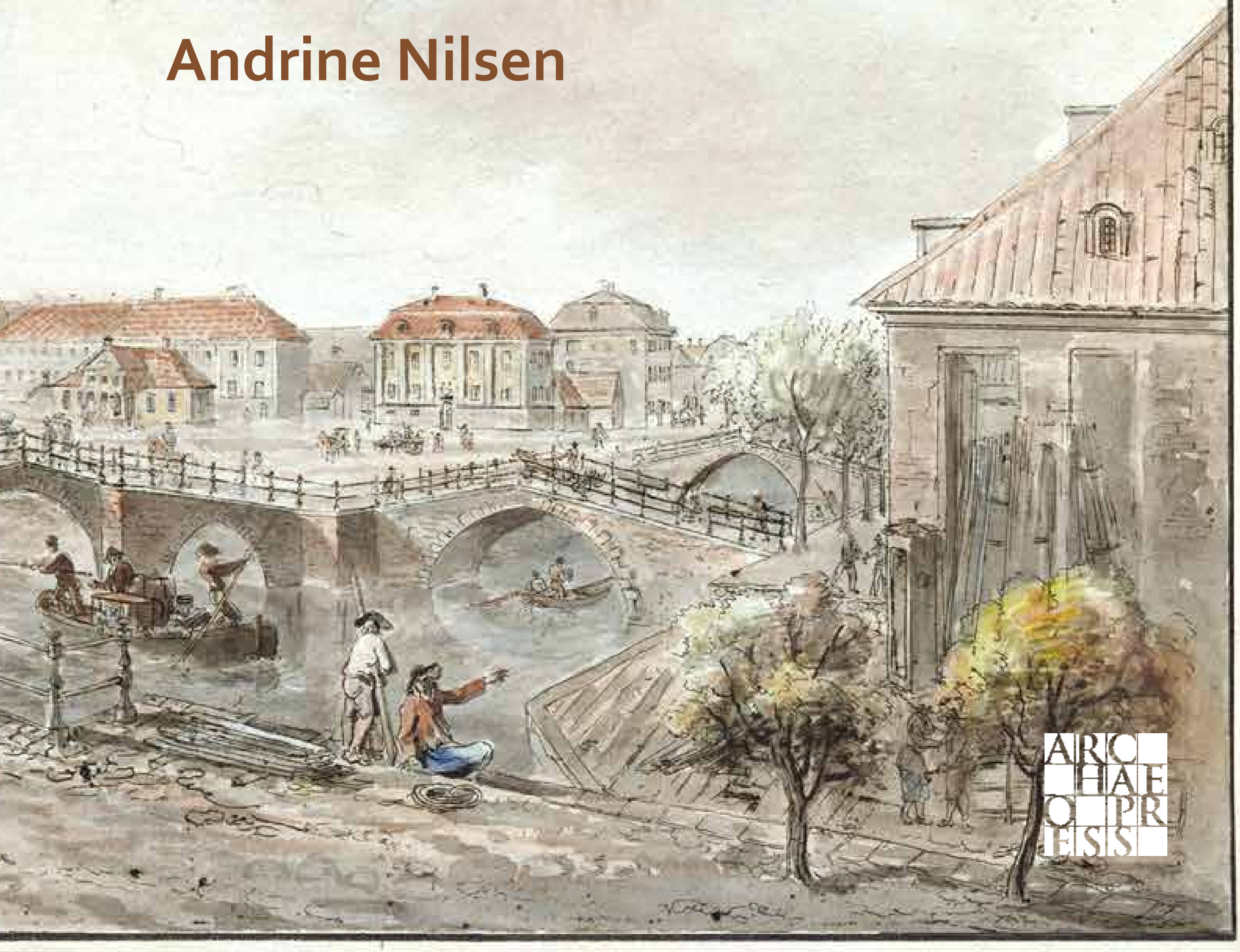
A doctoral thesis from the department of historical studies
University of Gothenburg

Vernacular Buildings and Urban Social Practice

Wood and people in early modern Swedish society

Andrine Nilsen



ARCHAEOPRESS

Doctoral thesis
Department of Historical Studies, University of Gothenburg,
defended on the 18th of September, 2020

Vernacular Buildings and Urban Social Practice

Wood and people in early modern Swedish society

Andrine Nilsen

Archaeopress Archaeology

Archaeopress Publishing Ltd
Summertown Pavilion
18-24 Middle Way
Summertown
Oxford OX2 7LG

www.archaeopress.com

ISBN: 978-91-85245-81-9

Cover image: 'View of Gottenburg' the great harbour canal by Elias Martin c.1787. Gothenburg City Museum.

GOTARC
SERIES B. GOTHENBURG ARCHAEOLOGICAL THESES
ISSN 02 82 – 6860
http://hdl.handle.net/2077/64421

Manuscript revision:
Per Cornell
Gwilym Williams
Thomas Lindkvist
Tove Hjørungdal
Lars Ersgård

Printed in England by Severn, Gloucester

Published with contributions from

Thank you for supporting my doctoral research!

Berit Wallenbergs Stiftelse
Institutionen för Historiska Studier
Torsten Söderbergs Stiftelse
Brandförsäkringsverkets stiftelse för bebyggelsehistorisk forskning
Lennart J. Hägglunds stiftelse
Helge Ax:son Johnsons Stiftelse
Kungl. Hvitfeldska Stiftelsen
Kungl. Vitterhetsakademien

For dendrocronological analysis
Brusewitz Donationsfond
Helgo Zetterwalls Stiftelse
Johan och Jakob Söderbergs Stiftelse

For research trips and conferences
Sven and Dagmar Saléns Stiftelse
Helge Ax:on Johnsons Stiftelse
Fonden Wilhelm och Martina Lundgrens Stiftelse
Elna Bengtssons Fond
Helgo Zetterwalls Stiftelse
GU donationsfonder
Kungliga Vetenskaps- och Vitterhetssamhället i Göteborg
Kungliga Hvitfeldska Stiftelsen
Kunglig Gustav Adolfs Akademien för svensk folkkultur
Vernacular Architecture Group
Kulturfonden för Sverige och Finland

Berit Wallenbergs
Stiftelse

Contents

List of Figures

5.4

Chapter 6

6.1

6.2

Chapter 7

Chapter 8

Appendix 3b. Archaeological evidence of log timber technique

Appendix 4b. Preserved buildings in Vita Bergen, Stockholm

List of Tables

Appendix 12. Fire insurance records, Gothenburg 1800-1804, residential buildings

Acknowledgements

It has been a fantastic couple of years of my life, leaving me the opportunity to get into questions, which I consider interesting, with nice and clever colleagues, at a place of work with ample possibility for personal development. This has opened my mind to the possibilities of research, and for a longing to always know a little bit more, while also learning the craft.

Above all, Per Cornell, my main supervisor, we have had interesting conversations over '*fika*' and dinners. You have included me into your vast network and we have seen the world through our travels. Most of all you have critically analysed my texts, pushed and inspired me when I needed it, and you have provided friendship as well as a welcome to the professional side of Academia.

Gwilym Williams, for proof reading, thoughtful comments and friendship, you have even managed to make the stressful last months before printing enjoyable!

Tove Hjørungdal and Thomas Lindkvist my additional supervisors, you have always stood ready to read and comment on my texts and provided me with your comforting support.

Lars Roede, my opponent in the end-seminar. Thank you for your thorough reading of the work and your advice and recommendations! Not least for your inspiring thesis of the wooden houses in Kristiania.

Lars Ersgård for reading my work and commenting on several occasions, you are such a friend!

To the doctoral group for friendship, all our socializing and for intellectual support

To Martina Hjertman most especially, who has worked on related research, for our collaborations, as travel companion, but above all for you friendship and never ending fountain of ideas. I have become a better researcher because of you, and you have made these years golden, both professionally and privately.

My earlier roommates: Emma Nordström, Frida Espolin Norstein and Sidra Gulzar, you are epic! Malou Blank, Anna Wessman and Yuan Yuan for friendship, as travel companions and for being awesome!

I would also like to thank all my colleagues in the Department of Historical Studies for wise comments in seminars and our socializing and pleasant luncheons.

Before I started my PhD education, I was part of the project The Early Modern Town – Between the local and the global, which furnished me with valuable friends and colleagues who have made this work so much better – for articulation, friendship and cooperation's!

Per Cornell, Rich Potter, Martina Hjertman, Lars Ersgård, Malou Blank, Imelda Bacunic Fridén, Kina Linscott, Göran Tagesson, Bengt Westergaard, Dag Lindström, Giorgio Verdiani, Andrea Arrighetti, Claes Pettersson, Finn-Einar Eliassen, Ann-Charlott Feldt, Jette Linaa, Stefan Larsson, Tom Wennberg, Liisa Seppänen, Gunnar Almevik, Göte Nilsson Schönborg and Robin Gullbrandsson.

For a successful cooperation regarding the conference BISI Buildings in Society International in Stockholm, 2017. I hope that we can do more things together in the future!

Linda Qviström, Göran Tagesson and Liz Thomas.

My PhD project has also improved through being part of the rescue archaeological project Gamlestadsprojektet, investigating Nya Lödöse.

A warm thank you to Christina Rosén and Mattias Öbrink for letting me test some of my hypothesis in the field, thanks to the whole group for valuable discussions on the early modern urban material. Finally, thanks to Mattias Öbrink and Gwilym Williams for a successful collaboration and joint publication.

To my dear colleagues at Rio Göteborg Natur- and kulturkooperativ, you are awesome and best!

I have a warm appreciation for Hanna Markusson Winkvist, Anita Synnestvedt, Maria Persson, Henrik Alexandersson and Katarina Streiffert Eikland, what a lovely introduction towards teaching and supervising.

One of the case studies involved dating ten, storied buildings dendrochronologically.

Ulrik Hjort Lassen and Lennart Grandelius helped me drill for wood samples. Lennart Grandelius, Britt-Marie Börjesgård generously provided me with data on additional buildings. While Lennart and his wife Kerstin gracefully invited me to stay with them while conducting the survey in Eksjö.

For all our future projects, it is time to put in a higher gear now!

Joachim Östlund, you are wise, a bit mad yet lovely. Martina and I are determined to see our ideas through!

During the last couple of weeks, my dear ones helped me get my work ready for publication.

Lena Skog, Malin and Magnus Wallander, Linda Lindeblom, Anton Ásgeirsson, Martina Hjertman, Simon Qvennerberg and Patrik Nilsen, thank you all for proof reading!

Mattias Öbrink helped get the maps sorted, thank you!

Rich Potter and Ulrik Hjort Lassen drew, or redraw all the layouts of storeyed buildings.

Bengt Westergaard helped make the database look good.

Pia Englund and Anna Ihr photographed timber-framed buildings in their respective part of the country.

Jonathan Pye graciously agreed to photograph me

Finally to my family

To my children, Anton and Embla, and my parents Eva-Britt and Ivar who have stood by me through thick and thin with encouragement and support. Thank you for believing in me, I love you!

Simon, you have come into my life towards the end of this experience, yet I am so happy to be able to share this milestone in my professional carrier with you. It warms my heart to have you by my side.

Without all of you, this experience would not have been the same. I am indebted to you!

Thank you!
Andrine Nilsen

Glossary

Jetty – '*Cantelevered overhang of parts of the façade (or part of a façade, gable or oriel window). Supported by the projecting ends of beams or joists, additional, short joists jointed at right angles to beams, or made by a – hewn jetty. The first floor of an internal partition may also be jettied*' (Volmer and Zimmermann 2012, 189).

Jetty bressumer – is '*a sillbeam of an upper storey to which the posts of the upper storey are attached*' (Volmer and Zimmermann 2012, 162). Thus, concerning buildings with external jetties.

Girding beam – '*in a continuous, not jettied wall'* (Volmer and Zimmermann 2012, 162)

Short upward brace – '*Short brace running upwards from a vertical to a horizontal timber*' (Volmer and Zimmermann 2012, 184)

Up and down braces – '*downward (long) brace at the lower end of a frame, running for example from a post to a sill beam*' (Volmer and Zimmermann 2012, 181). '*Upward (long) brace at the upper end of a frame, running for example from a post to a wall plate* ' (Volmer and Zimmermann 2012, 181). Here the two types of braces are registered together.

Close studding – 'Pattern of timber-framing which is composed of posts and studs set fairly close together; it lacks almost all rails (except pieces such as window sills); often the panels are only as broad as the studs' (Volmer and Zimmermann 2012, 194)

External stairs – '*Stairs outside a building* ' (Volmer and Zimmermann 2012, 380).

Balcony/open gallery – '*Covered external passage or balcony at some height above the ground, open except for a balustrade and giving access to adjoining rooms. It may be supported by pillars or corbels*' (Volmer and Zimmermann 2012, 66).

Introduction

Most of the early modern townscapes in terms of wood constructions are gone in the Swedish cities of today. Wooden buildings dominated the towns and stone houses were few; as an example, Gothenburg only had 11 residential stone houses in 1737 (Scheele and Simonsen 1999: 24). What is left of the early modern wooden buildings is mostly found in archaeological contexts as remains in the ground. Nonetheless, some buildings have survived despite town fires, demolition or being transformed by renovations. Many historic buildings have also been moved and thus lost their former context over time.

There is a lot left to study to begin to understand these townscapes and buildings regarding construction, functions and living environments. An interdisciplinary method has therefore been used to develop new knowledge on buildings *under* and *above* ground.

The image on the front page depicted by the artist Elias Martin around 1787 shows the big harbour canal in Gothenburg. It encapsulates the heart of this work by visualizing the busy street life, the public buildings in stone surrounding the big square i.e. the magistrate's court, the stock market, the town hall, the city guard and the Christinae 'German' church. Behind the stock market, a small one storey wooden residential building can be seen. These types of buildings were ubiquitous in the back streets and they are the focus of this study. In the front left corner, there is a two storey multi-unit building in wood, which reflects a new type of communal urban living. The picture likewise shows some pivotal features of the early modern Dutch city plan that epitomizes Gothenburg i.e. the canals and bridges, the big square and the angular street grid.

Aims and questions

This exploratory work addresses the Swedish urban wooden early modern building stock.

- The principal aim of the study is to examine what components the wooden early modern built environment held and how they were organized within the urban plots to some extent the study address possible changes over time in these patterns and possible regional differences.
- The study examines what building techniques were chosen and how they were used, in terms of function.
- The work also studies how the internal layout of buildings changes over time.
- Furthermore, internal comfort i.e. insulated/heated and uninsulated/unheated spaces are investigated to understand usage and layouts.

The building techniques discussed have both practical and social implications. A key question to address is if there was a difference in the built environment and social structure in the city centre as opposed to the urban periphery (outside the city limits).

Time span and space

The study is focused on the production of space in the period 1470-1850, that is to say, the early modern period. The starting point of 1470 might seem early, yet, changing Swedish townscapes (for example that of Nya Lödöse and Uddevalla) mark a change in city planning (Öbrink, Williams, and Nilsen 2018). Another factor, from the perspective of a building researcher, are innovations within the indoor environment such as the chimney and glazed windows as well as storied houses. These alterations to the interior slowly changed the way people went about their daily lives.

The end date is set between 1800-1850, connected to how the new era of industrialization, major population growth and the tearing down of city walls, altered the early modern urban environment completely. Setting the end date to the mid-19th century for the early modern probably seems late. Nonetheless, much of the traditional building techniques, internal layouts and residential organization prevailed and could still at this point be related back to the beginning of the early modern and even further back in time (Linscott and Nilsen 2018). It is important to recognize that these artificial breaks in time, or time periodization, are connected to specific events and do not extend to all aspects of society. Parallel practices will follow different timelines i.e. a government can decide to create a state religion or a shift in state religion set to a specific date. However, it does not stop people continuing to worship in accordance with their old beliefs in secret. Similar practices can be seen in the built environment even though new techniques, new layouts, modes of heating and the introduction of windows brought change, traditional building practices existed side by side throughout the period.

Study methods and academic disciplines

This work stands on four legs regarding source material. The study of vernacular wooden buildings combines knowledge from the disciplines of building conservation, architecture but foremost archaeology from the ground up. Historical sources and historical methodology will also be an important part of understanding what the lost urban building stock once looked like. The interdisciplinary approach will help combine and deepen the knowledge as well as the context of the vernacular townscape of the early modern period.

Studies of the building stock in several towns over a rather extended period makes it difficult or even impossible to be comprehensive. This work includes a number of micro studies of samples of the building stock from different places and periods through archaeological, preserved, drawn, photographed and written records. These micro studies enable a series of socially and structurally related questions to be investigated. They also give an idea of what these datasets can hold in terms of research potential and limitations. The urban wooden building stock is a minor area of research within archaeology, but one that recently has started to attract a lot more attention in line with ever more interventions, carried out within the ambit of contract archaeology, coming in contact with the material. The micro study is thus a method of approaching this vast material by testing methods and theories that can be reproduced and compared on a macro level. The scope of each micro study has a limited reach and is therefore not intended as statistical evidence; however, the micro study is necessary to produce a good quality macro study. '*Microhistory, then, sets out to create generative procedures that can use a given general issue to test a multitude of possible outcomes, in different contexts under a variety of conditions; procedures that can then suggest new problems and new questions that propose a rereading of the initial unwarranted generalizations of an insistently generalizing historicist vision of history* ' (Levi 2019, 45) This study thus rests on seven micro studies in line with Levi's argument to further a discussion on complex urban social, material and spatial issues.

Objects of study and mode of selection

The focus of this study are urban wooden housing from the 1470s to 1850. The data consists of a sample of archaeological remains, preserved houses, as well as of contemporary images and written records, the methodology behind the sampling will be addressed further on. In Sweden, early modern building remains in urban settings have to be surveyed according to the Heritage Act.[1] Contract archaeology has gone through major changes in the last two decades in respect of digital documentation, field techniques, and natural science analysis as well as through a heightened emphasis on researching historical sources, all of which have been useful to this work.

Major urban archaeological surveys have been undertaken in a number of Swedish cities in the last couple of years with early modern material. Some of them have been studied more closely as case studies in this work primarily through archaeological reports: Gothenburg, Nya Lödöse, Stockholm, Jönköping and Falun.

The towns have been chosen on the premise of having examples of excavated early modern building remains with most of the layout of the ground floor intact.

These five towns represent the capital, four major cities as well as a further four harbour towns, two newly founded towns, and two towns that were moved, in addition to futher incidences of two inland towns and two fortified towns and finally single instances of a smaller town, a mining town and a factory town.

A number of reference cities both domestic and international will also appear; Copenhagen (Denmark), Christiania (Norway), London (UK), Turku (Finland) as well as Visby and Eksjö (Sweden) and others in order to establish context and influences on the Swedish urban landscape.

Volmer and Zimmermann (2012) has been used as the main glossary for the language concerning buildings and constructions. They have done substantial work comparing and explaining building methods and regional language differences for the historic building stock of a large part of Northern Europe.

Archaeological records

In respect of the archaeological remains of log timber buildings, the main focus has been on finding examples of houses with as much of the layout intact as possible and with examples from different periods. Log timber preserves well in the ground therefore there are a great many examples to choose from; it was not possible to examine all excavated early modern log houses. Thus, a sample has been studied to provide examples from this building technique.

Finding the dataset for timber-framed constructions started as a puzzle to establish if timber-framing could be found outside the provinces of Halland and Skåne. Therefore, a wide internet search was started including archaeological reports, preserved buildings, photos in museum databases of historical buildings as well as of historic drawings and records discussing the building stock. Thus, the sampling might appear slightly chaotic, but it does answer the original question.

