages are seen in relation to the stratigraphy at site 9.

Assemblage 1
Accession numbers BRM 3/24-25, BRM 3/72-73, BRM 3/232.
Context: 'O-11 and O-10. In the well'. ('I brønnen'). Well 1 is the only well in squares O-11 and O-10, the finds must therefore stem from well 1. Well 1 is assumed to be contemporary with building 8 (Larsen 1967a). When well 1 and building 8 fall into disuse, they are both superposed by building 9. The artefacts in well 1 must stem from the time before building 9 was constructed, the finds can therefore give a *post quem* date for building 9.
Dating finds:
BRM 3/72, one sherd of Grimston Decorated ware.

According to the prevailing date for Grimston Decorated ware (Jennings and Rogerson 1994), building 9 must have been constructed after c 1225.

Assemblage 2
Accession numbers 3/90-100.
Context: N-11. 'Under the floor'. ('Under golvlaget').
Accession number 3/170.
Context: N-11. 'By and under the floor in N-11. In the sand'. ('Inntil og i underkant av gulv i N-11. I sanden.'). The only floor which can be localised to square N-11 is the floor of building 8, thus the finds must come from by and underneath the floor of building 8, and they provide a *post quem* date for building 8.
Dating finds:
BRM 3/92, 1 sherd of Ardenburg pottery.
BRM 3/93, 1 sherd of Scarborough II pottery.
BRM 3/94, 1 sherd of Scarborough II pottery.
BRM 3/95, 1 sherd of Grimston ware.
BRM 3/96, 1 sherd of Decorated Grimston ware.
BRM 3/97, 1 sherd of Decorated Grimston ware.
BRM 3/98, 1 sherd of Decorated Grimston ware.
BRM 3/99, 1 sherd of Grimston ware.
BRM 3/170, 4 sherds of Grimston ware.

The sherds of Decorated Grimston ware give a *post quem* date for building 8 to after c 1225, according to the prevailing date for this ware (Jennings and Rogerson 1994).

Assemblage 3
Accession numbers BRM 3/530, BRM 3/535-539.
Context: 'M-11, in fill-masses over the pavement'. ('I fyllmasser i overkant av gangbroen'). The pavement may be the timber passage (kavlpassage), which is mentioned in the report as there is no mention of other pavements or passages in square M-11. The artefacts may therefore give a *post quem* date for the destruction of the timber passage.
Dating finds:
BRM 3/535, 5 sherds of Scarborough II ware.
BRM 3/538, 1 sherd of Scottish White Gritty ware or York White ware.
BRM 3/539, 1 sherd of Siegburg Stone ware.

The youngest find in this assemblage is a sherd of Siegburg Stone ware, which is usually found from c 1300 and on (Lüdtke 1989, 33). The timber pavement may therefore have gone out of use after c 1300.

Assemblage 4
Accession numbers BRM 3/571-584, BRM 3/681-683
Context: 'M-11 and M-12, in fill-masses in the level under the east-west going passage'. ('I fyllmasser i nivået under Ø-V passasjen'). The east-west going passage may be the wooden passage (kavlpassage) which is mentioned in the report, as there is no mention of other pavements or passages in square M-11. The artefacts may therefore give a *post quem* date for the timber passage.
Dating finds:
BRM 3/575, 1 sherd of Scarborough II ware.
BRM 3/576, 1 sherd of Scottish Gritty ware or York White ware.
BRM 3/577, 1 secondarily burnt sherd of Grimston or Humber ware.

The Scarborough II sherd is the youngest type present and this gives a *post quem* date for the timber passage to after c 1215/1225 (Farmer and Farmer 1982).

Assemblage 5
Accession numbers BRM 3/692-704.
Context: M-12. 'Under the stone layer in fill-masses with wood chips'. ('Under steinlag i fyllmasse m. Spon'). Only buildings 10 and 11 are referred to as a 'stone layer in square M-12', so it is likely that that the stone layer is identical to buildings 10 and 11. If this is the case, then the finds in the assemblage give a *post quem* date for buildings 10 and 11. Buildings 10 and 11 are situated stratigraphically under fill-masses, which were under the east-west going timber passage (kavlpassage). These fill-masses are dated to 'after c 1215/1225' on basis of the presence of a Scarborough II sherd in assemblage 4.
Dating finds:
BRM 3/703/1, 1 upper of a low thong shoe III with slits in groups, pointed toe and rounded heel.
BRM 3/703/2, the sole of BRM 3/703/1.
BRM 3/704/1, 1 upper of a low thong shoe with slits in pairs, top band along the instep and a band of decoration running up the middle of the front piece from the toe to the instep (embroidery pattern A (Larsen 1992)). The toe was pointed and the heel was rounded.
BRM 704/3, 1 fragment of a thong shoe upper with slits in pairs.

Fragments of three shoes were found. All three were thong shoes and at least two had a pointed toe. High and low thong shoes are found in a wide time range. In the material from the Gullskoen area at site 6, Bryggen the shoe types are found in periods 2-7 (Larsen 1992) dated from the 1120s to 1476 (Herteig 1990; Herteig 1991; Hansen 1998). However, the types dominate in the older periods, making up for almost 80 % of the shoe material in period 2, and almost 50 % of the shoes in period 3 (Larsen 1992, Figure 54). Periods 2 and 3 at site 6 are dated from the 1120s to 1198 (Hansen 1998). At the Folkebibliotekstomten site in Trondheim thong shoes are found in phases 4-8 (Marstein 1989, 10 and 87), dominating in phases 4-6, dated to between '1050 and c 1175' (Christophersen and Nordeide 1994, 35). Shoes with a pointed toe are known from all periods in the Gullskoen area, but they are most common in periods 2 and 3 (Larsen 1992, Figure 55) dating from the 1120s to 1198 (Hansen 1998). The Folkebibliotekstomten site material is not classified by toe shape alone, so comparison is difficult.

The chronological distribution of shoe material from the Gullskoen area at site 6 and the Folkebibliotekstomten site is too wide for any strong conclusions to be reached on the dating of assemblage 5 at site 9. However, if we add the fact that all three shoes in assemblage 5 are thong shoes and that at least two of them had pointed toes, this high proportion may imply that the assemblage stems from the time period dominated by the thong shoe and where the element of pointed toe was most common - that is in the period between c 1050 and c 1198 according to the Gullskoen area and Folkebibliotekstomten site materials. A broad date of assemblage 5 to

between 1050 and 1200 is in accordance with the fact that assemblage 5 was found stratigraphically under assemblage 4, dated to after the first quarter of the thirteenth century. I therefore suggest that assemblage 5 dates broadly to between c 1050 and 1200. This gives a similar *post quem* dating for buildings 10 and 11.

Assemblage 6
Accession numbers BRM 3/755-764.
Context: M-10/pl. 5. 'In well 5'. ('I brønd 5') (This well is the same as well no 4 in the report). Well 4 cuts through remains of buildings which burned in fire 3 and the well was superposed by fire-layer 2. Therefore well 4 must be younger than fire 3 but older than fire 2. The finds in well 4 can give a *post quem* date for fire 2.
Dating finds:
BRM 3/760, 1 sherd of a cooking pot.
BRM 3/761, 1 sherd of York White ware.
BRM 3/762, 1 sherd of Paffrath ware.
BRM 3/763, 1 sherd of a cooking pot.
BRM 3/764, 1 sherd of a cooking pot.

The youngest type of pottery in this assemblage is the sherd of York White ware. The sherd gives a *post quem* date for fire 2 to after the end of the twelfth century. (Reed 1990).

Assemblage 7
Accession numbers BRM 3/803-812.
Context: L-11/pl. 5. 'In well 3' ('I brønd 3'). This well is number 6 in the report. Well 6 lies stratigraphically below fire 2 and it is most likely connected to buildings which burned in fire 3. The assemblage may give us a clue to the dating of this place in the stratigraphy.
Dating finds:
BRM 3/808, 1 sherd of Siegburg Stone ware.

Stone ware from Siegburg is found from c 1300 (Lüdtke 1989). The sherd gives a *post quem* date for fire 2.

Assemblage 8
Accession numbers BRM 3/881-886, BRM 3/895-900.
Context: L-11/pl. 6. 'In fill-masses' ('I fyldlag'). On plan 6 we see something that looks like the remains of foundation rafts.
Accession numbers BRM 3/887-894.
Context: K-11/pl. 4. In fill-masses ('I fyldlag'). On plan 4 we see something which looks like the remains of foundation rafts.
Accession numbers BRM 3/904-911.
Context: M-10/pl 10. In fill-masses. In the level under timbers ('I fyldlag. I nivået under treverk'). On the original drawing the wood seems to lie close to the natural subsoil, the fill-masses may thus belong to the first stage of filling-in the Vågen bay.
Accession numbers BRM 3/924-926.
Context: 'M-10/pl. 9.' On plan 9 we see the same wood as on plan 10, the wood seems to lie close to the sterile masses, therefore the fill-masses may belong to the first stage of filling-in the Vågen bay. Assemblage 8 may stem from fill-masses from the first expansion into Vågen. The artefacts are most likely redeposited and reflect the material culture in earlier phases.
Dating finds:
BRM 3/888, 1 sherd of Andenne pottery.
BRM 3/889, 1 sherd of Andenne pottery.

Andenne ware is produced from the eleventh century up until the middle of the fifteenth century (Reed 1990, 38).

Assemblage 9
Accession numbers BRM 3/901-903, BRM 3/1004-1010.
Context: M-11/pl. 11. 'Found in fill-masses under the floor made of thin logs'. ('Funnet i fyllmasser under strangedækket'). The floor belongs to building 5 and the assemblage was found in layers under the floor of building 5. The floor consisted of thin logs laid side by side, trash could easily fall between the floor-logs and be deposited as cultural layers under the floor. The layers under the building may therefore stem either from the time before building 5 was constructed or from the period when the building was in use.
Dating finds:
BRM 3/903, 1 fragment of low thong shoe upper with slits in pairs and rounded toe.
BRM 3/1009/1, 1 shoe sole with pointed toe and rounded heel.

BRM 3/1009/2, 1 high thong shoe upper with slits in pairs, pointed toe and rounded heel.
BRM 3/1010/1, 1 front part of a shoe-upper with a band of decoration running up the middle of the front piece from the toe to the instep (embroidery pattern A). The toe was skewed.
BRM 3/1010/2, 1 upper of low thong shoe with slits in pairs, top band along the instep and a band of decoration over the instep and up the middle of the front piece from the toe to the instep (embroidery pattern C). The toe was pointed and the heel was rounded.
BRM 3/1010/3, sole with pointed toe and rounded heel.
BRM 3/1010/4, lace hole piece from a low side laced shoe (variant 1).