[1] Sveriges Riksdag, Kulturmiljölag/Historic Environment Act (1988:950), Sveriges Riksdag, Stockholm. Viewed 28 October 2019 https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/kulturmiljolag-1988950_sfs-1988-950

Post and plank construction poses yet other dataset issues i.e. such constructions are not always preserved well in the ground and appear to sometimes be problematic to record archaeologically. In addition to the limited archaeological dataset, written records, preserved buildings, drawings and photos have been studied.

Archaeological and architectural drawings or digital measurements of layouts have been included and discussed when applicable.

Selection of preserved houses

After conferring with the town conservationists, a limited number of preserved houses were chosen to be part of a dendrochronological survey aimed at understanding the storied house in terms of dating, layout and possible traces for archaeologists to 'read'. The preserved houses were chosen from urban contexts in the province of Västergötland, in this case Gothenburg, and the province of Småland with samples from Jönköping and Eksjö.

An additional small number of preserved log timber buildings at the reserve *Vita Bergen* in Stockholm have been compared to the sample of archaeological remains of log timber buildings. In the early modern period, Vita Bergen, was situated in the urban periphery.

Historical records

All fire-insured properties in Majorna (a suburb outside Gothenburg) in 1795 have been selected (a total sum of 10). Unfortunately, there were no fire-insured properties in Gothenburg that year, instead 1800-1804 seem to be the earliest years for this type of insurance. Nineteen properties from Gothenburg had been insured during that period while only 10 of those had enough information to be included in the analysis. Clearly, these twenty fire insurance records do not reflect the whole building stock at that time, but do give some insight of what the city looked like and what types of buildings it included as well as an estimated value.

The focus of the probate inventories is for the purpose of this discussion on built property, and not household goods, to compare with information from the fire insurance records on buildings and property. These probate inventories have been selected randomly from 1795 with the only criteria that property is mentioned in both Gothenburg and the suburb Majorna, a year that reflects a vast population increase in the area.

Contemporary traveller's diaries have been used to provide background on a few occasions.

Photos and drawings have been selected freely where they could be found in published books, museum photo databases, in the university library database Alvin, as well as in archaeological or conservation reports.

The structure of the study

This study has a slightly different set up than usual so here is a guide through the chapters. The theme of the work concerns wooden buildings in an urban environment during the early modern period. This is a rather new field of research in Swedish archaeology. The archaeological source material is fragmentary and the quality of documentation varies a lot. This study is thus an exploratory attempt to fill in some of the gaps left by the fragmented material. This will be achieved through conducting an interdisciplinary study combining the archaeological reports and preserved buildings with historical images, historical records, dendrochronology and maps. The research is not based on statistics (the source material is too limited) but it aims to combine, compare and find out what materials can benefit from joint studies.

This research follows the methodological lines of historical archaeology with archaeological material as primary source and written documentation as secondary source material. Physical material objects are the focus of this study and their role within urban social practice. Written sources are used within many branches of archaeology aside from historical archaeology such as archaeological history and contemporary archaeology as well as a general reference to, and use of, archaeological reports.

Chapter 1 is where the theoretical outline of the work is presented. The *basis* or *frame* is formed by questions of space such as the production of space and its social dimensions. The other part is the *driving concepts* and their application such as the difference between routine and conscious actions. The serial collective choices in building, such as repetitive or functional constructions sometimes referred to as the 'common-sense', are often found in so-called 'traditional' or vernacular building culture. While also considering the multiple choices of functionality that can be applied to buildings, thus suggesting that common sense can mean different things or that the social dimension at times requires buildings with less obvious functionality.

Materiality is part of the spatial in terms of the physical properties and dimensions of wood materiality in connection with spatial organization.

Chapters 2 and 3 shows different aspects of the research background.

Chapter 2 explains how the wooden building stock is reflected in all strata of Swedish society but also why the wooden early modern urban buildings of today mainly consist of archaeological remains. The *atypical,* or the *unique* was saved at the expense of the *usual or commonplace*, the wooden building, which was targeted and demolished on an enormous scale affecting a very large part of the building stock.

In Chapter 3, the research history of the wooden building is discussed. Various disciplines have contributed to the knowledge of this joint heritage i.e. architects, ethnologists, art historians, building conservationists, historians, building practitioners such as carpenters and so forth. Archaeology has entered the scene quite late and had other periods than the early modern as well as other types of buildings (mainly in brick or stone) in scope for a long time. This is a relatively new field of research in archaeology, thus there is a lot more to be done and many questions left to explore. This study is in many ways pioneering new research.

Chapter 4 revolves around wood as a material in general and wood as archaeological remains (Appendices 1-2). This is the first step in a micro archaeological scale starting with discussing wood materiality in itself. The aim is to show how wooden building remains of dwellings and houses are only a small part of the whole spectrum of wooden structures, artefacts and historic environments. This is imperative since wood is a biological material which often is missing from the 'scene' on archaeological sites.

Chapter 5 has four sections dedicated to discussing building techniques in wood from the early modern town. This is the second step in a micro archaeological scale with studies on the particularities of buildings.

Section 5.1 sets the background for the other three sections in terms of a short presentation of five Swedish towns (Nya Lödöse, Gothenburg, Stockholm, Jönköping and Falun) with their general history and archaeological history. These towns outline the case studies.

Section 5.2 discusses a sample of log timber constructions with its layouts, modes of insulation and size. There was ample material from archaeological reports to draw on, it seems log timber structures are preserved well in the ground. The archaeological remains were then compared to preserved buildings. Due to the large number of examples, the presentation of each building is to be found in Appendices 3 a-b and 4 a-b.

Section 5.3 is focused on what degree houses built using timber-framing techniques could/can be found outside the former Danish provinces of Skåne and Halland. The archaeological source material was fragmentary so other types of sources were explored i.e. pictures/photos, preserved buildings and historical records such as fire insurance records (Appendices 5-7).

Section 5.4 is a study on post and plank constructions in urban environments. Again, the archaeological record was in short supply and additional sources were used i.e. preserved buildings, photos and fire insurance records (Appendices 8-9).

Chapters 6.1-2 are the third step in the micro archaeological scale discussing particular buildings in urban environments from a technical but also social aspect. While Chapters 5.2-5.4 are focused on wooden buildings in the urban centre, Chapter 6.1 highlights the urban townscape, while Chapter 6.2 is directed towards the urban periphery. There were no archaeological records from the suburb Majorna, thus other forms of records had to be explored. Probate inventories but foremost fire insurance records have detailed information on buildings and property (Appendices 11-12). The aim was to see how this historical material compares or adds to the archaeological data through asking the same/similar questions to both sources.

Chapter 6.1 discusses the storeyed building. Houses with more than one floor are elusive for archaeologists and difficult to find. However, studies of preserved buildings, historical records and historical images show them to be common features in urban environments. Twelve dendrochronological surveys of storeyed houses contribute data on dating, wood source, type of wood and construction but also whether the houses were built in one or two floors originally. Layouts of storeyed houses is another dataset discussed and whether or not the storeyed house would leave identifiable traces on archaeological sites.

Chapter 6.2 raises the question on urban-like building environments outside the city limits, vital to the city but rarely discussed in archaeological research mainly due to not being included in the Historic Environment Act (*Sw. Kulturmiljölagen*).

Chapter 7 is a broader more general contextualization of the wooden building stock in terms of who initiated, influenced, built and used the towns. This is the final step in the micro archaeological scale providing a sketchy overview of the early modern society from the urban perspective.

Chapter 8, all the data from the case studies from Chapters 5-6 have been combined and analysed in terms of size, building technique, layout as well as insulated and uninsulated spaces and the presence of windows etc. Hence, further contextualized for a deeper social understanding. The analysis provides a macro level to the case studies and is to be considered the fourth step in the micro archaeological scale.

Chapter 9.1 holds the general conclusions of the work.

Chapter 9.2 summarizes the study as a whole.

Appendices

This study rests on a large empirical material, and not everything could fit into the main text. At the same time, it is important for a full disclosure to make it easily accessible. There is a mixed use of English and Swedish depending on source.

Appendices 1-2 are the collection of finds and wood material registered at the Nya Lödöse investigations for 2013 and 2015 respectively. This material is discussed in Chapter 4 (table in Swedish).

Appendices 3-4 a, and 5-10 are the database of the empirical data of log timber, timber-framed and post and plank buildings from Chapters 5.2-5.4.

Appendix 3b is the archaeological empirical data from the micro study regarding log timber buildings with full descriptions and photos of building layouts discussed in Chapter 5.2.

Appendix 4b is the empirical data from preserved log timber buildings in Vita Bergen in Stockholm, discussed in Chapter 5.2.

Appendices 11-12 are lists of fire insurance records in Majorna and Gothenburg discussed in Chapter 6.2.

Chapter 1

The scale of the city: the social dimension of space in theory and method

In order to be able to discuss the complexities of the built environment and its social connotations a number of theoretical approaches and analytical fields will be used. A key aspect is discussing the production of urban space through questions regarding the wooden house within the built environment and its social connotations using empirical urban theory (R. K. Merton 1968; M. Smith 2011).

The city will be studied in scales from limited empirical sites such as the individual houses on the burgage plot, the prevalence of three forms of wood construction and their uses, and finally the contextual background of the Swedish wooden town. The methods and theories that will frame this approach are most of all: micro archaeology understood through structural practices, serial collectivity and social formations set in a discussion of the cityscape.

Time and process

An event in time must always be connected to space to have meaning (Hägglund 2002: 144), thus creating a *space-in-time*. This means that to be able to understand history we connect events to specific locations, where the built environment often has the most evident ties to the past. Despite the transformation of the landscape, place still connects people from different times through remnants of built environment such as graves and settlements. There is a kind of duplicity in time when visiting a historic site; the *space-in-time* is on the one hand strong through the shared relation to the location and the remaining traces, on the other hand, the concept of another time is impalpable. Yet the topography surrounding the historical sites with their material culture provides something tangible for the modern person, in the 'meeting' with the past (Carelli 2007: 17–18). The constant displacement of a *now*, is therefore always and at the same time never *now,* in a play that Derrida calls *différance* (P. Cornell 2015; Hägglund 2002: 152; Verdiani and Cornell 2015). Further there is also the fact that everyone experiencing *now* differently creates a situation where we never fully will understand the past. But in which the past has a continued active presence.

Lorenz (2014) discusses history, in terms of memory and the experience of time. Thus, emphasizing the time travelled (*distance*) since the event, or how it is (*absent*) from now. Lorenz calls it the *hot* present and the *cold* past with *the cooling off* period in-between. The fuzzy distinction between history as a discipline and memory is ambiguous and remains problematic when discussing the past (Lorenz 2014). He emphasizes, non-linear time – thus reversible, non-progressive time, which allows for simultaneity, meaning, the coexistence of a past, present and future streaming from purely relational categories (Lorenz 2014: 46). Lorenz, draws on Kings' (King and Slomp 2002: 55) notion of the Neoteric present, thus the distinction between what happens *in* the present, experienced as 'traditional', 'ancient' or 'conventional', while occurrences *of* the present are to be understood as 'innovative', 'modern' or 'novel'. Therefore, there is a discrepancy between the novel and the new (Lorenz 2014: 47). The early modern wooden houses had features that were both new and novel, which shall be presented further on in this work.

The change over time regarding town formation and city life from the end of the 1400s to the late 1700s was of course significant. The process in between was complicated and drawn out, the changes did not occur overnight, but it was still a comprehensive physical change. The regulated town plan of the early modern age changed the concept of the town, through ordered grids of houses and plots with some regard to fire safety and aesthetics. Another great change was the location of the town. Medieval towns were usually carefully laid out following the local topography while early modern towns were commonly theoretically planned towards an ideal, and therefore, not accommodating the topographical environment, that is they were often placed in swamps or wetland with all the unpleasantness which that entailed, or in uneven terrain, making a demand for levelling hilly areas. Another difference was the high defensive walls and moats that surrounded some early modern towns. The restructuring of the foundation of the towns combined with the construction of walls, moats and sometimes fortifications was accomplished through earthworks and stone masonry at great labour expense (Öbrink, Williams, and Nilsen 2018).

Towards the end of the 1400s, towns were usually located on dry land in close connection to fresh water. The layout of the town had other priorities than straight grids and defence systems. Although the houses were, to a great extent, similar to the houses two hundred years later, changes had been made; layouts, windows and chimneys, the first floor, panels and paint which will be discussed in detail further on.

Social practice and social formations

A combination of high, middle and low level theories have been chosen to analyse the empirical data of the built environment for social practices and social formations, in an attempt to understand some particular aspects of the early modern society (M. Smith 2011).

High level theory such as Giddens' (1989) arguments on social practice and 'structuration', or serial collectivity by Sartre (1991) will give a frame to the study.

While mid-level theory such as 'châine opératoire' by Leroi-Gourhan (1993a) or Conneller's (2011) human-material interactions and Lefebvre's (1991a) 'the production of space' will provide the study with keys to understand mechanisms behind practices.

Finally the low-level theory of micro-archaeology (P. Cornell and Fahlander 2002) and Bedal's (1995) 'Raumstruktur, Baustruktur, Sozialstruktur und Funktionstruktur' as well as Chomsky's (1965) 'structural grammatical transformation' are more immediate working tools, connecting theory to the empirical data.

Social formations - social dimensions and materiality

Actions that have taken place at a location during a certain time are to be analysed as *social formations*. It is an analytical tool to be used theoretically rather than operationally to widen an understanding on material function within a social environment. The archaeological material is not in itself the aim, but the social context that it has functioned within is the scope of my research. Social formations are not to be interpreted as society, ethnicity or as a culture and cannot be understood through common laws, religion or ways of governing but is rather a looser form of social bond through chains of actions in daily contact within time and space (P. Cornell and Fahlander 2002: 12–14). Emilio Sereni (1961) introduces the use of landscape as a way to understand the social history and the production of space in his field historical geography. He had a bottom up perspective focusing on giving Italian peasants agency in a subaltern history. Sereni also took a strong political view using Marxist theory to study past events to help understand and plan for the present. Thus historical landscapes and social formations were to be understood as active agents of politics and history (Ferretti 2015). Sereni seem most occupied with human physical traces in forming and producing the landscape yet he makes little reference to archaeology.

Serial collectivity

'*Sartre meant that man form temporary series rather than social categories, through practices and relations to materialities*' (P. Cornell and Fahlander 2002: 15). To exemplify how the concept of *seriality* can be applied to an urban material, take for instance the creation of shortcuts. There seem to be a relentless need to walk in the straightest possible line from A to B, regardless of how the city plan is organized and intended. Sometimes, one person creates the shortcut, but mostly several people make use of a smart and effective route, thus creating the path while using it so to speak. The individuals act as solitaries but unconsciously join the group of people who benefits from using the route. Even animals create paths to water sources or other locations of preference. When it comes to serial collective practices within the built environment i.e. how to organize the kitchen, entails actions of routine, assumption and sometimes practicality. In Swedish kitchens of today, there is a better chance of finding milk in the fridge rather than in a cupboard, and the fridge is the place most people would start to look for it. In the past, the milk was stored in another place of preference.

Serial collectivity signifies making use of some facility or creating a new element but through possibility or inclination rather than from a joint decision. Collectiveness is parallel with consciousness, which sometimes can be transformed into intentionality or routine. Sartre (1991) [1960]) thus connected materialities to practices which is useful within archaeology (P. Cornell and Fahlander 2002: 15). Intentionality is key, rather than a connection to a specific group, with a brief joint identity towards a common aim (P. Cornell and Fahlander 2002: 41–42). Material remains and their spatial locations have deep connotations to social dimensions.

Serial collectivity has a lot in common with environment-behavioural theory (Rapoport 1988a; 1988b; 1982; 1990) which is Rapoport's approach to low-level meaning. He connects expected, intended or appropriate behaviour to urban spaces and predictability. Thus mnemonic clues related to social situations linked to privacy, accessibility, movement and arrangements c.f. (M. Smith 2011).

Structuration

Structuration is a key field within sociology and Giddens (1984: 25) points to the duality of the constitution of agents and structures. He emphasizes that structure is both constraining and enabling and can be stretched through time and space thus out of any individuals control. Giddens also addresses the importance of *usage* meaning habit or routine in social life (Giddens 1984: 19).

Social practice

Social practices can be related to houses and burgage plots through patterns of movement and patterns of practice. Sometimes conscious practices, sometimes only semi-conscious routine and in other instances they were unconscious. Individuals can relate to a building in various ways which impact their approach and patterns of movement (P. Cornell and Fahlander 2002: 15–16). Servants sometimes had to enter the house through a separate entrance; on the other hand, the servants occasionally had a more comprehensive access to rooms in the building than for instance, the owners. The division of the house between the residing family and their guests on the one hand, and the servants on the other, made free movement through the house complex for all involved. Some spaces were specifically intended for the family while other spaces were used exclusively by servants. Yet, many spaces were used by all involved but on entirely differing terms. These practices were structured to create a hierarchy within the household through making certain spaces exclusive by pre-determined boundaries.

Social behaviour is conditioned within architectural space through the design of the built environment. Thus acting as an agent for the setting for – and production of – human activity, which calls for both structural and behavioural perspectives (Kühltreiber 2014: 47).

The passing of time can render great changes to the social as well as the internal and external space and context of a building. Structured practices can be applied to building technique and location (P. Cornell and Fahlander 2002: 16), constructions are built with a purpose, sometimes those purposes are met and sometimes the buildings can become or be used for something completely different. The perceptions of the built environment are also subject to evaluation due to positive effects like aesthetics or negative effects of neglect or littering.

Bedal (1995: 19) discusses concepts of reference levels in building archaeology; room/spatial level (Raumstruktur) thus the internal structure and layout, building constructional level (Baustruktur), which refers to building technique or construction. The social structure (Sozialstruktur) can help understand the context and human relation to the built form while the functional level (Funktionsstruktur) tells of how the building was used and how it was modified. These are concepts that are well-adapted to help understand and interpret spatial, social and structured practices within the built environment.

Materiality and the social

Materiality is for the context of this work also very much related to social dimensions. What previous generations have left behind – i.e. archaeological remains, standing structures or finds – constitutes the basis for analysing the social landscape and everyday life. Since this study focuses on a historical period, there are also historical records to take into account. The materiality forms social as well as geographical spaces that limits or opens up for discussions and comparisons, and the constructions in which people have dwelled, worked and lived forms the foundation of the discourse.

For a long time form has been the equivalent of culture following the lines of seriation, and the order of ‘types’ and use (Binford 1979; Montelius 1919). This is particularly evident in the naming of Stone, Bronze and Iron Age periods (Conneller 2011: 26–27). The use of typology, tradition and time, as well as geographical sequencing were also prevalent in Sigurd Erixon’s (1982) work on the Swedish rural building stock and peasant culture. In transforming ‘ecofacts’ into artifacts qualities and even information is integrated i.e. material features or design, in terms of cultural information building a relation between cultural meaning and the physical world (Kühltreiber 2014: 40).

Châine opératoire, introduced by Leroi-Gourhan (1993b) discusses the making/production focusing on every sequence in the chain of actions from the manufacture from matter to final product and the skillsets involved. Conversely, it is a discourse of mind over matter where the material still has no agency of its own, thus lacking in relations (Conneller 2011: 17). The *châine opératoire* is on the other hand an interesting method to understand the series of practices that is required to transform the tree in the forest to the wood product and eventually into the wood construction. There was also a long chain of people with different skillsets involved in the production of the city in its entirety and over time.

Chantal Conneller (2011) has expanded on Ingold’s (2000: 339–48) metaphor on the interaction between human and material as weaving a basket:

> *‘All activity, he suggests, can be described as 'weaving' (rather than making) because, rather than being imposed on materials, forms are generated through the movement of human-material interactions /.../’* (Conneller 2011: 30).

as well as on Simondon’s (1964: 39) discussion on the technology of brick-making:

> ‘*Simondon /.../ argues that the relationship is not between a pure form and abstract matter, but prepared matter and materialized* form’ (Conneller 2011: 30–31).

These cases, which are both revealing and elegant in their own contexts, can still not explain all human-material interactions, Conneller argues. She points to the complex nature and variability of both materials and the human skillset as well as their technical interaction (Conneller 2011). Materials have agency of their own i.e. on where they grow/exist, levels of resistance or durability as well as a range of other properties that might be conditioned by weather, heat, cold, water, wind, in interaction with other materials etc. Thus, interactions between a specific material and a human with a specific skillset and product in mind still do not necessarily end up with the same result. Most materials can also be made into a range of products for a variety of uses.

To further stress the importance of wood materiality during the early modern period the concepts of *omnipresence* and *ubiquitous* are used, both meaning something that can be found everywhere. In the early modern era the presence of wood would be seen, heard, smelled as well as touched and conditioned; heating, shelter, productions, fuel, transport, tools and a number of other areas connected to living in the northern hemisphere, argued in Chapter 4.

Micro-studies and repetitive practices

The built environment entails a vast concept of living- and workspaces and consists of an enormous dataset. This is not a catch-all study but includes a number of micro-studies to test theories and methodologies on small-scale empirical building environments thus using empirical urban theory to explain a limited range or types of phenomena (Hedström and Udéhn 2009: 31).

Micro archaeology

Social formations, structured practices along with serial collectivity are the foundation of micro archaeology. The attempt is to dissolve totalities such as religion, ideology, social organization/structures as well as cosmologies and economic factors. It also emphasizes the complexities of social categories like; gender, class, race and ethnicity (P. Cornell and Fahlander 2002: 18). In the study of a local situation, a measure of general practices and positivities can be detected (P. Cornell and Fahlander 2002: 18).

Another way to understand the methodology is to describe it in terms of *scales*. The heart of micro studies is in studying a small-scale location i.e. a house. That house in turn might be understood in context to other buildings in for instance a burgage plot. That plot in its entirety or in parts can be compared to another burgage plot. By studying several burgage plots in their individual contexts of the city plan, something might be said about the town as a whole. The town can then be compared to other towns studied in the same way. The key element here is to know the material on a micro level before saying something regarding the macro level and to see the particulars before drawing the big picture. There might be similarities on a big scale while several diversities on a micro level or vice versa. This can be understood as certainties but micro archaeology has been developed as a reaction to grand theories (P. Cornell 2016) that tries to catch all by painting an image of one unified society, often ignoring plurality. In this sense micro archaeology is the essence of a *bottom up* theory (R. C. Merton et al. 2013).

An interdisciplinary approach to the built environment

Another important contributor to the understanding of space and constructed space is Simon Unwin who has developed an analytical method of understanding architecture through drawing. He defines architecture as a *conceptual organization* or *intellectual structure*, and he equals architecture with the identification of place. Place is for architecture what meaning is for language, he says (Unwin 1997: 27–28). Architecture is the common language and the grammar of construction. The designer, the builder and the users are equally important to a built structure. Unwin interprets the difference between art and architecture: art deals with abstractions while architecture is about life and reality. If you look at an architectural drawing you would picture yourself moving around in the space, projected into the room because architecture always relates to occupation, use and meaning (Unwin 1997: 29–30). While Elias Cornell (1997) perceive architecture as practical reality organized artistically where the 'practical' entails both use and construction.

Drawing is understanding. When meeting the object in the field survey, to draw it, it has to be measured, studied and touched much more comprehensively than if it were photographed or scanned. In this slow process, thoughts have time to be processed and discoveries will be made that will enhance the understanding of the object of research. Of course, photography and scanning have other advantages not to be underestimated: speed and accuracy; they can be used in places hard to reach and so forth. A drawing is always an interpretation, what is drawn and what has been left out is always by choice of the artist. A photo has much the same properties, what is being framed and how, is in the hands of the photographer, there will always be something left out or not in focus to consider. Methods of using architectural drawing to understand historical buildings and archaeological remains have been practiced by several researchers (Almevik 2012; Andersson 1988; Eriksdotter 2005; Linscott and Nilsen 2018; Moore 2003; Sjömar et al. 2000). One key element of this study is interpreting drawings and layouts of historic buildings from the field of architecture and building conservation as well as archaeological remains documented as layouts. Another element is the methodology of urban archaeology using the Harris Matrix (E. C. Harris, Brown, and Brown 1993). It is a

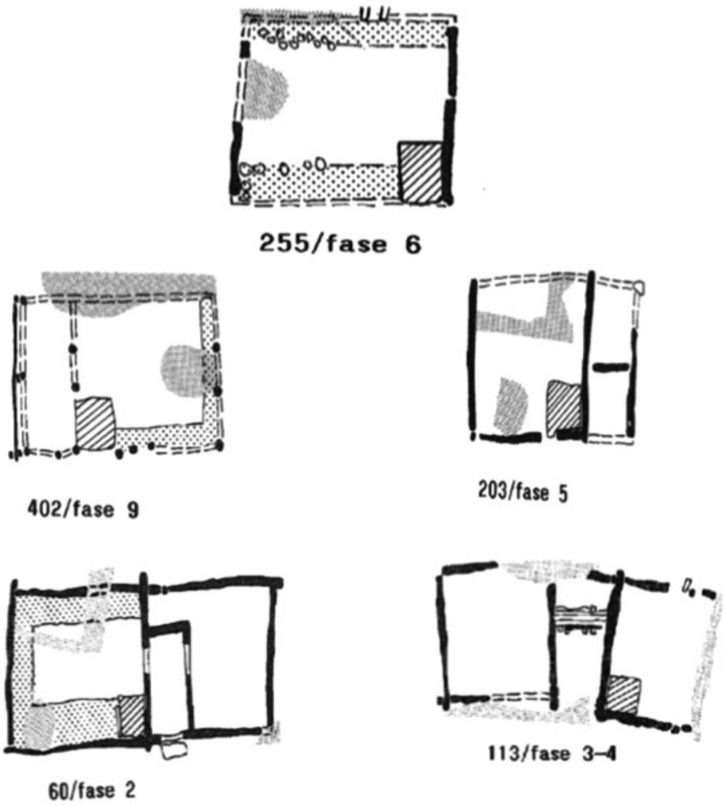


Figure 1 These examples from medieval Trondheim (Christophersen and Nordeide 1994) shows how the one-room building or one-room with porch could be joined with another building with a similar layout thus creating layouts with two, three or more rooms in a structural grammatical transformation, using base modules.

method where a stratigraphic object is part of a context. Every such object is studied and removed sequentially, starting with the most recent on the uppermost level. Single contexts correspond to actions (E. C. Harris 1979), thus a method adapted for investigating social practices. The method can be used on all types of units, constructions and layers, dug with either trowel, spade or excavator. All units are then horizontally documented and given a unique identity in an ongoing system. Context sheets, detailed drawings and geodata give information on patterns of deposition in the form of construction – destruction – reconstruction (Wehlin et al. 2018: 26–27). The methodology can also be used investigating standing structures (E. C. Harris 1979: 54–59; 1993).

The idea of structural grammatical transformation

In the study of wooden buildings from medieval and early modern periods a number of repetitive elements can be detected (Linscott and Nilsen 2018). The houses were built like boxes, where some parts belong to the same box and others to a separate but attached box system. Another important element to wood construction was characterized by each timber as a building component, which could be put together or taken apart. It could be transported to a new location and then put together again. Damaged parts could be replaced, and new ones added. In a double module construction, one module could be detached and moved to a new location, while the rest of the house still stands and remains in use. This makes dating wood constructions complex. These boxes/modules/buildings could also be understood as similar to modern day building modules, built in the factory with wallpaper and kitchen appliances already attached when brought to the designated plot to be assembled. Of course, todays version is a bit more high-tech and sophisticated, but the idea is much the same. Another point is that as soon as something is altered it entails a meeting between the new and the old, a problem because now it becomes something new at the expense of the old or something less or more than the former, as well as a consequence of the fact that something was changed. This slow transformation of practice and agency through iteration will be discussed further on in this chapter. Language, in the way grammar is used to sort which words that go together to form meaningful sentences, and materiality in the sense of building parts that form the construction comes together in the theoretical idea of structural grammatical transformation.

Before the introduction of ceramic stoves and masonry ovens (1500-1600s) urban Scandinavian vernacular buildings for commoners had typically only one heated room, which had multiple functions i.e. with a fireplace for cooking and heating, places to sleep, work and eat. The main room sometimes elongated to include a porch. The important element is that it was the same timber in the walls of the main room as in the porch *Figure 1*. If a bigger house was needed, two modules of this kind could be placed next to each other, which would create a centre porch/vestibule with adjoining main rooms

(Linscott and Nilsen 2018). These modules with different sets of compartments could be joined or separated at will. Over time, these compartmented modules were modified in different ways with extra rooms or with additional floors creating the multifaceted building flora of the early modern period.

The idea of structural grammatical transformation was developed within language studies by Noam Chomsky initially in his book *Syntactic Structures* (1957). He developed a way to describe and explain the underlying grammatical structures that form our language. Only a given set of syntactical structures are possible and this entails the grammaticism of the language. An archaeological approach to the idea of structural grammatical transformation regards how different types of wood seem to be better adapted to certain types of building techniques. This might have regulated which types of house are common in various geographical zones parallel to cultural exchange. The next step is limitations in height, breadth and form in relation to properties of the material and different techniques. Finally, the idea of modules presented above. Brick is another material where geometry conditions its use, and Unwin points out that vernacular buildings tend to conform to the geometry of the human scale, a social geometry so to speak, and what he calls the geometry of making (Unwin 1997: 31–34, 148).

Harris (1989; Johnson 1993: 39) write about 'a national language' of building and of 'regional dialects' that makes the solutions chosen non 'commonsensical' as there seems to be many varieties of choice in building. This is something that will be further explored in this study where variety seem ubiquitous and not necessarily aligned with geographical circuits.

Repetitive structures

Wood is a material that lends itself to boxlike structures. Boxes with a certain form or measurements, constructed in similar ways tend to look alike. If a number of these boxes are placed in a line, the repetitiveness of the form gives an illusion of planning and structure, which can fool the eye. Repetitive structures are common in urban environments both as planned form but just as often as 'unplanned' or rather less planned features. The idea of what a house should look like is strong in our mind and seldom questioned. In my youth, I attended an international school were the teacher told us to draw a house on the blackboard. It was my first realization that the concept of a house is very different in the rest of the world. The funny thing was that I had drawn a wooden cabin with a chimney and a small garden outside. I did not live in such a traditional house, nor did anyone I knew. So why did I not draw my own modern house? There is a strong element of seriality in our way of building and conceiving houses. We may not always consult our neighbours before deciding what kind of house to build, but we often end up with something similar to the others anyway due to modernity, tradition or cultural understandings. These repetitive structures are important to consider when interpreting archaeological remains and historic environments.

One significant factor to count was the presence of professional builders both in regard of logging and forming the timber into building parts in the forest, but also in reference to timbermen and carpenters in the town who helped erect the building on site. Sometimes these functions were performed by the same artisans, who travelled from the forest to the town with the timber, but often not by the owner him/herself. This fact might have an impact on the seriality, the uniform structure and the iterated practices of the appearance of the urban building and form.

Iteration

The concept of iteration is of interest to consider while studying building strategies. Iterated practices can be understood as repetition but with small alterations. The blueprint is a repetition of a form or a suggestion of a plan but almost never identical with the original structure. The blueprint is an image on a paper, a representation of built form but not a construction in itself. Most carpenters consider blueprints as a starting point while the result is similar but not an exact replica. Often measurements are altered, or different nails are used, or the carpenter selects another type of wood then first intended. Thus, both the product constructed from a blueprint and the blueprint itself are iterations of an idea.[1]

Copying or mimicking is another form of iteration, Cornell and Hjertman (2013: 9) point to the copying of older buildings where old knowledge of the construction has been forgotten and the architect and carpenters manage to fashion a similar building but not an exact replica, perhaps due to problems getting hold of the requisite raw materials, changed building techniques and the tools used. The context or the use of a building might also have altered (P. Cornell and Hjertman 2014: 588), i.e. the form of a Greek temple, originally built for religious purposes, has centuries later inspired architects' designs of follies in English gardens, schools, museums or court houses.

Space

Reading a philosophy lexicon space is defined from three starting points:' *a) mathematical space of one, two, three or n dimensions: b) physical space (that in which the physical, extended being exists and within which all*

[1] From discussions with archaeologists Mattias Öbrink and Gwilym Williams.

movement takes place); c) metaphorical space of sensory perceptions with its perspectives and horizons' (Lübcke et al. 1988: 476). Paraphrased translation.

Lefebvre's (1991a) concept 'the production of space' will be used as a stepping stone to understand the built environment and how it came to be and look the way it did/does.

The question of space

I shall focus here on B, physical space and C, metaphorical space. What makes up a room? What is the particularity to this kind of space? We talk about free space, as well as room to live and breathe, in a metaphorical way. Space is of course all around us all the time; space the universe and space as a place to exist. Usually we think of a limited space as something with some sort of boundaries. It could be a continent, a country, a county, a city or a street, it could also be the valley between the mountains or a lake in the woods. Light is an element that can create a sensation of a room. Light or the lack of light can also affect the sense of space, how we experience it. What is being lit and what remains in the dark is important for our understanding of space. Scent is a further element that can create space. A good scent or a bad one both have an ability to generate a sensation of space and boundaries but also of good or bad impressions depending on the person's experience of that specific scent. Childhood memories are often connected to smell for instance. Expected buyers of real estate are lured by impressions of a home, of domesticity and of family created by the use of a real or an artificial sent of newly baked cinnamon buns. These kind of sensory experiences can be heightened in open or closed spaces, in streets and alleyways or in planned versus less planned environments (Unwin 1997).

Another way of referring to space is what sort of consequences the space creates. Who or what creates the space or room? Who has access to that space? Are women, for example, able to create space for themselves? Thus, it becomes a question of political dimension. Early modern Swedish crofts sometimes had a rod across the room under the ceiling functioning as a space divider; a stranger was not allowed to pass without the permission of the residents. This rod had many names; crown rod (*Kronstång*) Figure 2, beggar's rod (*Tiggarstång*) implying that beggars specifically were not allowed to surpass that point. In Gotland *(gapstock)* as yet another way of giving or denying access to the domestic space. The rod was also used for hanging hard rye bread or sometimes clothes.

Space is often connected to constructed boundaries, i.e. walls, city plans or city squares and parks, but it can also imply constructed surfaces/layers such as reclamation of wetlands to create more land. Space with constructed physical walls is mostly understood as a room. A room is on the other hand a complex construction in itself. How many walls are needed to make a room? Does it need a floor or a ceiling? In modern decorating terms it is popular to create a room within the room using furniture or perhaps plants as space dividers. Typically, in a standing structure the room has four walls, a doorway, a floor and a ceiling, which is created by the volume in a three-dimensional space. In Scandinavian archaeology we seldom find the room, what is found is normally the floor or traces of a floor, and if fortunate some remnant part of the walls.

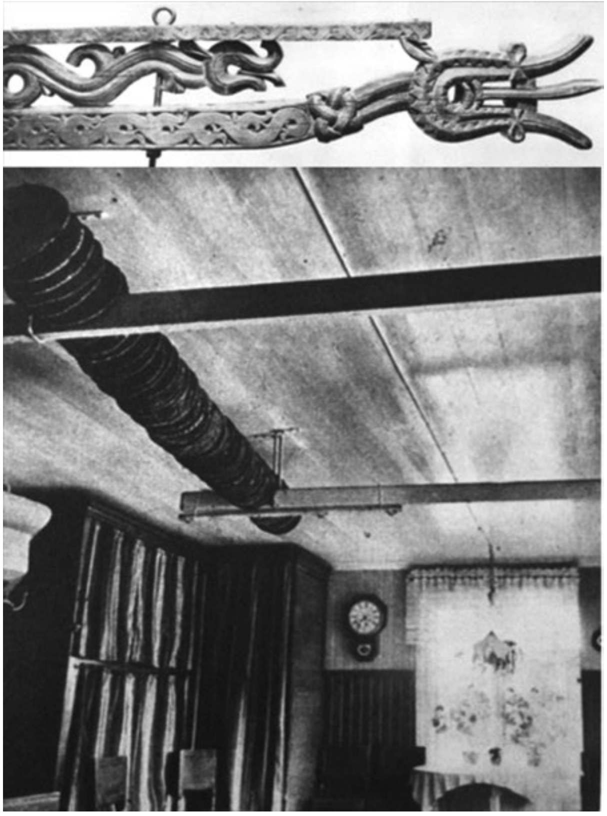


Figure 2 Example of a crown rod (Kronstång) as a social space divider and as a decorative object (Erixon 1938: 283–84).

Traditionally, the floor is recorded in two-dimensional drawings from a bird's eye perspective, creating a flat image. It is often hard for the archaeologist to fully picture what the house might have looked like in its original state. Yet, one room that more frequently appear archaeologically in a more complete state is the cellar as exemplified from Stockholm (Fennö 2004), Uppsala (Anund 2001) and Jönköping (Nordman 2010; Varenius 2008).

Today 3D-modelling of archaeological remains presented as houses with walls and a roof is popular but also precarious since the data, concerning everything above the floor level, is usually scarce or completely lacking. A large part of the imaging must be drawn from the modeller's or the archaeologist's previous experiences and through guessing. Yet, the model has a very strong influence on the viewer, which makes it difficult to imagine alternative interpretations once he/she has seen the model. That what might have been seen as suggestions from the modeller's part is often understood as fact and reality by the viewer.

Depth distance is the analytical method of choice for architects and archaeologist when studying buildings. Depth distance is measured from a fixed point say the front door and measure the linear distance and the number of turns to each room (Hanson 1998). The rooms with the lowest accessibility and flow are then said to be less sociable and thus closed off. That is, in my opinion, a simplistic way of determining movement and accessibility. One enters the house, after that, one circulates freely rather than continuously returning to the fixed point at the front door before walking to another room. This means that even if a certain room is far from the entrance it still might be frequently used and easily accessed from another part of the house, say the kitchen. Other important questions are how a room is used and for what purpose it serves. It is also important to consider that accessibility might differ between hierarchies within the house: gentry vs servants, adults vs children etc. as well as fit vs infirm persons. Amos Rapoport wrote *House, form and culture* (1969) where he discusses how culture, the environment, and human behaviour influence the form houses take. The human influence on built form is most likely not a surprise to anyone, I will argue that material properties are just as influential. That is why we can see similar construction techniques being developed in different parts of the world, without intercultural contacts.

The production of space

The production of the built environment can also be understood as a production of space since our living space; home, school, work and social life etc. are mostly within built spaces. The kind of space produced is of course connected to needs, affordability, supply of building materials, modernity and the location as well as the context of that location both geographically and socially, which Lefebvre would call *the underpinning* (1991b: 403–4). An examination of the context of production, transportation and construction of urban houses will help to understand the underpinning of the city; however, this study will mostly focus on construction.