Fragments of seven shoes were found. At least three of these were thong shoes and one was a low side laced shoe, the rest cannot be classified. Four out of six shoes had pointed toes. As we saw under the discussion of assemblage 5, a high proportion of thong shoes and of the element of pointed toe may indicate that the artefact assemblage dates from the late eleventh century or the twelfth century. The low side laced shoe of type 1 is not found before phase 5 at the Folkebibliotekstomten site in Trondheim (Marstein 1989), that is from c 1100 (Christophersen and Nordeide 1994, 35). In the Gullskoen area at site 6 the type is found from period 2 and onwards. The shoes provide a tentative dating frame of c 1100-1200 for assemblage 9.

Assemblage 10
Accession numbers BRM 3/946-949.
Context: L-11/pl. 8. 'In fill-masses. 0.94 masl' ('I fyllmasser. 0.94 moh').
The artefacts must have been found close to buildings 13, 14 or caisson 2, as these were the only constructions on plan 8. It is, however, uncertain whether these artefacts are contemporary with the constructions, because the fill-masses which contained the artefacts, may have been deposited when the constructions went out of use and the area was filled out as part of the expansion of the built-up area into the Vågen bay.
Dating finds:
BRM 3/947, 1 sherd of Andenne ware.
BRM 3/949/1, 1 fragment of a low thong shoe upper with densely cut slits and rounded heel.
BRM 3/949/2, 1 fragment of low thong shoe upper with slits in pairs.
BRM 3/949/3, 1 fragment of a low shoe upper with traces of top band along the instep and heel-stiffener. The heel was rounded.
BRM 3/949/4, 1 fragment of a thong shoe upper with a pointed toe.

Andenne pottery was produced from the eleventh century up until the middle of the fifteenth century (Reed 1990, 38). Fragments of four shoes were found, three were identified as thong shoes. As seen under the discussion of the material from assemblage 5 the chronological distribution of the thong shoe material from the Gullskoen Area at site 6 in Bergen and the Folkebibliotekstomten site in Trondheim provides a very wide dating frame for thong shoes. Still, as with assemblage 5, the fact that as much as three out of four shoes are thong shoes, would imply that assemblage 10 should be dated to the period dominated by this type of shoe, that is in the period between c 1050 and c 1200. The presence of the Andenne ware in the assemblage cannot help us narrow this time span as Andenne ware was produced for a long time. It is difficult to be conclusive about the dating of assemblage 10 on the basis of finds. I suggest that assemblage 10 may be dated tentatively to between c 1050 and c 1200 on the basis of the predomination of thong shoes in the material.

Assemblage 11
Accession number BRM 3/951.
Context: 'L-10/pl. 6. -7300x/8300y/0.79 masl. In fill-masses containing wood chips', ('I spon og treflisholdige fyllmasser'). The assemblage was found within the walls of building 12.
Accession numbers BRM 3/952-965, BRM 3/984-997.
Context: 'L-10/pl.8. Within the walls marked 26-45, 50-58'. ('Indenfor tilevæggene mrk. 26-45, 50-58'). This corresponds to building 12. It is not possible to decide whether the finds are contemporary with building 12, or whether they belong to fill-masses spread after it went out of use, so the context is unsafe.

Dating finds:
Pottery
BRM 3/956, 1 sherd of Andenne ware.
BRM 3/957, 1 sherd of Scottish Gritty ware or York White ware.
BRM 3/987, 1 sherd of York White ware.
BRM 3/988, 1 sherd of Andenne ware.
BRM 3/986, 1 sherd of Modern Redware.
Shoes:
BRM 3/997/1, sole with rounded toe and heel.
BRM 3/997/2, pump with rounded toe and heel, decoration along the instep (embroidery pattern B (Larsen 1992)), edge band along the instep.

Pumps are found in small quantities at site 6 from period 2 until period 6, dated from the 1120s to 1413 (Larsen 1992). At the Folkebibliotekstomten site pumps (SUL 1 and 2) are found in small quantities from c 1100-1375 (Marstein 1989), thus leaving us with much too wide dating frames to be of any help here. We have to rely on the dates provided by the ceramic material. The type of York White ware encountered here is found from c 1200 (pers com Alan Vince 1998) and this is the youngest ware found in this context. The sherd of Modern Redware must be considered an intrusion. I suggest that assemblage 11 may be dated tentatively to after the end of the twelfth century (after c 1200).

APPENDIX 4

Seven artefact assemblages from site 11, Dreggsalmenningen 20 BRM 4 (1967)

The dates of seven artefact assemblages are discussed in order to throw light upon the absolute date for the oldest material at site 11, Dreggsalmenningen 20 site. The assemblages have been selected by comparing information from the artefact database from site 11[92] with the original drawings, comments to the drawings and the report from the excavation (Larsen 1967b). The assemblages were selected aiming to date structures in the lowest level at the site. In the original documentation structures were rarely given numbers, instead the structures were described by find context, that is square and levelling number and sometimes a general label for example 'floor', 'drain'. The find contexts for artefacts were described according to the original field information. The description of the context of the assemblages is generally poor and only in a few instances could the artefacts be related to a structure. Only assemblages with pottery and comb material have been analysed. Combs are classified according to Wiberg 1977 and Flodin 1989. Table 73 shows pottery and combs in the assemblages. Figure 16 shows the assemblages in relation to the stratigraphy at Dreggsalmenningen 20.

Assemblage 1
Accession numbers BRM 4/1630-1633.
Context: W-9/pl 1. 'In drain 1, under fire-layer 2'. Drain 1 corresponds to drain 3 in the report.
Accession numbers BRM 4/2215-2234.
Context: W-9/pl 1 'North of drain 1, under fire-layer 2'. Drain 1 corresponds to drain 3 in the report.
Accession numbers BRM 4/2270-2275.
Context: W-9/pl 2 'In drain 1, under fire-layer 2'. Drain 1 corresponds to drain 3 in the report.
Assemblage 1 should provide an approximate *post quem* date for the culture-layers between drain 3 and fire-layer 2
A sherd of Scarborough II ware in the assemblage dates the culture-layers between drain 3 and fire-layer 2 to after c 1215/25, according to the prevailing date for this ware (Farmer and Farmer 1982). This may give a similar date for fire-layer 2 in Square W- -9.