Lefebvre distinguishes between the concept of *ideal space,* which is to say mental, or mathematical categories and *real space*, which entails the space of social practice. He emphasizes that these two types of space are closely linked through involvement, underpinnings and through presupposition (Lefebvre 1991a: 14). This study meets the ideal space primarily in the production of ideal town plans, regulated city-plans as well as theoretical approaches to town planning and fortification strategies. The curious way state officials (usually positioned a long way from any practical implementations) seem to have thought that once a city-plan was realized, the work was done. Thus, nothing should henceforth be altered, preferably ever, since the plan was 'ideal' (Almquist 1929: 332, 335; Bæckström 1923: 25). Architectural communications theory is another way of understanding the ideal space i.e. how the built environment has been used to communicate messages of political or social nature on questions of identity, wealth, power and status (Rapoport 1988a; 1982). Most research into this type of questions usually ignores residential context in favour of civic architecture (M. Smith 2011).

Real space (Lefebvre 1991a: 14) is interpreted from examinations of material remains i.e. archaeological remains and standing structures. The social environment will be analysed from the amalgamation of interdisciplinary materials and methods connected to constructed space. Thus, the theory meets practice through archaeological relics, preserved buildings or for example historical sources such as fire insurance records, probate inventories and historic images. Real space can also be studied through generative planning theory (Ashmore and Sabloff 2002; Kostoff 1991; M. E. Smith 2007) discussing housing planned on household or neighbourhood level as bottom-up processes, or else through vernacular theory (Rapoport 1988b) concerning people who build their own houses in sometimes informal settlements (Briassoulis 1997).

Anthropogenic spaces - economic, geographical, sociological, and political – along with spaces in nature - of energy and flow and so forth - are multi-sectional and complex in their nature. They all form part of a composite spatial field of social practice (Lefebvre 1991b: 8). This means that social practices cannot be fully understood using only one of the above approaches but will benefit from a multi-sectional line of attack examining a material from several points of view before coming to a conclusion. Working with an urban material, this is imperative.

Space always connects closely with the human body, and its senses such as the sense of smell and sight. Social space is constructed of *rhythms* of the total body which consists of the passive body (the senses) and the active body (labour) combined (Lefebvre 1991a: 405). Ideas that connected bad smells to contagion during the early modern era made councilmen force specific productions i.e. tanners and butchers to the outskirts of towns (Jorgensen, Jorgensen, and Pritchard 2013) thus creating an appointed area or space for these kinds of productions.

The problematic of space is the theoretical discussion on mental and social space, while *spatial practice* is empirically observable i.e. architecture, city planning and urban form and these two understandings of space are to be understood as two separate entities (Lefebvre 1991a: 413). The possibility of changing a space to better suit new needs, hence man's flexible relationship with materiality and space, are important to remember.

The theoretical stance of this work is closely connected to space in various forms: the metaphorical space and the sense of space as well as constructed space are important issues when dealing with built form. I will discuss how a room is used, what purpose the space serves and the human influence on built form. The practice of space is naturally of interest from an archaeologist's perspective especially when studying indoor environments. A smoke-filled, poorly-lit cramped space, will always be understood and experienced differently, from a warm smoke free spacious room with ample daylight. The notion of public and private space is important when interpreting a city plan but also on smaller scales, as access to wells or to various areas on the burgage plots.

The practice of making and uses of space

The use of domestic space was of course quite different in the early modern period to how we operate today. The common town house in Sweden, in the 15th century was often small, dark, and draughty and filled with smoke from the fire. Some improvement on this part was of course an effect of the introduction of the chimney in the 16th century, a wider spread of ceramic stoves in the 17th century and glass windows slowly gaining in numbers from the 15th century. The first floor was also becoming more common after the introduction of the chimney. Yet, this study, as well as Qviström's (2019) research, have shown that the development and adaptation of these features were not linear but rather accepted or rejected over an extended time period. During much of the year, daylight is short and before the development of turpentine, gas or electricity most labour had to be conducted outdoors or by candlelight. The indoor environment in ordinary burgage accommodations were often cramped and crowded and things had to be moved and tucked away, then fetched again several times a day. The work environment indoors was seldom ergonomic and often with few intended surfaces, hot by the fire and cold in every corner. Most members of the burghers' households probably spent most of their life outdoors or in workshops or public houses regardless of the time of year; conversely, some household members might have had the opposite experience having to keep close to the domestic environment.

Climate was another factor affecting the practice of space. The Nordic building stock is focused on one thing most of all, warmth. The houses had to function in low temperatures up to -40˚ C, how low depended on the geographical location. In wintertime, one room was the locus of attention, the main room/parlour with a fireplace and an insulated wooden floor, which typically was the only heated room in the house. Efforts were made to make it as draught free as possible, through a number of strategies discussed in detail further on in this volume. Before the introduction of ceramic stoves, the average Scandinavian household lived together in this room during wintertime. Nonetheless, during the summer, a greater choice of habitation was possible and the household was spread out living in a number of buildings and rooms within the burgage plot or indeed the rural farmstead (Erixon 1964) changing the practice of living and sleeping depending on season.

One aspect that immediately strikes the contemporary Scandinavian eye is most of all the absence of private space i.e. the absence of bathrooms. Even the privies often had more than one seat. There were also few private bedrooms and often a rather large number of people living in a cramped space i.e. the parlour. Naturally, being private meant something different to an early modern (c. 1470s-1800) person from what it means to us today. Perhaps being private was less connected to building form and human physicality and more connected to a mindset, or even places outdoors? Ole Grøn (2014: 35) discusses how the private sphere was maintained in some crowded ethnographical dwelling milieus by avoiding eye contact. There was also the use of symbolic divisions instead of physical walls, and a recognition and ability to bind perceptions to a limited part of the immediate space and activities. Thus, giving and receiving a level of privacy to those closest.

There were of course a series of levels of private or public, related to personal limitations i.e. in relation to gender, age, race, social standing, social networks but also self-evident matters such as opening hours of certain facilities or other accessibility issues (Hallenberg and Linnarsson 2014).

Some new ideas about what was considered private or public emerged during the early modern period. Habermas (1991) argues the crossing lines between the private sphere and the public both in terms of physical space but also through discourse and sociability. Our approach to these questions, as archaeologists are often more hands-on i.e. a fenced area as opposed to an open area, accessibility versus seclusion (Öbrink, Williams, and Nilsen 2018). The streets, markets, wharfs, alleys went from being privately tended and managed, shared spaces, towards government-controlled spaces during the early modern period. The town guard being one factor and regulations regarding both behaviour and constructions on the other (Laitinen and Lindström 2008: 262, 264).

A space is an important factor of social life; there is a need for spaces to meet, to eat, to work and to love. Space is intricately bound up in family and a sense of belonging. We need a place to come from and sometimes a place to go. Space and place are also connected to time and our memory. In order to remember my beloved, grandmother, I picture her in a place and in a space in time, we both shared. *'Space is often understood as something bigger and more abstract while place is created within the space. Karin Sennefelt likens space to motion and the place to a pause'* a pause within which historical events can be studied (Hallenberg and Linnarsson 2014: 9).

People and plots

The social dimensions of the built environment must include demography, thus people and their living space i.e. where they lived and worked, how they lived and worked as well as, whom they lived with. People organize as single individuals, as families, as co-workers and as households, which has impact on the spatial organization. Other questions related to living in the urban, near the urban or in urban-like surroundings, and have a close connection with production-sites and work opportunities in various environments, which again can all be related back to the city.

Marginality, centre and periphery

Another way of understanding the organization of space is in the concept of *marginality* understood in terms of a social or a geographical context and sometimes these two contexts interlock. *Centre* and *periphery* are also concepts, which are important to discuss. How a built environment is perceived is founded on a series of different factors; where the building is located, what quality material it is made of and not the least who lives in that building? Furthermore, how is the building used? Yet, none of these factors are static but form part of a cyclic change through time. A peripherally-placed building can in time be perceived as located much closer to the centre as a town grows. An area can for various reasons decline in status and pass from a well-to-do area, to a challenged one or, indeed, from problematic to popular. The inhabitants of buildings are another changeable feature. Many houses are in use for generations, some for several hundred years, which also influences how the house has been used over time and how it might have changed to adapt to modern ideas and needs. A measure of wear, tear and care also influence impressions. There are often a range of marginal areas within the centre perhaps connected to physical danger, bad smells or loud noises, while other reasons could be lack of space, or just dark and wet, which made living there cheap but undesirable.

In a physical aspect, the peripheral regions of a city may be constituted in many ways but often function as economic lifeblood for the survival of the city, for instance in shape of harbours, gardens, farmlands, mines as well as the residences for a large number of people. Stereotypical ideas have often been applied to inhabitants of various peripheral areas, in terms of economic and social character. The social diversity of these areas as well as the city *extra muros,* in itself, has been widely ignored by archaeological research in Sweden. The focus on centrality, based on what we consider to be the 'real' city is reflected in *Kulturmiljölagen (1988:950)* (the Cultural Heritage Act) and forces archaeologists to ignore pivotal parts of the city space.

City parts outside the core or walls are to a higher extent home to common people, often in settlements built beyond an official and regulated city plan consisting of informal planning (Briassoulis 1997). Shared goals are the common denominator behind informal planning. While these goals may not be the government's first priority, perhaps no formal planning is in place or the inhabitants needs for certain services or amenities are not covered by the formal plan. The same problem-solution logic could be shared by a number of solitary actors through a common system of values (Briassoulis 1997: 109). Thus, the actors could be a social collectivity rather than an organized group (Briassoulis 1997: 109). A completely unplanned built space is rare.

The lack of value often placed on the history and everyday life of commoners have a negative influence on the official storytelling and understanding of important contributors to our shared heritage. The voice of the subaltern often goes unheard partly because of scarce documentation or influenced by a stigmatizing rhetoric in contemporary writings. Interestingly, the elite residences in the periphery and the wealthier merchants are also excluded from the story because they do not fit in to the stigmatized homogenous image of the margins. Ultimately there is a need for an archaeological approach to disclose what the built environment looked like, how infrastructure was organized and what living conditions might have been like in the urban periphery. A large number of specialized workplaces could also be found in the fringe, a topic which needs further investigation. Archaeology could thus reveal more about marginal areas to give answers to questions regarding the spatial organization of places of production, supplies of water and the disposal of rubbish, as well as living conditions and probably wider social diversity. Issues seldom referred to in detail in written discords, thus getting closer to a comprehensive understanding of the urban.

The household unit

Words like household and family are difficult to pin down to a conclusive definition; what it means in any given situation is very much determined through its context (Allan and Crow 2001: 1–2). In research, a closer definition is needed to have the reader understand what is being studied and how. The early modern household has been defined as – a married couple, with children living at home, servants i.e. labourers, maids, apprentices or journeymen, and perhaps the odd close relative. This study covers a time span of several hundred years, the household changed within that time span and aspects regarding for example the 18th century does not necessarily transfer to earlier centuries. The household defined as a social order in the 18th century, working organization and a unit of people living together (Tagesson and Lindström 2016: 214). However, the records display a complex variability in terms of households both in Kalmar, following cyclical change, as studied by Tagesson and Lindström, and similar patterns can be seen in records from Gothenburg.[2] In Kalmar, there were nuclear-family households, large households of more than 10 individuals, but also single households, both male and female, which show a complicated pattern of living arrangements (Tagesson and Lindström 2016: 214).

A family is not formed by blood ties alone, but also from social and emotional connections. The household, conversely, is often connected through strategies that are more practical. This means that questions asked to either group are quite different. Questions directed to the family or about the family refer to kinship, social conflicts or love, and in some cases, upbringing or inheritance, to mention a few examples. Questions directed towards the household have on the other hand links to economy, strategies for responsibilities and distribution of resources, as well as questions regarding the division of labour (Allan and Crow 2001: 5–7). However, the distinction of who belongs to what unit, when one becomes a member, or when one ceases to be a member, are hard to determine. There are new family liaisons through marriage connecting to the partner's family ties. It is not uncommon to belong to more than one household and one set of family connections, consider stepfamilies, for instance, as well as children leaving their parents' household to form their own, and also not to forget single households, then not containing a family (Allan and Crow 2001: 6).

The houses are not only used for dwelling, production and distribution they are also mechanism of communication which leads to and regulates social interaction between family members and between separate households. Houses are cultural constructions as much as built form (Birdwell-Pheasant and Lawrence-Zúñiga 1999: 3). It is interesting that the word 'to marry' in Spanish '*casar* ' means 'to house', which binds the social practice of marriage closely to the house and space. The family and the house are thus linked in act and in practice i.e. the Venetian nobility created a strict set of rules regarding the family and house, controlling not only commerce and political strategies, but the sexuality and marital bonds of the members of the household in strict hierarchical order (Boholm 1993); or, equally, on the other hand the social, political and physical aspects of the peasant houses in the countryside in southern France in the 16th century, discussed by Le Roy Ladurie (1978). These houses, reflects the hierarchies and power relations within and between households and families in a patriarchal set up of authority and displays of status (Boholm 1983).

The Swedish burgage plot stands for all the houses and the courtyard within one urban plot, which could be used by one or more households in the early modern urban context. This includes the dwelling, all kinds of outhouses as well as shops or workshops, a term that will be used throughout the study.

The concept of cohabitation is of great importance to understand early modern living arrangements. Dag Lindström (Tagesson and Lindström 2016: 214–17) has within historical research shown that it is not easy to define those living together under one roof during the early modern age, partly because it could be family members of several generations living on the same burgage plot. Most property owners had live-in help, or servants, of various kind such as maids, farm hands or wet-nurses that often stayed on after retirement. It was also common with demands from state authorities to provide soldiers (often with families) or prisoners of war with room and food, as part of a citizen's taxation. The burgage plots also housed a large amount of tenants in rented accommodation. Whom of these people regularly ate together and worked for the common household is hard to determine. Traditionally historians have counted households by observing the gaps in the registry. That is to say; husband, wife, child, child, child -*gap*- widow, child and so on, counting every such group as one household. Still, all these three groups could just as easily belong to one household or to two or three, definitions of the household varied from place to place and so too did the recording of them (Lindström 2020).

What did cohabitation really mean, how did it operate in reality? All these people ate and dwelled somewhere outside working hours, but where? Probate inventories from the 18th-19th centuries reveal that people moved a lot within the towns, as much those who owned

[2] Östen Dahl (2017-09-20), https://www.gbgtomter.se/ a database based on Olga Dahls research on plot ownership in Gothenburg 1637-1807. (2020-05-04)

property as those who rented.[2] Owning several burgage plots in a town was common, and did not automatically mean that the family was present on all plots or that the inhabitants necessarily belonged to the same houseold. owning property was a relatively safe way of managing money in the absence of banks (Tagesson and Lindström 2016: 213).

On a trip to Birmingham a few years ago, I visited a cultural heritage site, managed by the National Trust, of back-to-back houses. It was an eye-opener for several reasons. I will concentrate here on two things: first, of all, these houses constructed in their thousands during the late 18th century and used well into the 1970s had fireplaces for warmth but did not contain kitchens or a place to cook. Instead, they filled a pot with meat and vegetables and left it with the baker who put the pots in the hot oven after he finished baking the bread for the day. In the evening, the pots were collected in time for supper and contained a slow cooked meal.

From an archaeologist's perspective it is interesting since cooking facilities are generally interpreted as indicative of living and household. This could entail that we should broaden our horizons when it comes to possible living quarters and practices in connections to bakeries and similar facilities. Archaeologists should be open to the possibility that the houses and the living environments shaped practices forced by the construction of the building, in this case the absence of a kitchen and through practices of cohabitation. Similar practices were in place in Gothenburg in the second half of the 19th century, during house inspections numerous buildings had rooms without a fireplace i.e. for heating and cooking, found in the suburbs Annedal and Olskroken (Wallqvist 1891: 10–11). A lot of families also dwelled in damp cellar rooms (Wallqvist 1891: 11). The study is admittedly from a later date, but the concept of substandard living facilities is not necessarily restricted to a certain time. Thus, these kinds of examples can help detect alternative dwellings in the archaeological data from a bottom-up perspective.

The second discovery was that people did not always rent rooms, flats or houses they could just as easily rent a bed and nothing else. That bed could be rented out to two persons working different shifts. That would mean that the lodger only had a place to sleep but no access to any other facility in the house. Most likely they lived their life at work, outdoors and in public houses. During the early industrialization era, public health and quality of eating deteriorated fast. Maybe the lack of homemade cooking and the monotonous meals of soup or stew contributed to malnutrition. This English example is relevant, since as discussed earlier, Swedish towns had a vast rental market and a high number of cohabitation (Lindström 2020). Where did all these people eat and dwell outside working hours?

There was a cyclic element to family formation that could rapidly change and a strong element of variation (Tagesson and Lindström 2016: 217), mostly because of high mortality rates where illness could have a fatal outcome to several members of family. Death in childbirth was not uncommon for either mother or child, and work-related accidents, fires and death in connection with war were unfortunately familiar to most. As a consequence, new family formations were created when entering a new marriage after the loss of a spouse. This could bring new family members into the picture, children (from former marriages or the new one), mothers- and fathers-in-law or other relatives or people working and living with the family. Another side to this situation was revealed by those who did not remarry, a consequence of which was a rapid change to the household's economic situation affecting the possibility of autonomy, in a positive or a negative way. It was furthermore common to raise children whose parents were dead or absent in assistance to family or friends i.e. guardianship and similar situations. These new circumstances could also have effects on property, some was lost, and some was gained through marriage, inheritance or guardianship. The same could be said about the grown-up children leaving their parents household to form new ones. The formerly full house was suddenly left to a single couple, or the couple left the house to the children (Szołtysek 2015: 6). Regardless, cyclic changes to family formations had direct connections to construction.

One way of dealing with cyclical change was through a care system, which entailed the elderly couple signing over the deeds to the burgage plot or farmhouse to one of their children. A small cottage called '*undantagsstuga*' was taken into use as a dwelling for the elderly couple and a fixed amount of grain, hay, firewood and milk, etc. was part of the arrangement/legal contract (Tagesson and Lindström 2016: 208).[3]

The hierarchical structured family formation was not exclusive to the nobility but thriving in most of the early modern society (Johnson 1993). The elite family households were thus in a sense a melting pot of layers of social strata and social relationships and in that particular sense perhaps less segregated than a home belonging to a worker's family.

A fast-dissolving of the nuclear family structure, as a norm, is causing problems, in today's society, due to slow shifting legislation and the inflexibility of the layout of most accommodations. Braidotti (1991: 16) points out that the decline of the patriarchal constitutes the base of modern philosophy. It is, on the other hand, possible to question the idea of the nuclear family as

[3] Mats Hayen, Undantagen berättar om livet på ålderns höst, in *Släkthistoria 7/2016*

a general valued norm. Flexible family formations have probably always been the standard, although perhaps not always formally desired. Richard Wall (1986), discusses the structure of the household from an English perspective and describes the early modern household as *'the adaptive family economy and its key characteristics 'flexibility''.*

Family relations are not cemented, or natural as recent redefinitions of paternal and material expectations on areas of responsibility shows. The relationships within the family can only be understood through studying the social and economic context it has been shaped from. Domestic relations can be seen as a product of negotiation (Allan and Crow 2001: 200–204).

Chapter 2

Wooden buildings and the demolition frenzy – the bankruptcy of the Swedish building culture

Urban townscapes with historic depth should ideally reflect the centuries past in its building stock. Yet, it needs to be established why the research of Swedish early modern buildings and urban living environments needs to be conducted by an archaeologist. In many other countries that would not be the case and there would be less need or opportunity to search for answers in the ground. The fact is that the early modern townscape of most Swedish towns is gone due to extensive demolition of the most common buildings as well as city fires and heavy-handed reconstructions of preserved buildings. The remaining buildings are frequently situated like small isolated islands in modern surroundings, in most cases completely removed from their former context of use or, simply, relocated to another place. Many preserved houses have been described as examples of the atypical or the unique and are often constructed in stone or brick. The vernacular wood house on the other hand has been demolished more indiscriminately, thus losing the most recognizable feature of the early modern town.

So much has been lost regarding the knowledge of the early modern wooden buildings and their context that it is up to archaeology to sort through the pieces.

The Swedish city in the first decades of the 20th century

Over the course of the 18th-19th centuries, rapid population growth caused the urban building stock to house a much larger number of people and occupations than it was originally developed for. This situation then caused a gradual wear and tear of the building stock.

Thus, a new wave of urban utopias emerged during the beginning of the 20th century, which in turn was implemented to some degree in the 1960s. It involved an idea arising from a functionalistic view that future problems could and should be resolved through radical renewal and an affirming of all trends and possibilities rendered by technology (Johansson 1997: 64). It also meant wiping away or hiding poverty and, consequently, entire urban districts in certain areas. The urban, wooden building stock got caught in the middle of this endeavour for reordering and modernity, much in the same way that it had in the early modern period (discussed further in Chapter 7), but now receiving a final blow in most towns.

Ultimately, the city is formed by a range of entities or structures that does not belong together or were not built for the same reasons or in the same school of thought (Linn et al. 2001: 19). The continual growth and change over time can see a city formed by 'added environments' (Garellick 1997: 9). As we shall see in the following analysis, not even the newly founded town contained only new builds but had a large addition of buildings moved there from other places. On the other hand, the city used to contain many environments now removed. There was thus simultaneously a renewal and a continuity of the urban going on (Karlsson 1996).

Historic milieus help memory and enhances the feeling of continuity and belonging among its citizens. Even, the sometimes hurtful or shameful history should have a place in the cityscape and the concealment as well as the possible denial of guilt could create hard-to -heal 'historical wounds' (Chakrabarty 2007; Lorenz 2014). Mats Franzén talks about how the room is experienced through the body, and how alterations to or demolition of a place affects the memory (Linn et al. 2001: 20). The early modern town and its wooden building stock have dropped out of our communal memory since the buildings are no longer there. Environments with houses, squares and streets, used by generations were demolished during the space of only a few years in the 1950-60s.

The Swedish wooden building culture belonged to all strata of society and it still does. Wood was used in all sorts of buildings from ramshackle sheds to high end and aesthetically prestigious buildings such as manor houses and a whole range of building categories in between. It is therefore not straightforward to equate a wooden building with low quality or short longevity. Since it was/is so ubiquitous in Swedish society and in fact housed the majority of the populace, the wooden building should enjoy a higher status and respect. There is often much talk about saving the unique or the building with atypical values, which of course is important. It might even be easier to come up with good arguments for preservation of these types of buildings. However, they are often saved at the expense of the commonplace. Arguments to save the mundane and the normal seem, for some reason, harder to find although the effect of such decisions affect more people.

The only thing left from the oldest built environments in Gothenburg, for instance, are constructions connected to power or the city plan. These consist of a few remnants of the fortification, the town hall, *Kronhuset* (a storage facility of the Crown), or *Torstensonska Palatset* - now the residence of the Governor while in the past sometimes used as a royal dwelling, built in the mid-17th century. Other features are the canals and the churches. All of which are built in stone, while none of the vernacular buildings from the city origins, in the 17th century, have been preserved.

A large part of the historic building stock from the 1860s and onwards was post and plank buildings, and when the steam-powered saw came into general use in the 1870-80s mass-production was initiated, thus creating something that would become the commonplace. Using re-used timbers sawed into planks, or even discarded short planks, the building process was rationalized based on assembly rather than construction (T. Almquist 1975: 5). Such houses were seen as cheap and easy to construct much linked to working class communities, ubiquitous in Swedish towns and countryside. However, when the demolition frenzy started, the original types of these houses were demolished in extremely high numbers. Many of the houses were prefabricated in factories and then distributed through the railways, often to factory towns which needed to construct buildings for the workers post haste (T. Almquist 1975: 7). Yet, some architecturally drawn houses, of this type, were quite beautiful with well-planned layouts; those preserved are still popular today. The principle behind these types of buildings still has merit nowadays, in terms of prefabrication chosen from a catalogue, built in factories and with a post and plank skeleton filled with insulation and panelling (T. Almquist 1975).

The metamorphosis of the 60s peaceful cultural destruction

This is development! Such claims were among the most common arguments for demolition. The lack of sense of history was firmly rooted in Sweden during the 1960s. *Kooperativa förbundet* (KF – the Swedish Co-operative Union) pointed out that they did not build to accommodate the problem of the historic environment. Politicians, focusing on efficiency and economy, consulted contractors rather than architects. KF produced buildings designed for the retail industry i.e. the new department stores such as *Domus* (Östnäs 1984: 209).[1]

Department stores were seen as buildings of function and therefore there was no need for decoration. Instead, the buildings looked like large anonymous boxes of concrete, often completely square, where even the roofs were flat.[2] Many of the same ideas went into the construction of apartment buildings that regularly had a box-like design. There are in fact few cities in Europe (apart from those bombed during the Second World War) that have been so stripped of their old historic environments as the Swedish towns. The Domus department stores all had the same appearance and design in whatever town you visited. The architects were all situated at the KF headquarters in Stockholm. These department stores from the 1960s have now been taken over by chain stores (such as H&M, Lindex, Kappahl etc.) in most Swedish towns, which only prolongs and confirms the uniformity. The Social Democratic party was in cooperation with KF, which led to disastrous consequences. Their political power was strong, with only a few in charge (Leijonhufvud 1965). If an obstacle occurred, the city plan was changed, to better suit the needs of KF, which even had its own town planning office.

Furthermore, there was no difference made between large and small towns when planning the location of the department stores. Several blocks demolished to make room for a retailer could change the image and perception of a small town completely. A whole city district was demolished in Gothenburg, in the 1960s, to construct the mall *Nordstan* (at the time of construction the largest mall in Europe). It was built with very little concern or documentation of the former building stock, its small-scale industries and workshops or of the people who lived there. It was an area of vital importance to archaeology, both above and below the ground, the last district to contain small wooden buildings from one of the oldest parts of the town. The area was demolished at a staggering pace while calling it *'the largest cohesive Swedish city slum clearance programme so far'* (Fritz 1997: 21).

Some lessons had been learned from the experiences of the 1950s and 60s, as shown in this report on slum clearances in the city from 1980 ' *Methods for new builds and specifications have acted, and still do, heavy-handedly with respect to existing environmental values. A lack of experience and knowledge, but also a low appreciation of the environmental values - or confusion about how they should be handled – among those who have planned and decided, have contributed to the gauche renovations'* (I. Blomberg 1980: 5).[3] Yet, there are still almost identical discussions, for and against the preservation of urban historic environments, today as much as in the 1900s and the 1960s.[4]

[1] From Östnäs' interview with the Architect Sune Lindström.

[2] *När Domus kom till stan* is a Swedish documentary from 2004. The film was directed by Anders Wahlgren for Swedish Television. It aired first on 15th of September, 2004 on SVT2. http://www.oppetarkiv.se/video/2431979/nar-domus-kom-till-stan

[3] 'Nybyggnadsmetoder och -krav har gått, och går fortfarande, hårt fram med befintliga miljövärden. Bristande erfarenhet och kunskap, men också låg uppskattning av miljövärdena - eller villrådighet om hur de bör hanteras - hos dem som projekterat och beslutat, har bidragit till de ovarsamma ombyggnaderna' (A. Blomberg 1991: 5).

[4] Laurits, Olsson and Nerdal 2019-05-08, Göteborgs Tidning https://

Another key cause of the demolition was of course the introduction of cars. Cars were considered modern and a necessity, especially since dwellings were forced out of the city centre to be replaced by offices. People thus had greater distances to travel between home and work. Vehicles also needed roads and parking, thus old houses were demolished in large numbers to make room for wider roads and parking garages (multi-storeys) or parking lots.

There were small islands of preserved houses, placed or saved, in reservations, such as the Swedish concept of *hembygdsgårdar/byggnadsreservat* (in English possibly best understood as open-air museums) or simply as occasional houses in the cityscape. These became ways of rescuing some valuable houses or historic environments. The importance of houses preserved within their own habitats as opposed to moved out of it, is also relevant to the discussion. *Gathenhielmska reservatet* in Gothenburg was successfully established following extensive lobbying and local protests in 1936, after threats of demolition (Niklasson 1962).[5] Part of the success in advocating to preserve the houses within the Gathenhielmska reserve was possible due to the fact that the houses, the street view and the living environment had, by 1936, become unique or at least atypical, after these previously commonplace townscapes had been demolished.

On account of some single and demarcated conservation projects such as the preservation of Old Town Stockholm, contractors were able to push for demolition in an even more indiscriminate way in other places i.e. the city district *Norrmalm* in Stockholm. It is also interesting to note that the vocabulary in regards of Stockholm's Old Town changed. From being called dirty, unsanitary and in need of renewal when the politicians wanted to tear it down, it became one of the most expensive and sought after areas in the city because of its historic atmosphere, after the old town was saved.

Slumification; vocabulary and practice – the objectives behind, and the kindness of the city planner

The use of the terms 'shanty constructions' or 'shanty town' were reoccurring and often used in the description of how unimportant and unremarkable the buildings that got torn down were. The more neutral phrases 'wooden house', 'wooden town' or simply 'residential quarters' were seldom used in this type of rhetoric. Nonetheless, it was not always the houses in the worst condition that got destroyed first; demolition was often arbitrary and not sufficiently recorded. There was insufficient control as to what was worth keeping and what could be disposed of; on this account, residential environments and buildings disappeared at a staggering pace. The amount of demolition in almost all Swedish towns could not possibly have been viable. Enormous amount of cultural value was lost and can never be restored, due to the 'usual' or commonplace being targeted in very high numbers.

Investigations regarding living facilities and residence were a concern. One such investigation was conducted by Hjalmar Wallqvist (1891: 1). The aim of the study was *'...the great significance of the workers' housing problems regarding "the little people's" conditions of sanitary, ethical, economic and social issues and its often bleak seriousness'* (paraphrased translation).[6] He goes on and emphasizes the importance of treating this delicate situation, in a social regard; of the question of the condition of housing, in a way that involves the residents in order to conduct the study.

Derogatory language was often used to emphasize the need for demolition. The Swedish word 'sanering' (sanitation) in the sense of town clearance was the official standard word used in almost all official Swedish reports, newspaper reporting and dialogue within political circles as well as towards the general public. The word entails a larger sense of cultural baggage 'sanering' implies cleaning, making healthier, restoration of order, reconstruction, modernisation, renovation and its converse infestation, dirt and squalor were of course to be inferred.

The '*cleared*' were referred to as part of the problem. By discussing the 'cleared' rather than referring to the people affected by the demolition of the neighbourhood as tenants, a counterpart is created that is unimportant and largely without a voice (Sverige. Byggnadsstyrelsen 1954). *'Little thought was given to where the evicted tenants should go after their houses were torn down (Cornell 1981)'.* The lack of regulation of the rental market i.e. the exposure for arbitrary evictions, unexpected rent rises or rundown flats were some of the reasons why *Hyresgästföreningen* (the Tenants Association) was formed, in 1915. For instance, mass-evictions in Olskroken, Gothenburg, in 1936, came after the tenants acquired rent control from parliament, as retribution by the property owners. Many houses had been torn down leaving large numbers of tenants homeless (Wahrolén 2015). About 20 000 apartments equivalent to about 3500 houses were demolished in Gothenburg in 1959-1974. The districts outside the city core were the worst hit in Gothenburg (Garellick 1997: 13). Similar patterns

www.expressen.se/gt/debatt-gt/vi-valkomnar-en-dialog-kring-hur-stadens-kulturarv-kan-skonas-i-denna-exploateringsiver/, viewed 2020-01-16

5 Gathenhielmska reservatet, Vård och underhållsplan – Del 1: Värdebeskrivning och historik, 2014:19–20. Antiquum.

6 Wallqvist 1891:1 *'...en inblick i arbetarebostadsfrågans stora betydelse för 'småfolkets' förhållanden i sanitärt, etiskt, ekonomiskt och socialt hänseende och dess mången gång dystra allvar'.*

for destruction could be found in most Swedish towns at the time, with a disastrous result for the historical building stock.

The counterparts in the debate

There were two forces working towards the demolition and a renewal of the townscape: two forces that previously had not seen that many common goals. On the one side, there were those that stood to gain financially from projects such as the proprietors, the department store owners, and the construction companies. On the other hand, there was the Swedish Social Democratic party (*Sveriges socialdemokratiska arbetarepartiet*) which wanted better living conditions for the working class, and who wanted to lift the whole of society to a higher standard. Unfortunately, many people were caught in between these ideals or interests when put into practice.

There were also two similarly unusual bedfellows on the other side of this debate. There were the intellectuals that wanted to protect historic buildings and the environment. They protested at the loss of historic values to the town often pointing to the picturesque and the quaint. An idealized standpoint romanticizing the past, stemming from ideas embodied by the open air museum of *Skansen* in Stockholm (Bäckström 2012). This side of the discussion often left out the people and their sometimes-abject poverty and problematic living conditions. Whether or not poverty had a cultural historical value consequently became a public discourse.[7] There was of course also the people directly affected by the demolition, fighting for their homes and their right to influence their own future. They often highlighted other values like neighbourhood community; the beauty of many old buildings compared to the new blocks of houses in concrete. They also pointed to the fact that many families had lived in these areas for generations. Problems with moving to the outskirts of town to the newly built districts, with higher rents and longer commute to work were also addressed (H. Andersson, Ejderoth-Linden, and Tegnér 2009).

It is important to remember the advantages connected to the new buildings that emerged; sanitation and washing facilities were moved indoors into the apartments. A more even indoor temperature with less draught was achieved with central heating; there were no pests i.e. rats or bedbugs (Nordman, Nordström, and Pettersson 2014: 450). A fresher environment in the kitchen was created when the electric stove, the refrigerator and the cooker hood were introduced. The introduction of washing machines in communal laundry rooms or even private washing machines changed the lives and the time spent on house chores dramatically for foremost women (Rosling 2018).[8] Another advantage was that the overcrowding was diminished through a new regulation regarding every child's right to its own room (Hagvall 1970; Rydqvist et al. 2006).[9] Yet, much of this could have been achieved through careful renovation of the old houses as well, a solution not sufficiently explored.

The glossary of slumification

One part of the toolkit of the elite preparing for future demolition is/was, withdrawing important elements in the social structure such as repairs, access to services and shops, public transport, not building enough housing etc. Adding problematic elements is another part of the toolkit i.e. through social services procuring social housing primarily in these neighbourhoods. Thus, creating problems by placing clusters of people with mental disorders, addictions as well as halfway houses for criminals, in the same types of places, while avoiding others. This can be aimed, consciously or unconsciously, at making people feel disconnected from the community and anxious in their immediate environment. Current Swedish immigration laws demands that newcomers secure an address and living facilities before receiving permanent residence status. Sweden is a country with a serious housing shortage, which in return forces people to move in with for example relatives, creating overcrowding (H. Andersson, Ejderoth-Linden, and Tegnér 2009: 20). Elias Cornell uses the word *slum programming* to describe such behaviour, on the politicians' part (Cornell 1984: 158–64). Another way of looking at the same issue is whether there actually is a link between bad, ill-kept housing and a social incongruity with a higher degree of people without jobs or dependency on welfare (Landström 1971: 4).

Such mechanisms were at play in Gothenburg: '*Haga was now considered ready for demolition and the ban for building new buildings was in place. No modernization or improvements were undertaken, maintenance was thus neglected*' (paraphrased translation) (H. Andersson, Ejderoth-Linden, and Tegnér 2009: 20). Ironically, the reason why the district later was considered valuable was the fact that no 'destructive' renovations had altered the cultural values of the building stock.[10]

[7] A similar discussion took place in Turko in Finland in regard to saving the district of Klosterbacken (Bergroth and Söderström 1990: 48).

[8] Tvättmaskin.net viewed 2020-01-10 http://www.tvättmaskin.net/tvattmaskinens-historia

[9] 'Trångboddhet' Crowded living. 2015. In Wikipedia viewed 2019-07-22. https://en.wikipedia.org/wiki/Overcrowding Also in the Swedish parliament's decision https://data.riksdagen.se/fil/DC6FAAD8-DC3A-4563-A16E-61E2937D53AE from 2019-02-22.

[10] 'Haga betraktades nu som rivningsmoget område och nybyggnadsförbud infördes. Inga moderniseringar eller nybyggnationer genomfördes och underhållet eftersattes' (H.

Enforcing a 'we and them' scenario can create and enable public support on the authorities' behalf (Gokee and De León 2014: 137). *'A government inquiry on the social residential situation in 1947 suggested radical clearance programmes across large parts of towns in the country. Often with recommendations that all existing residences should be removed'* (H. Andersson, Ejderoth-Linden, and Tegnér 2009: 20) (paraphrased translation).[11]

Yet another part of the toolkit is the vocabulary to create the 'other' found in most official reports and planning acts from the 1950s and 60s. While talking down the neighbourhood and the housing, similar wording was also used towards the residents, as mentioned earlier:

> Shanty constructions, shanty town, primitive, squatter like, slum, slum area, unnecessary repairs, area for the poor, clearing, anachronistic, anarchistic building stock in older neighbourhoods. Ready for demolition ('*those who said such things were often victims of a false Darwinism'* (Cornell 1984: 161)).
>
> Inappropriate, unhealthy, rotten, dirty, cramped, ramshackle
>
> Conglomeration, dull, impenetrable for the sun, gloomy
>
> Clearance, unsanitary (Sverige. Byggnadsstyrelsen 1954) ready for clearance, total clearance, clean out.
>
> Sacrifice for uniformity; give room for businesses and traffic, declassed (Garellick 1997: 86)
>
> '*It has been a natural aim to concentrate the clearance to as large areas as possible, so that the proceedings can be as rational and financially advantageous as possible*' (Möhlenbrock 1965)
>
> Logic, organize, reclaiming the right angle so that mass production can work (Le Corbusier 1962).
>
> Radical approach, rational, rationalisation procedure, educate the residents (Myrdal 1932).

This kind of vocabulary certainly had an impact of how these areas, as well as the residents, were perceived and it made it difficult for the affected tenants to be heard in the debate. The people in power effectively bullied a very large part of the population into submission.

Andersson, Ejderoth-Linden and Tegnér 2009,20).

[11] 'En statlig bostadssocial utredning 1947 föreslog radikala saneringar inom stora delar av landets städer. Ofta med förslag om att all befintlig bostadsbebyggelse skulle bort' (H. Andersson, Ejderoth-Linden, and Tegnér 2009: 20).

Hazards for the existing cultural building environments

We have two remaining wooden towns left in Sweden with an early modern city plan still intact. Eksjö and Säter, and to some extent Nora, are therefore important to protect. These wooden urban environments are rare in Sweden in the wake of the demolition frenzy of the 1960s. There are however other threats than demolition that are cause for concern e.g. unregulated renovations can quickly remove key historic elements from a building. In a historical sense, the major threat to a town built mainly in wood is of course fire. Recently two fires have again reminded us of this fact. In July 2015, the last remaining stable situated in an inner courtyard in the district of Haga in Gothenburg burnt down.[12] It shows how a conservation programme consisting of only a single building of its kind can quickly turn into a programme forever lost. The fire in the middle of old town Eksjö affected an entire building (half a city block) and a young life was lost tragically.[13] The fire resulting in temporary homelessness for many families.