Table 73. *Pottery and combs in assemblages 1-7 from Dreggsalmenningen 20 (1967) BRM 4*

Dating Artefact / Assemblage	1	2	3	4	5	6	7
Pottery:							
Andenne	4		1	1			
Black ware low fired							2
Cooking pot							3
Dev Stamford	3		1	1			3
Grimston					1		4
Grimston Decorated			1				
Hedon	1						
Humber						1	1
London (unspecified)							1
Low Countries Highly decorated	1		3	1	1	2	1
Near Stone ware	1		2			1	
Paffrath	1		1				2

Pingsdorf							2
Scarborough II	1		9	2			1
Scottish White gritty							2
Shelly (unspecified)							1
South Scandinavian			2				
Yorkshire (unspecified)			1		1		1
Post medieval red ware							1
Uncertain	6		8		2		4
Combs:	E6/1	D4					

Assemblage 2
Accession number BRM 4/4064.
Context: W-9/pl 1. 'In a building, under floor, under fire-layer 2'. The building must correspond to building 9 or 10, as these are the only buildings in square W- -9/pl 1.

Accession number BRM 4/4064 is a comb of type D4. Combs of type D4 were found in phases 8 and 9 at the Folkebibliotekstomten site in Trondheim. These phases are dated to between 1225 and 1325 (Christophersen and Nordeide 1994). The type is not very common in Oslo; at the 'Mindets tomt' site one comb was found under fire 5 (Wiberg 1977, 209), dating to c 1350 (Molaug 1977, 111). One was found at the 'Søndre Felt' site in fire-level 5 (Wiberg 1987, 419) dating to between c 1275 and 1350 (Molaug 1987, 313). At site 6, Bryggen 10 combs of this type have been found, 8 were found in periods 3 and 4 dated to 1170/71-1198, and 1198-1248 respectively, the two remaining combs were from younger contexts.[93] If the comb from assemblage 2 has a similar dating frame as the examples from Oslo, Trondheim and site 6 in Bergen it dates buildings 9 or 10 to after c 1170/71.

Assemblage 3
Accession numbers BRM 4/1634-1644.
Context: X-9 'Under fire-layer 2'.
Accession numbers BRM 4/1695-1700.
Context: X-9/pl 1. 'In drain 2'. Drain 2 corresponds to drain 5 in the report as no other drains are described in the square. Drain 5 is under a fire-layer, which Larsen assumes is fire-layer 2 (Larsen 1967b).
Accession numbers BRM 4/1806-1807.
Context: X-9/pl 1 'In drain 3, under fire-layer 2'. Drain 3 corresponds to drain 5 in the report since no other drains were recorded in the square. Drain 5 is under a fire-layer which Larsen assumes is fire-layer 2 (Larsen 1967b).
Accession numbers BRM 4/2649-2656
Context: X-9/pl 1. 'Under fire-layer 2'
Accession number BRM 4/2657
Context: X-9/pl 3. 'Under fire-layer 2'
Accession numbers BRM 4/3137-3150.
Context: X-9/pl 1. 'North of drain, under fire-layer 2'. The drain corresponds to drain 5 in the report since no other drains are described in the square. Drain 5 is under a fire-layer, which Larsen assumes is fire-layer 2 (Larsen 1967b).

Assemblage 3 provides an approximate *post quem* date for the culture-layers in and around the drain in square X-9 and the fire-layer above.
According to the Scarborough II sherds in the assemblage the culture-layers between the drain and fire-layer 2 may stem from after c 1215/25 (Farmer and Farmer 1982). This may give a similar *post quem* date for fire-layer 2 in square X-9.

Assemblage 4
Accession numbers BRM 4/2674-2680.
Context: X-8/pl 1. 'Under fire-layer 2'.
Assemblage 4 provides an approximate *post quem* date for the culture-layers under fire-layer 2 in the square and this may give a similar date for the fire-layer above.
According to the Scarborough II sherds in the assemblage the culture-layers under fire-layer 2 may stem from after c 1215/25 (Farmer and Farmer 1982). This may give a similar *post quem* date for fire-layer 2 in square X-8.

Assemblage 5
Accession numbers BRM 4/3114-3122
Context: U-9/pl 6. 'Under building, under floor'. The building may be building 5 since this is the only building with a floor preserved on this plan.

The presence of Grimston, Low Countries Highly Decorated, and York wares shows that the assemblage should be dated to after the end of the twelfth century (Reed 1990, 30-31; Madsen 1996, 22). This gives a similar date for the building and the floor.

Assemblage 6
Accession numbers BRM 4/3190-3195.
Context: U-9/pl 6. 'West of building'. The building is probably building 5. The assemblage should then be from the fill-masses above building 12. Assemblage 6 should thus provide an approximate *post quem* date for when building 12 went out of use.

The presence of Low Countries Highly Decorated ware indicates that the assemblage was deposited after the end of the twelfth century (Madsen 1996, 22).