In a modern society it is easy to forget how quickly a wooden town can perish and what effects that can have on the town and its citizens. You often read about historic urban fires and all the precautions put in place to prevent further disasters.[14] The government and city councils repeatedly encouraged and often demanded the urbanites to rebuild the city in stone or brick or at least in half-timber material, often in vain (H. Almquist 1929; Bækström 1923). Of the wooden buildings that once dominated the setting in absolute numbers, a very limited range of urban historic buildings remain. These few remnants are brittle reminders of times past and need active protection to continue to exist for future generations.[15]

There were six devastating fires in Gothenburg 1792-1813 in five of those fires a total of 688 houses were destroyed. In the sixth 1400 persons became homeless when the city district *Kvarnberget* burnt down and only three houses were left untouched. These types of fires have of course had a serious impact on the low number of preserved houses from the original building stock.

[12] Cwejman, Adam 2015-07-23 Göteborgs Posten http://www.gp.se/ledare/g%C3%B6teborgarna-f%C3%B6rtj%C3%A4nar-sin-historia-1.118188 viewed 2015-07-30,

[13] Sköld, Johan & Petersen, Kristina 2015-08-16 SVT Nyheter. P4 Jönköping http://www.svt.se/nyheter/lokalt/jonkoping/brand-i-1500-talshus-i-eksjo viewed 2015-08-16 2015-08-16, Sveriges Radio http://sverigesradio.se/sida/artikel.aspx?programid=91&artikel=6233199 viewed 2015-08-16,

[14] Ed. Östen Dahl 2007-09-20 Kv. Domprosten 4:39. A database by Olga Dahl. www.gbgtomter.se viewed 2019-07-22.

[15] Webbtidningen Brandsäkert Friedholm, Lotta 2014-04-10 http://www.brandsakert.se/2014/0410/norgebrand-v%C3%A4cker-fr%C3%A5gor viewed 2014-04-10,

Resisting destruction

There was a lot of critique regarding the 'clearance programmes' not only from the residents in the areas affected but also from scholars and other concerned members of the community. Daniel Kinlund (2015) describes this well in his paper on the demolition process in *Gamlestaden* in Gothenburg; how the residents in the city district managed to fight back and retain some of the houses and cultural heritage connected to the working class and middle class buildings. The city district Haga in Gothenburg was scheduled for total clearance but was finally saved after a long protest and demonstrations organized by the residents (H. Andersson, Ejderoth-Linden, and Tegnér 2009; Cornell 1984: 163; Kinlund 2015).

Some towns were somehow spared from the destiny of total clearances, in part or completely i.e. Gränna, Visby, Eksjö and Ystad. How did these towns resist the domination of KF, and a car orientated city centre?

The Wikipedia page regarding the chain store Domus and Kooperativa Förbundet, comments on the company's part in the demolition frenzy with only one sentence *'Old houses were torn down to make way for the new big department stores. The size and facades of the buildings have been criticised many times for not being adapted to the environment within which it was situated'*,[16] (paraphrased translation).

Gentrification – remodelling heritage buildings into unrecognition

Gentrification can come in many shapes and forms and is especially prominent in the building stock of the small coastal communities in Sweden. Here, small towns and villages connected to the sea through fishing and other maritime occupations, were initially dotted with small cabins occupied by often economically challenged families. These small (today considered quaint) houses were situated in dense formations on bare rock and subjected to harsh weather for most of the year. From the beginning of the 20th century, the wealthier urban population discovered how pleasant it was to spend leisure time by the sea and started to build big summerhouses in these places. Then again, some villagers also saw an economic opportunity to rent out their houses over the summers. In time, more and more people have come to enjoy these surroundings. In the last thirty-odd years, fewer and fewer all year residents reside there, and more and more tourists or summer residents have come to take over. The small fishermen's houses are being remodelled in the Scandinavian spirit of light and fresh i.e. often with the interior painted white while the indoor walls have been taken out to give room for more open space. Furthermore, frequently expanded with a first floor or larger ground floor. The extensive remodelling's have changed the makeup of the population (these coastal towns are almost deserted for most of the year) with rich urban summer guests and the townscape have changed from simple working class dwellings often in one floor, to luxury summer houses with all the trimmings.

Gentrification becomes a factor when the houses are 'ripped' out of their context. Initially they might belong to a specific stratum of society, or a specific line of occupation, and the built environment reflected that community usually from a specific place and time. Then another group of people start to move in appreciating something quaint or perhaps the location (as mentioned earlier i.e. the seaside or a place in the city) or maybe even something as mundane as the house prices in a certain area. However, their way of using the houses/spaces or their spatial understanding and needs might differ from the original population. Thus, slowly (or quickly) not only the area, the social set up, the community but also the internal layouts as well as the external facades of the houses starts to shift - a microcosm of macrocosmic change. Johnson (1997) has done a study of the transition of working class buildings into a middle class context in England reflecting a similar process of gentrification.

How are the urban environments perceived and cared for today?

Today there is an enormous need of building, of re-building and to think in new innovative ways to solve a situation where hundreds of thousands of Swedes lacks a residence of their own. It is possible that we are approaching another *miljonprogram* (Arnstberg 2000; Theselius 1993), a Swedish term for the project to build a million new homes to solve the housing crisis in the 1950s and 60s (Näringslivets byggnadsdelegation 1967). There are still a lot of people living in these houses from the 60s. Some houses have been torn down or look run down today but others have been carefully renovated often in close dialogue with the residents. However, not a lot has happened to the ideas of the 60s, the same concepts are still used. Birgitta Modh (1996) has produced a report regarding how a big housing project, in this case *Eriksbo* in Gothenburg, turned out. She also studied how the residents and active members of the local community in these large-scale residential areas wanted to develop the area further. What problems occur in such a building process and for what reason? Her main scope were the relations between everyday life for the residents and the built environment, but

[16] 2019-07-22 https://sv.wikipedia.org/wiki/Domus viewed 2019-07-23 *'Gamla hus revs för att ge plats åt de nya, stora varuhusen. Storlek och fasadutformning på byggnaderna har många gånger kritiserats för att inte vara anpassade till den miljö i vilken de uppfördes'.*

also in relation to social issues and organization. She wrote a first report '*Strävan efter självförvaltning*' ('*The quest for self-management*'). A process later referred to as 'the cooperative development', where the residents were able to take active part in more decisions and management (Modh 1996: 133).

One popular solution to creating more homes, was and remains the erection of high rises or blocks of houses. To some extent they are needed, but it is worth considering how high and how many apartments to build in one place. High rises are expensive to maintain, and it is not always popular to live on the upper floors where a sense of a connection to the ground can be lost. Children's possibilities for unrestricted play outdoors is also limited to when the parents have time to accompany them. High rises are often rather impractical and impersonal to live in. The towers change the cityscape radically and frequently in an unreflective way.

Hopefully lessons were learned from last time (the 50s and 60s) about how to form housing environments where people thrive, and where cultural values anchor people, ideas and environments from the past as well as for the future. Questions should be raised about what ingredients the older historic housing had/have that attracts, and what it is that makes for the breathing space that is so often lacking in the mass-produced building blocks and modern built environments.[17]

The term *blandbebyggelse*,[18] - mixed development - a mixture of residential buildings and (light) industrial space, is nowadays the new watchword within architecture and city planning. It contains elements of high and low buildings, squares as well as the presence of minor companies and corner shops. The concept also highlights the importance of green areas and places for recreation for people of all parts of life, as well as respect for cultural heritage. Thus, this is a way of creating a village within the town, an area as self-sufficient as possible to cut down on unnecessary travelling. This is a place where, the wooden building, in a Swedish context, has a key role to play. In other words, it is in many ways a blueprint of a pre-demolition townscape. Other countries are discussing similar ideas or in some cases high-density city planning but with a mixed use development for sustainability reasons (Coupland 1997; Walker 1997).

Concrete was introduced on a broad scale as building material during the 20th century. It soon came to dominate the market, where the production of square and often dull buildings was frequently the norm. The way concrete has been used as a universal solution to almost all construction issues around the world is rather problematic. Notwithstanding this, there is also a lot of artistic potential in building in concrete for architects with innovative ideas. The aspect of the environment and sustainability is nevertheless starting to catch up. The dominant role of concrete development in the world is causing a deprivation of sea-sand, which brings about coastal erosion (Masalu 2002; Meador and Layher 1998) and further environmental disasters in the long term.[19]

Wood as a building material is often described as transitory and short lived, which has been taken as a reason for giving it such a low status. Nonetheless, the oldest surviving Swedish vernacular building constructed in wood was built in 1229 (+/- 10 years), the old storehouse at Ingatorp's church (Gullbrandsson 2011), clearly proving that wood construction is sustainable, long lived, practical in a cold climate as well as aesthetically pleasing. Today, the building stock is expected to last for 20 years in general. Twenty years, expectations are most certainly low. How this use- and dispose-mode of consumption/construction can be discussed in sustainable terms is a mystery. Old timber buildings should be good contenders when debating building strategies of the future.[20] Wood is also a renewable material since it is possible to grow new trees after felling the old ones, in contrast to concrete where sand is not renewable in the same way. Wood is also a reusable material that after serving its time in one construction advantageously can be reused in another building or it can be used in another form i.e. even as wood chips.

Another aspect of the preserved building environment is its lack of protection from improvident renovation projects. Considering how few older houses that remain it is not viable to provide space for renovations in the modern spirit of 'light and fresh' unreflectively. At the same time, it is a tightrope, the houses need adaptation to the soul and needs of today to keep its place in our hearts and to defend its existence. Above all, it is in the use and in the relationship to people of today that the houses exist, because they are still relevant.

Consider the increasing popularity of new builds in old-fashioned designs. Architects are being inspired by traditional housing and influences, such as Karin Larsson's designs of furniture (I. Andersson 1986), Astrid Lindgren's well known literary environments

[17] Johansson, Lars Anders 2017-06-17' Om det fans en fri marknad skulle det byggas i klassisk stil' https://timbro.se/smedjan/om-det-fanns-en-fri-marknad-skulle-det-byggas-klassisk-stil/ viewed 2020-01-10

[18] 2015 https://intelligentlogistik.com/nyhetsflode/itteknik/nytt-bygglogistikprojekt-i-molndal/ viewed 2019-07-23

[19] Höflinger, Laura Spiegel Online 2014-10-02 http://www.spiegel.de/international/world/global-sand-stocks-disappear-as-it-becomes-highly-sought-resource-a-994851.html viewed 2014-10-02,

[20] Smedley, Tim 2019-07-25 BBC http://www.bbc.com/future/story/20190717-climate-change-wooden-architecture-concrete-global-warming viewed 2019-07-27

(Lindgren 2000; 2001; 1997) or the city district Jakriborg outside of Lund, a 1990s celebration of a Hansa town.[21]

The Cultural Heritage Act:[22] ‵*is the central law for the cultural heritage services. The law contains for example regulations regarding place names, ancient monuments and archaeological finds, built heritage and ecclesiastical heritage, as well as the import and export of historic cultural remains. The county council can also grant funding for care of particularly valuable ancient monuments, buildings and cultural landscapes. As support for expert advice, the county council refers to local or regional museums*'.[23] (Paraphrased translation)

The Planning and Buildings Act;[24] '*The council should make sure that buildings, particularly valuable in terms of historic, cultural history, environmental or artistic standards are not impacted upon in connection to the granting of building permits. The council can intervene against a landowner who does not meet the standards*'.[25] *(Paraphrased translation).* We can look at the United Kingdom and Northern Ireland as examples where the early modern house is still used and loved but with clear and strict guidelines. The respective parliaments and assemblies have been successful in enacting legislation regarding conservation and construction, where changes are permitted to some degree, resulting in houses that still function in the modern world without entirely losing their original looks, properties and value.[26]

Johansson (1997: 7) discusses lessons and strategies to retain culturally valuable built environments for the future in Sweden, by taking advantage of ideas on how to create a sustainable city culture. He claims another way forward is through creating policies against future 'cultural murder'. Johansson emphasizes the importance of keeping a statistical overview of the building stock as well as giving fiscal stimulus for owners of culturally valuable buildings. He also sees the need for an interface of conservation and protection regarding culturally valuable buildings.

A final point needs to be made regarding conservation strategies where the *usual* or *commonplace* contends with both the *unique* and the *atypical*. For too long has the usual been on the losing side and needs to be regarded as of much greater value. The usual is what is, or has been, relevant to the most people and thus relate more memories, physical and emotional. The usual is perhaps what most people preferred, and it operates closer to something like tradition than the unique and the atypical. Within the usual, there is often a measure of variation that also goes missing when the commonplace is being demolished. Removing the usual, emotionally and practically affects more people, since the demolition concerns more houses, and consequently more homes and living environments. The impact of handling the usual carelessly can lead to a break with history and eventually changing the townscape and the urban atmosphere in unexpected and irreversible ways.

Conclusion

The urban wooden building stock has always been treated with a certain amount of disdain and neglect. It has for ever been under attack from various directions such as fire, demolishment or derogatory treatment and language, or for its sometimes-vernacular character. These attacks have in no way halted over time. The early modern urban wooden building stock has been under fire, to such a degree, that there is literally nothing left. This chapter has been dedicated to the consequences of removing the commonplace in great numbers, thus understanding what is no longer there and why.

The Swedish wooden houses belong to all strata of society and appear both in the urban centre as well as in its periphery, but they are also ubiquitous in the countryside. Funnily enough, the wooden houses have always been loved and cherished within Swedish society, while at the same time faced with the problems mentioned above. No matter what government or city councils said, people kept on building in wood. While there are only a handful preserved urban buildings left from the early modern period the houses appear as archaeological remains. The remainder of the work will be focused on the traces of the historic wooden townscape.

[21] Niklasson, Olle 2006-08-26, Göteborgs Posten http://www.gp.se/livsstil/bostad/jakriborg-en-modern-medeltidsstad-1.1114192 viewed 2017-12-19

[22] 2017 Sveriges Riksdag, http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/kulturmiljolag-1988950_sfs-1988-950 viewed 2017-12-19

[23] Riksantikvarieämbetet, Swedish National Heritage Board, http://www.raa.se/lagar-och-stod/ viewed 2017-12-19

[24] 2017-11-15 Regeringskansliets rättsdatabaser, http://www.notisum.se/rnp/sls/lag/20100900.htm viewed 2017-12-19

[25] Riksantikvarieämbetet, Swedish National Heritage Board, http://www.raa.se/lagar-och-stod/ viewed 2017-12-19

[26] 2013 October Scheduled Monuments, Department for Culture Media and Sport, UK, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249695/SM_policy_statement_10-2013__2_.pdf viewed 2017-12-19

Chapter 3

Understanding wooden buildings – a background to Scandinavian research

Different lines of research relevant for this study is briefly discussed in this chapter. The wooden built environment and its social connotations have been in the scope of several disciplines. Furthermore, this chapter will answer why an interdisciplinary study combining architecture, archaeology and history is the most fruitful when addressing townscapes and its social dimensions. Researchers in most of the disciplines that are to be discussed have worked together to various degrees or used a combination of methods originating from one another. Architecture has the methodological keys to discuss and understand built structures. History gives a deeper knowledge of the social, political and legislative context of the buildings and its inhabitants as well as in some cases personal histories. There are, of course, also other historical records concerning the buildings themselves. Archaeology can connect the knowledge of physical buildings with local site information such as the internal layout of the buildings in addition to uses of space and personal belongings. Ordinary people's houses and living conditions, of which the vernacular building is part, is an understudied area within Swedish research. A combination of approaches and records from several disciplines will thus help get closer to understanding something of these environments.

Key concepts:

Buildings and constructions

People have always needed some sort of shelter from wind, precipitation and high or low temperatures, during all stages of the human history. Most of our knowledge about the Swedish early modern house derives from preserved houses in the countryside and a few remaining groups of houses in urban settings, very unevenly distributed. Most towns have none or only a few buildings left, mostly constructed in stone or brick. A few towns have managed to protect their historic building stock at least to some concentrated districts i.e. Stockholm, Ystad, Malmö, Lund and Visby. Yet, wooden buildings have been ferociously targeted for destruction and only Säter from the beginning of the 17th century, and Eksjö from the end of the 16th century, have retained larger areas of the older early modern townscape, which were built in wood, intact. Towns with preserved wooden houses and a city plan deriving from the 18th century are more frequent i.e. Alingsås, Kungsbacka, Mariestad and Mariefred just to mention a few. Most of these towns are older than the 18th century but due to large city fires, the original building stock have largely perished.

This means that the geographical location has had an impact on accessibility to the preserved building stock and a similar observation can be made regarding archaeological remains. Some county councils (*Länsstyrelser*) have valued early modern remains and actively encouraged archaeological investigations, such as *Länsstyrelsen Västra Götaland*, which early on financed excavations of early modern Gothenburg. Conversely, peripheral areas (in respect of early modern Gothenburg) such as Majorna is not included in the archaeologically protected zone (apart from its medieval remains i.e. *Älvsborgs staden* – Älvsborg town).

Table 1 Key concepts

Vernacular architecture – is a concept based on local building traditions and mostly on local materials, where, in Sweden, wood plays a key role. A formally trained architect has rarely designed these buildings, but instead local builders have passed the technical skills on to the next generation.
The burgage plot – is a translation for the Swedish term *stadsgård* and stands for all the houses as well as the courtyard within one urban plot. Used by one or more households in the early modern urban context. This includes the dwelling, all kinds of outhouses as well as shops and workshops. The term is more neutral in Swedish and not as connected to the 'burgher' but refers to a plot of land within the town limits; it could be inhabited by anyone. The owner of the plot received property and voting rights; living there as a tenant meant you only had fiscal duties.
The early modern period – *c.* 1470s-1800, referring to a break with the medieval mindset concerning city planning, interior design and technical innovations i.e. the chimney, the ceramic stove and windows etc., ending most notably with tearing down city walls.

It is, however, ambiguous because the Älvsborg castle has enjoyed some protection (some remains of the castle have been preserved and excavated while other parts of the castle have been integrated into the sugar refinery built in the 19th century). Älvsborg town is protected in theory but in reality no remains have been recorded even though there has been a lot of development in the immediate area.

Other county councils, such as *Länsstyrelsen Skåne*, have sometimes downplayed the importance of the early modern urban material and directed investigations to medieval deposits. This has created a situation where knowledge of this period greatly varies depending on in which county the archaeology is undertaken. Various disciplines have worked with the buildings in different ways (which will be discussed further on) and have come to a range of conclusions. An approach to other disciplines through collaboration and through using a broad set of methodologies will enable new questions to be asked and answered regarding the built environment.

There are few in-depth studies of archaeological wooden remains concerning materials from buildings and major structures. These have seldom been preserved or included in museum collections but rather have been neglected or discarded due to their sometimes, awkward shape and size. New methodologies such as 3D photography might improve the situation through a fast and careful recording in the field, which can further research without saving the actual timber. The wooden constructions can be buildings but also other forms of structures i.e. wells, wharves or rubbish bins as well as drains or bridges. Archaeological wood is also a material that has been largely misunderstood and underestimated. From a north European perspective, wood as a construction material in buildings has had an enormous significance to society through history, and still has today. Wood has furthermore been the most used material in interior design and furniture but has also been common in wooden tableware and tools not to forget firewood. The availability of wood has been of vital importance to past societies. Wooden building remains from historical periods are often well-preserved as an archaeological material, which has rendered it a position as a mass material at some excavations. Its diversity of use and form makes wood materiality intriguing to research.