Assemblage 7
Accession numbers BRM 4/4045-4061.
Context: U-9/pl 7. 'Under passage, under fire-layer 1'. The passage is probably contemporary with building 5, which is later than building 12 (according to plan 5-7/U-9). The assemblage may therefore stem from the level between building 5 and 12.
Accession numbers BRM 4/4197-4222.
Context: U-9/pl 7. Under fire-layer 1'. The assemblage may stem from the level between buildings 5 and 12 as this corresponds to the level excavated in plan 7/U-9.
The assemblage provides an approximate *post quem* date for the deposition of fill-masses on top of building 12 when this building went out of use. This may provide an approximate date for the fire which scorched building 12 and caused it to fall into disuse.

The presence of Scarborough II pottery indicates that assemblage 7 should be dated to after c 1215/1225 (Farmer and Farmer 1982). A sherd of Post Medieval Red ware must be considered an intrusion in this context.

FOOTNOTES

[1] 'Double tenements' are double rows of buildings that run at 90 degrees to the waterfront (cf p 173ff).

[2] The maps are constructed in the geographical information system Map Info using the local coordinate system *'Bergen lokale koordinatsystem'*, where 6000X/6000Y is located by *Domkirken* the present day cathedral church. This coordinate system was used at archaeological investigations between 1979 and 1995. Between 1955 and 1979 a local system developed for the Bryggen excavations was applied at all major sites, Curator Egill Reimers has kindly converted the Bryggen coordinates into the *Bergen lokale koordinatsystem*.

[3] The Vågen Bay is according to 'town north' oriented north - south. As my maps are drawn on the basis of a geographical coordinate system, the local tradition for describing features in Bergen according to 'town north' cannot be followed on my maps the Vågen Bay is therefore oriented northwest - southeast.

[4] In the Bergen area the natural topography was characterised by sloping morainic surfaces as well as steep hills and rocks. It is likely that the inhabitants aimed to level out the most extreme differences of height when building activities took place in new phases and it may be problematic to determine if the oldest culture-layers at a site actually reflect the first activity at the location. This is only considered a real problem when the oldest culture-layers are located on high parts of bedrock. As a rule of thumb, strata which are located directly on top of protruding parts of bedrock are not trusted to be the oldest remains of land use at a location, unless special circumstances call for it.

[5] The method of investigating the number of missing treerings on a dendrosample, through sapwood statistics has not yet been developed for pine (Pers com Thomas S Bartholin at the National Museum of Denmark Copenhagen. June 2004).

[6] The dendro samples were taken from material in the storerooms of the Bergen University Museum in co-operation with curator and architect Egill Reimers, who had a project of his own. Terje Thun of NTNU dated the samples and re-examined samples that were taken during the Bryggen excavations in the years between 1955 and 1979 in addition to the new samples. This 'dendro project' was financed through a grant from the Faculty of Humanities, University of Bergen.

[7] Terje Thun at NTNU has kindly re-examined 'crucial' samples in 1999, 2001 and in 2004.

[8] OxCal version 3.5 C Bronk Ramsey (2000); (http://www.rlaha.ox.ac.uk/orau/index.htm).

[9] T-5190, T5682, and T5473 (Hjelle 1986, 36).

[10] *Centaurea cyanus* (cornflower), *Papaver rhoeas* (poppy), *Papaver dubium* (poppy), *Papaver argemone* (poppy), *Helianthemum nummularium* (rock rose), *Cytisus type* (broom), and *Ulex* (gorse).

[11] A detailed account for how the H-post database was updated is given in Hansen 1998, 109-111.

[12] T-3786, 970+/- 40 BP (Krzywinski and Kaland 1984, 24).

[13] This is originally profile 220/1-3 in the Bryggen documentation material. Cf also diaries of excavation unit N7/1972 at site 6, Bryggen site BRM 0 (Top Ark).

[14] Dendro no 1454 BRM 0 (Hansen 1998, 94).

[15] Dendro nos BRM 0/93029 and BRM 0/ 93028 (Hansen 1998, 93). Since they have turned out to be central for the dating of the earliest horizons they were re-examined by Terje Thun.

[16] Rows of pairs of posts placed at intervals with vertical planks standing side by side in between. Both posts and planks were either rammed or dug into the ground. (See also Figure 13).

[17] According to boundary indicators accounted for in Chapter 9, the fences demarcate boundaries of two plots labelled 6/C and 6/B.

[18] '...the bottom of the enclosing wall below the floor-level of a building raised on posts', (Herteig 1991, 97). This description is in accordance with a building type that is later denominated 'cellar buildings' (Herteig 1992, 287).

[19] Q3 plan XII the fence and posts mrk 5 and 75.

[20] Q3 plan X mrks 1, 4, 5, 6, 18, 19, 20, 21 and 34.

[21] BRM 0/92710.

[22] Dendro no 1537 BRM 0, Thun's catras no 1344. Details like signs of reuse or missing tree rings were not documented when this sample was taken in the early 1970s.

[23] Dendro nos BRM 0/ 92786, 0/92785 and 0/92798. The first two samples were taken in 1997/98, from posts where only the bottom part was preserved, and the issue of reuse could not be judged. The two posts produced dates that were much older than expected for building 66, being assigned to period 2, a third sample was taken in 1999. This sample gave a younger date that corresponds well with period 2.

[24] T-9162.

[25] Excavation supervisor Andrzej Golembnik has kindly placed his unpublished manuscript for his report at my disposal.

[26] Golembnik suggests that the fire which ended phase 10/9 was identical with 'the fire before the historically documented one in 1170/71' (Golembnik in prep-a, 8). By this he most likely means that the fire is identical with fire VIII found at site 6, formerly dated to c 1150 (Herteig 1991). Today, however, the fire is dated to the 1120s (Hansen 1998). Fire VIII destroyed building 45 at the Bryggen site, however, the fire seems to have been quite local, since it has hardly been recognised outside this building (but see the discussion of the 9-post building at site 6 above). Consequently we cannot assume that the fire, which destroyed phases 10/9 at Dreggsalmenningen 12-14 BRM 237, was identical with the Bryggen Fire VIII.

[27] Larsen did not give 'building 14' a number. In the report building 14 is spoken of as 'a possible building under building 5' (Larsen 1967a). The scattered structures north of the fence are not discussed in the report.

[28] The fence itself, being dug into the ground may hardly have survived for some 150 years, but the function of the fence as a demarcator survived and the boundary symbolised by the fence was not trespassed by structures till after horizon 5.

[29] See Chapter 9 for a definition of plot boundaries.

[30] Classification according to Flodin 1989.

[31] Using the terminology of Clarke and Carter 1977 to distinguish the different types of wares (Clarke and Carter 1977).

[32] A sherd from phase 8 was classified as of 'unknown origin'. After a closer look it turned out that the sherd is a piece of a plastic ornament from a highly decorated vessel of Scarborough II ware. This kind of pottery is normally not found until the thirteenth century (Farmer and Farmer 1982). If the sherd is found in its right context Dunlop's proposed 1170-1198 date for phase 8 is 25-30 years too early and my proposed 1150/60-c 1170 date is 55-60 years too early. In other words the sherd fits badly with the general picture of the material by being too young. Consequently I think that the sherd was intrusive and it is not included in the further discussion.

[33] K21, K35, K9, K33.

[34] In a study of burials in medieval Oslo a time span of 20 years between each level of burials was suggested (Eide 1974, 227-230). This would date the first level of burials in the present case to 60 years before the 1120s, that is the 1060s.

[35] The samples from 1998 were taken by Reimers and myself.

[36] BRM 104/2486 (VIIIa) Catras no 11002561. The outer tree-ring in the sample was dated to 1090. According to Terje Thun, who analysed the sample (2001), a few tree-rings may have been missing. As the sample was taken from a place on the timber where the surface seemed intact, and lacked no tree-rings, this can only be a few years.

[37] BRM 110/6096, the sample was taken by Reimers and myself in 1998.

[38] 'Stages' is the terminology used by Golembnik.

[39] 'Stages' is Lindh's terminology. The documentation of stone layer 'A' in the site report is an exception to the rule: although it is not a fire-layer, it has been described and given a number ('A').

[40] BRM 490/27

[41] T-10346, from layer 190, BRM 342/97.

[42] Sherd BRM 342/951 from layer 620 in Pit K192.

[43] A basin used in connection with freshwater supply; sediments in the running water from the nearby stream were separated from the water when letting the water-stream slow down in a basin.

[44] 'Mørk brun gytje med lite makroskopisk materiale'. (Hjelle 1998, section 5).

[45] *Helianthemum* (rockrose), *Papaver rhoeas* (poppy) and *Centurea cyanus* (cornflower).

[46] The location of the units/plots can be seen on maps in Chapter 9 and 10 eg Figure 33 and Figure 39.

[47] Building row numbers and letters refer to Herteigs main publication of the buildings at Bryggen (Herteig 1990 and 1991).

[48] The additional boundaries in the middle town area cannot add anything to the discussion: The distance between the southern boundary of plot 26-27/B and the northern boundary of plot 29/B is about 34 m, measured at a right angle between the boundaries. If this distance were divided into three plots these plots would be about 11.3 m wide and thus conform to the system of the northern town area. If, however, the distance was divided into two plots only, these plots would be about 17 m conforming to the average of the known plots of the middle town area, in conclusion, this material does not add to the discussion. The distance between the northern boundary of plot 29/B and the pier/waterfront constructions at site 30, Vetrlidsalmenningen is about 25 m. This distance is just large enough for two plots of the northern town area size to be squeezed in. But some of the southernmost hypothetical plots would then be located partly in the small river that ran down the morainic slope here...A plot of about 17 m width on the other hand would fit quite neatly between the northern boundary of plot 29/B and the pier/waterfront constructions at site 30, Vetrlidsalmenningen and leave room for the small river. It seems that this material can be interpreted either way so it does not add anything to the discussion.

[49] The reader may recollect that the street was assigned to horizon 4 as a supplementary source through a horizontal link of the street to the presumed predecessor to St Mary's (cf p 115ff, 126ff).

[50] Each plot or site/analytic unit counts as one unit, where it cannot be ascertained whether data are derived from one or two plots (eg data from 'unit 7' at site 6 may stem from plot 6/E or 6/F or both) such data are treated as representing one plot/analytic unit. In horizon 2 data from sites located outside the horizon 2 plot-system and the settlement at site 30, Vetrlidsalmenningen, are counted as one unit per site.

[51] Kellmer never completed or published her studies. She did however leave behind notes, with valuable observations. I have been fortunate to have these at my disposal.

[52] Rivets in the combs from contemporary contexts in Bergen often appear 'hollow' and must, as suggested by Patricia Galloway, have been formed from rolled sheets of bronze or other metals rather than from pulled wire (Cf Biddle 1990, 266, footnote 20).

[53] BRM 0/54784/01.

[54] BRM 0/54784/1.

[55] BRM 0/64456. The possible touch stone was analysed by both microsonde and scanning electron

microscope by Harald Furnes, Department of Earth Science, University of Bergen. Furnes concluded that the raw material for the possible touch stone is 'a lava or a shallow intrusion' (Furnes 2001).

[56] A system for recording layers containing steatite offcut/chips has been in use as a routine at all investigations in Bergen since 1955.