Lines of research

There is no intention to deliver a comprehensive research history of any of the disciplines in the following discussion, but rather to show how several disciplines have contributed to the research of buildings from different perspectives.

Architects and research

Several architects who have influenced this work regarding the built environment have made important contributions to the study of historical buildings. The choice of introducing architectural research first, comes from architects being the most active working on the subject.

The Nordic Architects

Erik Hansen and Gregers Algreen-Ussing were part of the third wave of Danish architects coming out of the French school of architecture, a collaboration between *Det Danske Institut i Athen* and *École Française d'Athènes*. These two were also involved in classical archaeological surveys at Delphi, Greece. They were very much a part of developing a methodology of documenting structures, '*The importance of a wider knowledge of historical architecture and preservation of documentation of buildings that have often been severely changed or even destroyed over time. A tradition of surveying grew out of this activity in the form of a method of neutral drawing techniques, carefully detailed and with an interest for materials and constructions*' (Algreen-Ussing, Mulliez, and Hallager 2008: 12) (paraphrased translation).[1]

This methodology is detailed in [Byggnadsuppmätning: historik och praktik] (Sjömar, Hansen, Storsletten and Ponnert 1988), where the connections between Swedish, Danish and Norwegian architects working in classical archaeology are brought to the fore. Their collaboration also indicates the change in methodology, for the Swedish part, from an earlier ethnological methodology (which will be detailed later on) to an architectural approach.

The Norwegian Architect Arne Berg has had an important role in protecting and researching the Norwegian cultural heritage (Arne Berg 1974; 1989; 1998; 1968; 1980), he has also used this method of measurements and drawings with success. Berg cooperated with archaeologists during the large surveys in Oslo during the 1980s, where he helped interpret the building remains (Schia 1987). Berg has foremost worked with vernacular buildings and particularly wooden architecture. Håkon Christie was another central Norwegian architect, who has made important contribution to the research on stave churches alongside Sigrid Christie (H. Christie 1974; H. Christie et al. 2000; S. Christie and Christie 1959). He was

[1] 'Betydning ved at udbrede kendstabet til den historiske arkitektur og bevare en dokumentation for bygninger, der ofte senere er stærkt ændret eller helt forsvundet. Gennem denne virksomhet udvikledes en opmaalingstradition, der gav sig til kende ved en sober tegneteknik, omhyggelig gengivelse af detaljerne og interesse for materialer of konstruktioner' (Algreen-Ussing, Mulliez, and Hallager 2008: 12)

also involved in archaeological excavations of medieval buildings in Bergen and Trondheim in addition to the Urnes Stave Church. Ola Storsletten (Sjöström et al. 2000; Storsletten 1993a; 1993b) and Jan Michael Stornes at NIKU have been key for the continued work on stave churches, vernacular Norwegian building culture and developing dendrochronological methodology.

Similar connections between architecture and archaeology have been made in Sweden, such as in the work of Karin Rosberg (2009) on Viking age building techniques. Peter Sjömar (1988) has done an in-depth study of building techniques and the art of the carpenter. Kina Linscott previously worked with Anna Blomberg (Blomberg 1991; Blomberg and Linscott 2000a; 2000b; 2004) and they carried out a series of in-depth studies on early modern vernacular buildings in Falun and Stockholm (Linscott and Nilsen 2018). Linscott (2017) has worked intensely on 12th century wooden roof constructions in stone churches, with an archaeological approach to the building analysis.

Early modern urban wooden churches were common, thus a large quantity of study material in itself. The church buildings have, however, deliberately been excluded from this study but should be recognized as a theme worth a thorough investigation in the future.

Erik Lundberg was an art historian and an architect (Lundberg 1928; 1945; 1971), who was very influential regarding ideas of historic architecture in Sweden and with a strong emphasis on connecting all architecture to classical ideals and art history (Lundberg 1942: 25). His strong diffusionist ideas in which the Mediterranean area was a major source of influence on Nordic building stood in contrast to the extreme Germanic position of many other scholars at that time.

Vernacular architecture has also been of major interest to the architect Finn Werne, and he focused his work on the architecture of the countryside (Werne 1980; 1993). Another important art historian is Elias Cornell, who took great interest in the history of architecture (E. Cornell 1962; 1967; 1968; 1970). He discussed how architecture is perceived, used, and maybe most of all, how the element of buildings, as building blocks of the city, have come to be, along with its missing pieces (E. Cornell 1959; 1972; 1977; 1984). Cornell, also had a way of describing the city from the perspective of the stroller or flâneur, rather than from the drivers of cars, which makes for another approach to architecture and the city, and thus creating a more historic way of engaging with its buildings and structures. The gaze of a person walking slowly through town makes time to look closely at buildings and appreciate ornamentation and details. The pedestrian can also use shortcuts, steps and lanes connecting the person to other parts of town than the space and roads made for cars.

It is important to remember to question *why* certain houses remain while others are lost; is the surviving house a good representative for the houses originating from the same epoch (the usual or commonplace) or is it an exception from the regular (unique or atypical)? Is the reason for the missing houses or townscapes due to bad construction or quality, or are there other causes behind? The question 'why' probably has a whole range of complex answers. Commonly, high-end houses seem to have a stronger survival rate than houses built for and by the public, often consisting of the 'unique' architecturally drawn house. The *existing* historic building stock as well as the *missing* building stock both have a heavy impact on research (Deetz 1977: 127), which makes questions of representativeness important to consider (more on this in Chapter 2). In Gothenburg, during the demolition frenzy of the 1960s, even many of the patrician houses on *Kungsportsavenyn*, were destroyed. The reason given was that they would probably soon be deteriorating, anyway (Garellick 1997). Thus, even the unique; atypical and high-ended was not protected from the demolition process. The buildings' only, but unforgivable, fault was being old.

British and French influences

A lot of work has been done on the British medieval vernacular house and its construction. Clark (2013) has worked extensively on the medieval peasant house and a bottom-up perspective on the building culture. Dyer (2013) has researched the interiors of medieval peasant houses in terms of layouts and furniture which perhaps reflects social life more closely. He also advocates for more research on minor towns, as he has identified a lapse in works on that issue (Dyer 1997). Nat Alcock, is yet another researcher who has undertaken extensive surveys on medieval vernacular buildings using dendrochronology, both in the British Isles as well as in Scandinavia (N. W. Alcock and Currie 1989; N. W. Alcock and Miles 2013; 2010). He has also published on the origins of cruck houses and Wealden houses (N. Alcock 2010; 2013; 2019; N. Alcock and Miles 2012). The British researchers mentioned have influenced this study through methodological and theoretical approaches. Building technique as well as the interior structure i.e. the layout and the introduction of technical innovations such as the window, the chimney, as well as features such as the jetty and the first floor, were introduced and used by the public in increasing numbers. These changes to the built environment seem to be less due to local influence, but rather interconnected on a broader European scale.

The British archaeologist, Matthew Johnson, has worked comprehensively on the archaeology of buildings. He has analysed the transition of the English vernacular house and connected social structures and meaning to interior design (Johnson 1993; 1997a; 1999; 1997b;

2010). The historian W.G. Hoskins (1953), influenced the interpretation of the transition of rural British vernacular architecture for a long time with a housing revolution *c.* 1570-1640, he called the Great Rebuilding. He has been contested in some of his findings, foremost by Matthew Johnson. One objection to Hoskins - from Johnson, is that he regards Hoskins' researched time span, of 80 years, too narrow and interprets the process as much more drawn-out (Johnson 1997a: 26). Another critique was his purely economic aspect of complex social relations (Johnson 1997a: 11). Johnson also advocates a similar approach to buildings archaeology (1997b) as I have attempted to do in this work. He stresses the need to address buildings from a point of view of meaning, context and time as well as take account of the diverse meaning of 'common sense'. He also emphasizes the implications of the organization of space, in addition to attitudes towards cultural values in everyday practices and that we cannot interpret vernacular architecture independently of the present.

Frédéric Epaud is working on timber structures in churches and on vernacular timber-framing in France with close resemblances to British techniques (Epaud 2013), which brings in aspects of the regional dialects (Harris 1989) and also of cross-regional influences of timber-framing. The Italian architect, Giorgio Verdiani, has done interesting studies of various sites where the architecture has a strong story connected to a historic event, of which, the building remains as a symbol (Verdiani 2018), or, equally, in jeopardy of falling apart (Verdiani 2015). It does bring an extra layer to the table to treat a construction as a house with a social history rather than only discussing the initial intent of the architect. The architects' ideas and aims of how a building should be used say very little about the events that really took place and the lives that eventually were lived there.

Art history

One of the disciplines that took a great interest in buildings was art history and foremost Gerda Boëthius. She was born in 1890, and became a professor in 1938, at Uppsala University. Medieval church art was her main interest, but she had a close connection to the Zorn collections, assembled by the Swedish artist Anders Zorn, in Mora, where she worked for many years. His collection of old vernacular buildings had been bought from places within the province Dalarna, and moved to his open- air museum, in Mora. He had an eye for spotting the oldest specimens around, one of the oldest vernacular houses in Sweden, a timbered building from 1237, was in his possession. Boëthius, used *Zorns Gammelgård*, the museum collection, as a case study for her book on timber buildings from the Viking age to the 19th century (1941). She believed an evolution or a gradual advancement in art techniques as well as in building techniques, could be traced, which would enable her to date a piece of art or construction. She did so through creating sequences. This idea was of course influenced by Montelius (1885), and a popular method at this point in time. There is no exactness in the methodology, more a feeling or an instinct, but she has been surprisingly correct in her evaluations of buildings, when tested dendrochronologically. Nonetheless, she failed in her attempt to use art historical methodology when analysing Viking halls and stave churches (Boëthius 1931). This is not, however, a methodology that will be used, going forward in this project.

On the other hand, there are pieces of art and images from the early modern period that are interesting to study to get a better grip on houses, towns and people. Not forgetting interior and exterior representations from vernacular buildings and living environments, the Dutch early modern school of art is especially relevant. The number of floors, everyday practices of the urbanites, the presence of windows and chimneys as well as construction techniques gives important information that is hard to acquire elsewhere (Gammelbo 1960). It can be argued that interior decorations such as wall and roof paintings, can be more connected to the presence of a painter in town (who needs to make a living) then necessarily a reflection of the burghers' own social standing and aspirations (Nilsen 2014).

As mentioned earlier Erik Lundberg was both an architect and an art historian, and he wanted to trace all Swedish art and architecture to the Mediterranean area, a diffusionist idea of somewhat absurd proportions. Gregor Paulsson (1950; 1938) was another art historian who advocated the acceptance of functionalism (Asplund 1980). In the publication *Konsthistoriens föremål (Art History's Objects)* (1943) he proposed to change the name of art history as a discipline to '*Aesthetic environmental morphology'* in a bid to connect art and architecture with social issues. This is something he develops further in *Svensk stad (The Swedish Town)* (Paulsson 1950) and in *The Study of Cities: Notes about the Hermeneutics of Urban Space* (Paulsson 1959).

Soon the Norwegian art historian Linn Willetts Borgen will publish her doctoral thesis on stave churches from a strictly medieval and early modern point of view using both dendrochronology and art historical methodology (Willetts Borgen, forthcoming).[2]

Ethnology

Returning to the background of the research on wood structures, ethnologists have worked extensively with the tradition surrounding vernacular building during

[2] Willetts Borgen, Linn: *Stave Church Architecture as Sacred Memory*. A forthcoming doctoral thesis from Oslo Univeristy

the 19th-20th century, during the build-up phase of the discipline. The number of houses documented by Swedish ethnologists is impressive and the bulk of that research can be found at the Nordic Museum in Stockholm.

A key figure in this field of research was Sigurd Erixon (1888-1968) alongside his co-workers such as Olle Homman, Gunnar Sundbärg and Mogens Mogensen, some of whom later went on to develop the functionalist architecture of the 1930s (Jönsson 2007: 195). Erixon, was strongly influences by diffusionism and the school of *Kulturkreis* and he worked to create typologies of houses divided into different smaller geographically defined traditions within a distinctive macro cultural unit as well as social groupings with an emphasis on built form (Erixon 1938b; Gustav Adolfs akademien 1957). However, he preferred using the concept 'traditional' rather than referring directly to cultural circles in connection to vernacular architecture and vernacular arts and tools. He also created a large register of vernacular Swedish houses,[3] with the help of a group of ethnologists (Erixon 1924; 1938a; 1960; 1964; 1982). They made idealised drawings of the exterior and the interior as well as layouts of the buildings creating types or ideals of houses. They worked with a strong focus on how the buildings should look rather than how they actually looked. Species (Sw. *art*) was a central concept drawn from function, meaning differences in main function such as dwellings, outhouses, workshops and animal quarters, which in turn made up the different units within the farmers yard for example. Erixon believed high living standards created the ability to assimilate new ideas, thus leaving the poor to linger in traditional 'primitive housing' (Jönsson 2007: 196).

The volume of the work was impressive, but criticism later arose regarding the inconsistencies in the drawings. They lacked the precise measurements of the Danish and the Norwegian architectural school; each ethnologist had his own way of recording a house and the buildings are hard to compare due to the diverse nature of the drawings. A further critique was the lack of differentiation between building parts that can be seen and touched, and those that cannot be seen or touched (due to the angle or construction) and therefore was a mere guess from the artist's view. This lack of precision created confusion when analysing the building from the drawings. Erixon, was foremost interested in the spatial relations between the rooms within the building, which probably was the reason why he preferred drawings to photos, thus emphasising type over reality (Jönsson 2007: 199). He, as Boëthius, was a believer in sequence, in the idea of the simplest being the oldest. Yet, it is important to consider that the simplest form might be the oldest but the simplest building might be young, though built in an ancient form (Linscott and Nilsen 2018). Erixon appears never to have used dendrochronology as a dating method in any of his work. Ethnology stood for the main research on buildings and the field preferred other methodologies such as comparative studies, which might be the reason for the lack of interest. Erixon, managed to stress the built form to such an extent that he left out the people living in and using the houses, in spite of his aim as an ethnologist to study the human in her surroundings. He also succeeded in excluding people from photographs in his books, with only a handful of exceptions, leaving the building in focus (Jönsson 2007: 197–98).

In Erixons' quest for connecting all vernacular buildings to specific types of houses, some problems arose. Even though typologies at times are helpful in interpreting a building and seeing connections, it can also be a tool for hiding or ignoring diversity, something that Almevik (2004; 1993) effectively argues in his critique. Thus, Erixon focused on elevating the general (the type) at the expense of the particular (the actual building). Almevik (2004) also shows how Erixon created new names or types that had no equivalence in everyday language of the builders or users of said buildings. Eva Svensson (2014: 67–68) criticises Erixons' simplification of the peasantry in assuming a close connection with tradition and local regional identity, however Erixon did recognize farmers as part of a larger cultural circuit within which they continually interacted (Erixon 1938b). Svensson's studies have shown that the medieval peasant often had an international material culture, which played a part in vast trading networks and that they formed part of the continental cradle of Catholicism (Svensson 2014).

In the 1960s, ethnology as a discipline made major changes to its key fields in Sweden and the research of vernacular buildings exited the curriculum at the universities.

In Norway, Eilert Sundt (1817-1875), clergyman and polymath, pioneered interdisciplinary research within social science using ethnology, linguistics and demography. He connected housing with social issues studying historic- as well as contemporary cases (E. Sundt 1976b). For example, he was interested in looking for reasons behind the hardships of single mothers where the father had chosen not to take responsibility (E. Sundt 1976a). He was also researching the living conditions of travellers (Roma) (E. L. Sundt 1852; E. Sundt 1859) and housing for the working class people in Christiania (E. Sundt 1968; 1978). Sundt had a modern approach to research drawing conclusions that have retained their value and relevance.

[3] The documentation of Erixons survey on Swedish vernacular buildings is found in the archives of the Nordic Museum in Stockholm.

Another Norwegian ethnologist is Arne Lie Christensen (1995) who has researched the Norwegian historic building stock and building culture in terms of how people lived, where they lived and further living conditions connected to housing. He has taken inspiration from Eilert Sundt, and continues the discussion of 'house types' within cultural geographical districts. Christensen talks about continuation and change (Christensen 1995: 3058), the slow change within a well-known form, something like iteration. He refers to the opposition and interplay between architecture and building culture, official and unofficial culture and between the elite and ordinary folk as the place where the building stock takes form (Christensen 1995: 309).

History

Within the context of the historical record, the source material contains a lot of information regarding buildings, living conditions and city planning to reflect on from the early modern period.

Accounts of buildings and living conditions can be found in the magistrates' court minutes and probate inventories, as well as in fire insurance records. Much of the historical research on houses has centred on monumental architecture, thus buildings for the state, or for the elite. Although, for instance carpenters' qualifying masterpieces have been deposited at the city or regional archives.

There is also information to be had from detailed town histories by various historians such as Almquist (1929) and the art historian Bæckström (1923), the latter of whom discusses the early town-forming years of Gothenburg. Råberg (1987) studied what she believed were designs for a fortification around Stockholm through plans and maps. Forsberg (2001) takes a slightly different stand on the planning strategies of early modern Stockholm also with base data of maps and plans. Sandberg (1991) discusses the emergence of a more controlling state apparatus regarding the bourgeois in Stockholm. Karlsson (1996) has researched the history of Jönköping from a standpoint of city planning and the built environment in respect of those who influenced decision-making. More recently, in *Stormaktstaden Jönköping: 1614 och framåt* (Nordman, Nordström, and Pettersson 2014a). Jönköping has been the subject of a thematic interdisciplinary study reflecting the royal influence, the wooden town and its building stock as well as craft and industry. They also discuss the town's hinterland and many aspects of agriculture and urban farming. Sahlström (1961) have published on city plans and the townscape of Falun, while Hildebrand (1946) an economic historian discussed the developing stages and social as well as economic mechanism's behind the town formation of Falun. Norborg (1955) focused on town relocations while a wider scope on Swedish towns with its politics, building stock and demography have been studied by Kjellberg (1924) and, more recently, Lilja (2000). Thus, providing the background to the specific town development of each of the towns in this study. Town histories have been in the scope of historians from early on within the discipline, the older works from the end of the 19th century and the beginning of the 20th century shows a deeper interest in a top-down description of the town's formation and of the elite responsible. Much focus was directed towards the ruling institutions, economic aspects and international networks as well as the legislation surrounding the foundation of respective towns. Everyday life and the commoner's perspective were less discussed, much less researched. Nevertheless, there has been a shift when it comes to the scope of urban studies in later years, speaking in general terms the shift has been towards a bottom-up perspective of city life. More specifically the historical discipline has developed a range of subthemes: medical history and the history of illness closely connected to demography (Castenbrandt 2012; Larsson 2015) or demography and food access (Palm 1998; 2001; 2012). Economic history is another branch with a focus on import and export at the harbours (Hallén 2018), while within environmental history (Warde 2009; 2018; Warde et al. 2019) energy consumption and forestry in early modern Europe has been a subject of discussion. Urban history has also been approached jointly by an archaeologist and a historian (Tagesson et al. 2017) addressing not only the physical buildings but the inhabitants as well. Specifically who lived in the houses, how many lived together, what occupations they had and other such social dimensions (Tagesson 2016; 2019). Other aspects include the physical realities of the residents' living conditions, the layout of the building along with the building history in terms of remodelling or extensions; multi-unit structures also form a comprehensive part of their study. Tagessons' and Lindström's study touches upon many aspects of research that border on this work but from a slightly different angle. There are also an increasing number of joint projects between historians and archaeologists, as mentioned earlier. They are making use of each other's materials or methodologies and through discussion and collaboration creating a fuller understanding of the object of research, than if they had pursued their respective studies separately.