[57] Hufthammer has kindly provided the information about cut and chop marks on the skulls of cats and dogs from the Engelgården area site 6, Bryggen (about the same area as plot 6/E).

[58] At sites excavated between 1955 and 1979 layers were in principle characterised according to the most dominant feature of the layer, many layers were, however, not characterised at all.

[59] According to Anne Ågotnes' observations of signs of usage on baking slabs from site 6, Bryggen, the slabs must have been used not only for baking flat-bread. Other smaller types of bread and/or other foodstuffs were probably also baked or heated on the stone slabs.

[60] In material from medieval Ribe (DK) pins initially classified as sausage pins were through their context re-classified as skewere/strechers used when streching skins. The Ribe pins were found sitting in the ground encirkling patches of dark soil (Bencard 1973). In the present material the 'sausage pins' have not been found in such contexts.

[61] Four long-toothed combs and two flax-combs are present in the material but not included here.

[62] I have divided Flodin's type E5-3 into three types: (1) one row of rivets, no profile, (2) one row of rivets, one profile, (3) with two rows of rivets.

[63] The combs from Lund, Viborg and Oslo stem from older excavations and are all dated broadly to c 1150-1225 (Blomquist 1942, 142-148; Nielsen 1969, 61; Wiberg 1977, 207). The comb from Schleswig is dated to the twelfth century (Ulbricht 1984, 46) the comb from Lödöse broadly to 1100-1200 (Letter from Sonia Jeffery, Lödöse Museum 30/10/02). The comb from Schleswig is of bone (Ulbricht 1984, 49) Osteologist Anne Karin Hufthammer of Bergen Museum has kindly classified the 'twin' combs and some of the comb blanks from Bergen. She points out that the surface of the combs is generally so worked up that a positive classification of the raw material is not possible without a DNA test. A visual classification of the material, however, indicates that the combs were made of antler of reindeer (pers com Hufthammer 2002). Antler of reindeer and a few antlers of elk has been found in medieval culture-layers, whereas no specimen of deer have been found (Hufthammer 1987, 69). This supports the notion that antler of reindeer was the preferred raw material for combmaking in Norway (Trondheim, Oslo), whereas the raw material found in comb waste in southern Scandinavia (Lund, Konghelle, Schleswig) is antler of deer cf (Rytter 1997, 10).The combs from the other locations have not been classified according to raw materials.

[64] I only studied shoes with elaborate embroidery patterns as opposed to those with more simple patterns, because I wanted to have as many details as possible at my disposal when comparing the patterns. It is thus possible that the twins identified by me comprise an minimum of twins in the available material.

[65] I attempted to measure the regularity of the stitches in the seams of the shoes according to the methods described by Keth E Lind (Lind 1991, 192ff). Having followed Lind's procedures for a while no shoes with irregular seams had turned up and I gave up the time consuming project. With a few exceptions, that were all results of repair or secondary use of the shoe, the seams of the shoes in horizons 4 and 5 appear to be very regular.

[66] The inlaid metal of the three keys was studied by Kirsti Hauge Riisøen, Bergen Museum through 'X-ray diffraction spectroscopy (XRD). The inlaid metal on key BRM 0/72983 was copper alloy, whereas no inlaid metals could be traced on keys BRM 0/44749 and BRM 104/2771. BRM 104/2771 has, however, clearly had a string twisted around it. As for BRM 0/44747 this key has been treated in such a way during conservation, that it is not possible to study the original surface (Riisøen 2001).

[67] BRM 0/45060, 0/45222, 0/45847*, 0/54529*, 0/63860*, 0/64396, 0/64557*, 0/64558, 0/65017, 0/73103, BRM 76/10967, and BRM 94/1066*, BRM 104/2261*. In order to get a closer determination of the raw material and possible origin of the rock the whorls were examined geologically. Whorls marked with * were scanning elektron microscope analysed by Harald Furnes, Department of Earth Science, University of Bergen. According to Furnes, 'The analysed spindle whorls were all characterised by a

relatively high content of MgO and FeO, and a low content of SiO2. This composition indicates a rich olivine composition. In addition the A12O3 content is high. This shows that the material contains one or more A12O3-rich components; these may be Ca-rich plagioclase and /or A1-rich spinell. The rock is therefore most likely an ultramafic rock that to some degree has been transformed into serpentine. None of the samples thus represent greenstone' (Furnes 2001). There are slight variations in the colour of the thirteen spindle whorls. I asked geologist Øystein J Jansen, Bergen Museum, who is a specialist of serpentine/steatite quarries, to judge whether or not the 13 whorls in spite of the colour variations may stem from the same geological site/quarry. Jansen studied the whorls through magnifying glass. Based on his investigation and the results from Furnes' scanning microscope analysis, Jansen concluded that the darkest whorls are less transformed, while the lighter coloured whorls are made of rock that is more transformed towards serpentine and talk. Still all the whorls may stem from one geological site/quarry, since variations in the degree of transformation of the rock may be found within a few m^3 on a geological site (pers com Jansen January 2003).

[68] 0/65009. There was no production of pottery in medieval Norway.

[69] 0/65009.

[70] BRM 0/46136, 0/46161, both drawn, 0/76420 described only in the original find lists.

[71] BRM 0/45525.

[72] BRM 0/55139, BRM 110/5682.

[73] BRM 0/43752, 0/54277, 0/79851, and 0/82145.

[74] BRM 0/63827.

[75] BRM 0/44989, 0/45092, 0/45542, 0/46275, 0/53081 and 0/73063.

[76] The activities of war and games are not considered relevant for this discussion.

[77] Being no expert on boats myself I owe my confidence in this observation to a helpful discussion with Jan Bill, The National Museum Centre for Maritime Archaeology, Denmark, (January 2002) regarding the question.

[78] BRM 0/85675: 'Øyolv owns this sack'. The finds context is dated to between c 1170 and c 1198. 84690: 'Endre owns this sack'. The finds context is dated to between c 1198 and 1248.

[79] The reader may also recollect that, as a methodological approach, presence rather than the absence of activities is generally emphasised in the present study (cf p 71ff).

[80] Helge Askvik at the Department of Earth Science, University of Bergen has classified the hones according to principles outlined in Mitchell, Askvik, and Resi 1984.

[81] East Midlands, Hedon, Humber, Grimston, London, Scarborough, Stamford, and Torksey wares.

[82] Pingsdorf, and Paffrath wares.

[83] Normandy Gritty, unspecific 'French type', and 'north French' wares.

[84] Andenne ware.

[85] *Heliantemun numularium* (rock rose), *Centaurea cyamus* (Cornflower) and *Malva* (Mallow).

[86] Data for Ruth's study is based on children from the United States and Great Britain.

[87] Based on figures in Bennicke 1993, 37, medieval men and women were respectively 3.9 % and 4.8 % shorter than their modern counterparts, hence at an average, medieval people were about 4.3 % shorter than those of today.

[88] The modern continental shoe size is obtained by multiplying the length of the shoe in mm by 1.5 (Groenman-van Waateringe 1978, 185). Larsen (1970, 1992) and Schia (1975) used 24 cm, size 36, as the divide between adult and child shoes in their studies. They measured unpreserved leather. The major part of shoes from Bergen have today been preserved through various methods, this has caused shrinkage to the leather so that after preservation the shoes are shorter than when newly excavated. Soles measured and drawn before preservation were hence 15-25 mm longer than when I measured them after

preservation. In Oslo observations on leather before and after preservation show the same tendency – after preservation soles had shrunk 25-30 mm depending on the original length of the sole (Schia 1977, 123). My measurements are taken from a mixture of leather preserved through various methods and from unpreserved leather that has dried up, in addition to this most of the shoes had to be soaked in *lederweicher* before measurements could be taken. When soaked in *lederweicher* the leather swells and regains some of its pre-preservation size. Due to the various treatments of the leather from the point of excavation until measurements were taken I have not been able to establish the precise relationship between the post excavation size of the shoe and the present day size. This presents some problems when interpreting the material. In order to make up for at least one of these problems 20 mm is added to measurements taken from preserved leather that was not soaked in *lederweicher* before measurements were taken, this should provide a coarse compensation for the shrinkage caused by preservation. The measurements presented here are thus more or less equivalent to measurements taken of shoes that were not preserved. Yet another problematic question is how the size of the unpreserved shoe corresponds to the medieval shoe? This question has not yet been answered and it is beyond the scope of the present study to do so. Schia suggested that the medieval size of the shoe may be found between the newly excavated-shoe and the preserved-shoe size (Schia 1977, 123), his study of the soles from Oslo were nevertheless based on unpreserved leather, also Larsen's studies were based on measurements of unpreserved leather. I also have to interpret the measurements available, bearing in mind the uncertainties involved.

[89] Fritzvold (1976) also refers to the drawings from Trumpy's project 260. However he is not detailed in his reconstruction of the threshold between Veisan and Vågen and I found it necessary to check Trumpy's observations myself. It proved difficult, however, to find the drawings since Trumpy's material is in private hands. Half of drawing 9, containing information on bedrock levels for the main building at Bradbenken 1 was accessible (and therefore also only information on half of the building site!), with the kind help of Instanes A/S, Bergen.

[90] According to Fritzner (1973) the place name has two meanings: 1) Holmr: Omflydt Land af ringe Omfang, liden Ø i Aa, Vand eller Sø. 2) Holmi = Holmr: Tue, Forhøining som hæver sig op af og over den omgivende Flade (Land, Ager, Myr).

[91] Supplemented with information on the 'A5 index cards', the A5 index cards are the original documentation for the location of artefacts on site 9.

[92] Supplemented with information on the 'A5 index cards', the A5 index cards are the original documentation for the location of artefacts on site 11.

[93] I have classified these combs and dated them according to my updated 'H-post database' (cf p 82) and Hansen 1998.

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INDEX

FAGBOKFORLAGET

The Bryggen Papers present results based on the archaeological material from the excavations at Bryggen and other medieval and early sites in the town of Bergen. Known as an episcopal seat and regional royal administrative and residential centre, Bergen developed in the 12th and 13th centuries into the first truly international trading centre of Scandinavia and one of the most important ports of northern Europe, at the same time becoming the first capital of the Norwegian kingdom. The Hanseatic League established one of its four main trading stations or *Kontore* in Bergen around 1360, lasting into the latter part of the 18th century.

This volume of the Bryggen Papers presents a study of the processes of the urban development of Bergen, how the town emerged and developed into an important urban community by the early Middle Ages. The study is primarily based on archaeological contemporary source material from c 800 to c 1170 – a complex and composite material, comprising traces of cultivation, culture layers, buildings, plots and artefacts. Its main aim is to investigate the town's structure, plots and plots systems, and the different activities, crafts and production as well as the character of the urban settlement and its development until around 1170. The main questions that are addressed are when, how, why and on the initiative of whom Bergen emerged as a town.

The author

Gitte Hansen: Dr. Art. Assosiate Professor at Bergen University Museum, University of Bergen.

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