Furthermore, gender history (Sjöberg 2001; 2008; 2012) has diversified and broadened the scope of research to reach a more inclusive history. Agrarian history (Palm 1989; 1993; 1998) comprises both urban farming and husbandry but also towns as conduits for agrarian commerce and urban sustainability. Agrarian research also encompasses towns as places for tax collection. All these themes and more have on various occasions used urban materials in their studies creating a whole range of theoretical approaches to the historical research on towns.

Another kind of town history, are those written in historical times, such as Cederbourg's (1739) as well as Sirenius' accounts in 1737 (Scheele and Simonsen 1999) of Gothenburg, or Carl von Linné's (Linnæus) travels to Falun (1984) [1734?] and Gothenburg (Linné 1964) [1746] describing what and who he met and saw. These are a fount of knowledge of the actual physical appearance of the town in the early 18th century, but also of what was known about the town history, in addition to the history of former towns in the area.

Many of the accounts from the 17th and 18th centuries are normative narrative sources i.e. they describe what something should look like rather than being a direct description of what something actually looked like. They are descriptive sources where the author conveys what he/she sees, yet even these texts are often exorbitantly loaded with positivity, with no room for critique since the texts routinely were dedicated to the royalty. Conversely, they still carry some truth and notion of the object of description. Thus, it is always important to consider when, and for whom, a text was written.

Studies of the conservation/preservation of buildings

Conservation studies are closely connected to the field of architecture and centre around the care and preservation of buildings. Historic preserved structures such as buildings are usually the domain of the building conservationists/building archaeologists (Sv. *byggnadsantikvarie*). In Sweden, they often think of an archaeologist's referral to houses as standing structures as humorous, since what would houses otherwise be? However, an archaeologist sees the house as a standing structure as opposed to the material remains of something that used to be/ exist/ have another form. There are a lot of points of connection between building conservation and archaeology. Both disciplines are dealing with living environments from the past and houses, but also a need for understanding building techniques and materials. A shared interest in layouts and use brings the disciplines together. The body of the building, or its frame, is the key element for understanding the stratigraphy of the building. When the conservationists can do their in-depth studies of buildings, reaching the body, their reports are a goldmine for archaeologists, as reference material. Gunnar Almevik (2012) did his thesis on the building as a source of knowledge testing new and old methodologies to this aim. He has continued working on understanding and testing construction techniques, being meticulous in selecting materials and methodologies connected to traditional values of craftsmanship; such work will only ever be a good reference point for an archaeologist to take into account when analysing structural remains. There are interesting approaches to crafts as research tools in the anthology *Hantverksvetenskap* (Almevik 2017) as well as in *Crafting the Cultural Heritage* (Palmsköld et al. 2016).

Practitioners

Another side to building conservation is testing old methods of construction or repairing damaged historic houses. The practice of building is important for understanding what is functional or possible to accomplish as opposed to non-functional features, which might be difficult to apprehend if the research stops at a purely theoretical level. There is a close connection between practitioners and open-air museums as well as in preserving traditional ways of building and caring for the historical building stock.

August Holmberg (Holmberg and Göteborgs universitet 2006) was a builder born in the mid-19th century who helped convey knowledge of old construction techniques that he had learned following his father in his work.[4] He wrote down and sent in the bulk of his descriptions to the Nordic Museum in Stockholm, in the 1930s. His instructions have been tested by *Da Capo*, the School of Craftsmanship and Conservation in Mariestad, and have been proven valuable in selecting materials and construction methods. Holmberg's writings are important since they convey knowledge of all the stages, from which tree is chosen from the forest until its timber forms part of a building structure. He also discusses why certain building methods were preferred to others, as well as regional differences, and reflects on the social implications in an informed way. Ulrik Lassen (2014) is a Danish carpenter who is the first in the world to have submitted a doctoral thesis on craftsmanship. Lassen had a focus on *how* the timber-framing was done through marking procedures within the building process, in an effort to convey the silent knowledge of the carpenter to the world. Much of the knowledge of earlier generations like that of Holmberg is now lost. Lassen points to the importance of deciding on the layout and marking procedures, before designing the structure or ordering the materials, as the initial phase of the building process (Lassen 2014: 187). One critique Lassen suffered was not connecting the techniques he tested to specific periods in the past, something, which would have been very interesting in relation to this discussion.

'*The toolcase of the carpenter*' (2007) was Harald Bentz Høgseth's thesis, he is an archaeologist as well as a carpenter, and he examined what tools were available,

[4] Holmbergs work was edited and published by Da Capo in 2006.

what the tools looked like and the kinds of marks they left behind.

Practitioners have been active in trying old methods and tools as well as old building techniques recreating full-scale houses in open-air villages (*forntidsbyar*).[5] *Da Capo*, collaborates with the Department of Conservation at Gothenburg University, focusing on the preservation of buildings and old methods of craftsmanship.[6]

Jon Bojer Godal is an expert in Norwegian traditional building crafts and he concludes that he can see how the building culture in many respects lines up with culture-geographical findings, but that he also detected a lot of variability within the building stock. He points to access to building material as one such variability i.e. if the building is erected in a region with lean trees than its likely that the building culture reflects that in the area. While woods with thicker and shorter that would affect the mode of construction (Godal et al. 2018: 321). He also discusses carrying systems where its important that areas with a lot of heavy snow also have constructions that can carry the load (Godal et al. 2018: 323).

Open-air museums and folk museums

Open-air museums became common in Scandinavia during the late 19th and early 20th century, born from a romantic idea of the nation. The very first open-air museum in the world was King Oscar II's Collections (king of Sweden and Norway) established in 1881 at Bygdøy, in Oslo, Norway.[7] It included the collection of five buildings representative of Norwegian building- and folk-culture, which Hazelius visited in 1884. In 1907, the king's collection was integrated into the project *Norsk Folkemuseum.*

The oldest houses and the houses that most represented the ideal of a particular region were moved to *Skansen.*[8] The crown project founded in Stockholm in 1891, aimed at collecting and visualizing the best vernacular building traditions from each region in this national park. Similar projects arose, for example, in *Norsk Folkemuseum* on *Bygdø* in Oslo, Norway in 1894, as well as in *Frilandsmuseet* in Lyngby, Denmark established in 1897. *The Ulster Folk and Transport Museum* in Belfast, Northern Ireland was established in 1958.[9]

Most of the buildings represented in Skansen have only a fleeting resemblance to what the houses looked like before the move. Idealised types of houses were created that had little to do with reality. At the same time, it was a sort of affirmation of vernacular history, traditions and heritage. Vernacular materiality and objects of everyday life as well as vernacular art were displayed at the ethnographic folk museums, all deriving from a romantic notion of the farmer or folk as the ideal (Bäckström 2012). Sprung from the Skansen project came hundreds of small local open-air museums *hembygdsgårdar* in virtually every parish. The Swedish Local Heritage Federation was established with local communities protecting their heritage, some of them followed the idea of typology and the ideal, but there are also many examples of moving whole houses without much transformation.[10] The open-air museums or building reservations,[11] which was another name for them, have become an important preserver of historic vernacular houses in the countryside, as well as in towns. The positive aspect of the creation of open-air museums is that many houses have been saved from demolition. On the other hand the buildings have also mostly lost their context and are problematic to fully understand, set in artificial surroundings and often subjected to heavy alterations (Bäckström 2012). Sten Rentzhog (1967) is an art historian and a museum curator, who wrote extensively on open-air museums and the wooden building stock (1971; 1970; 1984; 2007; 1998).

Another approach to recording the built environment was taken by Bäckström and Wallin (1911) in their book series *Gamla Svenska städer* (Old Swedish Towns) with the stocktaking of the physical town re-orderings at the beginning of the 20th century. The Swedish Society for Technology (Sv. Teknologförening) and the department for the art of building with names like Sigurd Curman, Axel Nilsson and Kasper Salin among others associated, had photo-documented Swedish towns. These photographs clearly reflect the towns' pre-demolition state and the total transformation they have gone through when compared to the building stock of the same towns today. The open-air museums were part of some desperate attempt to save some valuable buildings for posterity.

[5] Fotevikens museum http://www.fotevikensmuseum.se/besok (viewed 2017-12-19); Byalaget, Ale Kommun http://www.alevikingagard.info/ (viewed 2017-12-19)

[6] Hantverkslaboratoriet 2015-09-08, Virkesberedning - Rekonstruktionen av Södra Råda medeltidskyrka, Göteborgs Universitet https://www.youtube.com/watch?v=U8DD5NQ1L7c&t=289s (viewed 2017-12-19)

[7] Norsk Folkemuseum https://norskfolkemuseum.no/en/king-oscar-iis-collection (viewed 2020-02-06)

[8] Skansen 2017 http://www.skansen.se/en/kategori/english (viewed 2017-12-19)

[9] According to the tour guide - the museum was founded on, and inspired of, the ideas of Skansen in Stockholm, Sweden.

[10] Sveriges Hembygdsförbund https://www.hembygd.se/om-shf/languages/about-the-swedish-local-heritage-federation/ (viewed 2017-12-19)

[11] Friluftsmuseet Gamla Linköping http://www.gamlalinkoping.info/en (viewed 2017-12-19), Kulturreservatet http://www.kulturreservatet.se/nykres/index.php/vaster/majorna/gathenhielmska-kulturreservatet (viewed 2017-12-19)

Dendrochronology

The dating of growth-rings in wood (Thun, Storsletten, and Det norske videnskaps-akademi i Oslo 1993), dendrochronology, is a scientific method used to date wooden artefacts or constructions, a method first developed in the United States in 1910. Dendrochronology is a discipline of its own, but it is also used as an addition to other disciplines as shown above.

It is a very useful tool/method to date historic buildings. Yet, it is a method that needs to be used with some thought. A timbered building is constructed from a number of timber courses, and these timbers can be changed if they are damaged, or remodelled, which is one of the reasons why these buildings have been so practical and popular. Consequently, many samples need to be taken in order to get a reliable dating of the construction, preferably with a clear idea of what is to be dated and for what purpose. A carved date over the door may be a poor indication of the age of the house. The first floor or the roof constructions have seldom been dated; there have been some general assumptions that these must be younger than the ground floor. Still, what is to say that they were not constructed at the same time? In archaeology, the first floor and roof constructions have always been elusive and preserved buildings need further studies. Parts of the timber were often reused from old buildings in new structures, something that needs to be taken into account when analysing the results. As previously mentioned, dendrochronology, is used in several disciplines and publicly available databases are emerging making the results and the sample diagrams more accessible. Crosschecking the results with several companies is always a good idea. The laboratories for wood anatomy and dendrochronology usually create their own chronology from their own reference samples, making it important that they have access to enough samples of the period and area in question. Dendrochronology is also used to analyse climate, since the growth-rings look different depending on hot and cold, wet and dry years. Pine, spur and oak are datable, yet birch is not.[12] Good results has come from scanning wood in *objects d'art*, as a less invasive way of reading the growth-rings (Olstad, Stornes, and Bartholin 2015).

Important working tools such as BARD a database of British building archaeology on line (Moir, Wild, and Haddlesey 2013) have synthesized earlier works, now easily accessible for the public. There have been some extensive dendrochronology projects researching English vernacular housing (Lloyd 2013). Britain has successfully managed to retain a large part of its vernacular building stock and therefore building archaeologists have had opportunity to study houses from different historic eras in close detail. Historic houses have been altered to different extents over the course of time; buildings are thus rarely preserved as time capsules. Still, from the sheer number of preserved houses, deductions can be made of how common specific features were, as well as of regional differences. It would be good to see a similar endeavour in Sweden in the future.

Archaeology

Archaeology is of course the core method of this study and archaeological remains of wood construction its key material. How to understand the constructions that are excavated and to connect them with an existing building stock are some of the aims for the discussion.

In Sweden, there was some interest in urban archaeology at the end of the 19th century and the beginning of the 20th century with excavations taking place in Nya Lödöse (Strömbom 1924) and Gamla Lödöse (af Ugglas 1931) among other places. In recent years, there has been a growing interest in early modern archaeology and several major urban excavations have taken place. In Jönköping it has involved researching parts of the old fortifications and burgage plots (Nordman 2014; Nordman, Nordström, and Pettersson 2014b; Nordman and Pettersson 2009; Bramstång Plura et al. 2012; Tagesson 2014). In Gothenburg large parts of the former fortifications, the harbour area, the old shipyard, and burgage plots are being excavated (Forsblom Ljungdal, Lennblad, and Ni Chíobháin Enqvist 2019; Thörnqvist 2018; Wennberg 2017a; 2017b). In Stockholm archaeologists are investigating burgage plots in the old town as well as in the Slussen area (Carlsson and Svensson 2015; Evertsson 2019; Söderlund 2012). Falun has had a large survey in the block Västra Falun (Wehlin et al. 2018). While Nya Lödöse (Öbrink and Rosén 2017) and Kalmar (Tagesson 2013a; 2013b; 2018; Tagesson and Jeppsson 2015) have contributed new knowledge on city formation, fortification and town planning and not the least on the building stock itself with a vast number of excavated houses. This new body of data has changed our understanding of early modern construction and city planning. Large areas have been investigated making it possible to answer questions regarding city plans, street systems, and the organization of burgage plots placing the structures in a much-needed context. In addition a number of PhD theses that touch upon medieval and early modern buildings archaeology also need mentioning: Rosén (1999) discussing social status in connection to material objects; Hansen (2005) who researches medieval town development from a bottom-up perspective; Schmidt Sabo (2001) has studied

[12] Hans Linderson 2015-03-11 Geologiska Institutionen, Lunds Universitet,.https://www.geologi.lu.se/service/vara-laboratorier/nationella-laboratoriet-for-vedanatomi-och-dendrokronologi/dendrokronologisk-datering (viewed 2017-12-19)

medieval villages and Eriksdotter (2005) has done work on techniques regarding buildings archaeology. Qviström (2019) has recently defended her thesis on windows and the perception of light in medieval and early modern vernacular buildings and how they altered the construction itself as well as the indoor environment.

Joakim Thomasson who is researching the early modern built environment in the south of Sweden will contribute to forthcoming doctoral works within this field. He is connecting the building stock to agency, power formations and class perspectives, which is not dissimilar to this study. Earlier important works on archaeology on buildings have been contributed by Jan-Erik Augustsson with an emphasis on building traditions in the West of Sweden (Augustsson 1986; 1992; 1995; 1999). He was for a long time the only archaeologist occupied with this type of research questions and material, however, as mentioned researchers are now moving into the field with many new perspectives.

As mentioned earlier the archaeologist Göran Tagesson (2013a; 2016) has worked extensively with buildings and building remains from several Swedish towns. Tagesson has collaborated with the historian Dag Lindström and the archaeologist Per Cornell, in studies concerning the make-up of the early modern household. They focus on preserved buildings, archaeological surveys, written sources as well as traces of craftsmanship and living environments within the project '*Houses and households in Swedish towns 1600-1850*'.[13] They have established who lived and built the houses through research of the written records. This has enabled a list of occupants, of their numbers and trades as well as their social standing. Some of the houses were crowded due to a high number of tenants. The multi-unit structure is one key urban house type that was introduced and built in increasing numbers during the second half of the 18th century, which contributed to a change in living practices. In that sense, many households could live in flats under one roof. Tagesson and Lindström have collaborated with carpenters to establish traces of craftsmanship and house restructuring work on buildings. The dating of the houses through dendrochronology has also been an important part of their interpretation process (Tagesson et al. 2017). Different approaches to a similar material have further been discussed in (Tagesson and Nilsen 2018).

Nicolay Nicolaysen (1817-1911) was a Norwegian archaeologist and historian who worked with both prehistoric e.g. the Gokstad ship, and historic archaeological sites e.g. Munkelivs convent. He had a special interest in medival art, thus his the illustrated work about art and craftsmanship from Norways past *Kunst og handverk fra Norges fortid* (Nicolaysen 1881) depicts the close relationship between the wooden building culture and aesthetics.

[13] 'Hus och hushåll i svenska städer 1600-1850' Göran Tagesson and Dag Lindström

Archaeological method and practice

The first issue of the British Journal *Archaeologia, or, Miscellaneous tracts relating to antiquity* from 1770 gives a small insight into what interested the researchers in the early days of archaeology. They took note of above-ground ancient features with an emphasis on preserved buildings and architecture of note, i.e. castles, churches, round towers, often illustrated with drawings of the layout, but also of inscriptions (often Roman) on the walls and other structures. This type of study is very similar to what we today call buildings archaeology. Additional observations included at times even limited excavations looked at structural remains slightly visible above ground i.e. burial mounds, roman roads, ancient port structures and traces of a Roman station and so forth. Finally, there are often descriptions and discussions of ancient artefacts. There seems to have been an interest in straightforward descriptions of spatial and material properties of the objects of study in reaction to previous poetic accounts on history. They do not describe any systematic excavations in this first issue but an awareness of structures and 'answers' hidden below ground shines through the pages. It seems like an expected course of events to go from what you can see (structures of architecture) to what you can only hint of below ground. This early link between architecture and archaeology needs to be recognized.

Archaeological remains of houses usually consist of the bottom floor and sometimes one or two courses of timber from the wall construction. What the rest of the house once looked like unfortunately is left largely to the imagination. Nonetheless, there are various clues to support the archaeologist in the interpretive process.

> *'The subterranean remains of a house, which are observed through excavation, have survived the passage of time in a far less selective way than have whole structures'* (Deetz 1977: 127).

The stratigraphy will help pinpoint the order of the constructions and artefacts belonging to the individual construction phases. The interior layout gives other clues to the type of house and particulars regarding its construction and use. The wall material, if any remains, can help identify building techniques. What sets archaeology apart from other disciplines is the strong focus on context-related material and settings. For instance, discussions on family and living can be found in Roesdahl (2003) where Viking age and early medieval housing practices and culture are studied through various angles and questions. The focus on context is one of archaeology's most important contributions to the study of buildings, making sure, so to speak, that the people that used to inhabit the premises are taken into account and that the spaces are filled with meaning (Johnson 1993). Everyday life leaves traces of things and practices not often written about. Through the study of archaeobotany, environmental samples can reveal traces of use and handling of foodstuffs and of the presence of animals as well as of farming on any scale. It does not capture all daily activities or practices, but it gives indications of overall uses of intended spaces within the burgage plot.

In 2011, there was a conference on building archaeology in Oslo, organized by NIKU (the Norwegian Institute for Cultural Heritage Research), where differences in legislation and regulation within the Nordic countries regarding the research on buildings became apparent. It became clear that *buildings archaeology* meant different things for professionals in Norway compared to Denmark, Sweden and Finland with different professions conducting the work on buildings. In Norway, building conservationists and architects were in charge of researching the historical building stock. The presentations at the conference were mostly aimed at the study of building techniques, layouts and the transformation of the building over time. The term buildings archaeology meant that they were using a stratigraphic method to discover layers of wallpaper and investigate the body of the preserved building finding evidence of reconstructions and hopefully the original form.

In Sweden, Denmark and Finland, the field is more open, and many disciplines or professions work with the historic building stock, as has been presented in this chapter. Buildings archaeology is more closely connected to archaeology, usually meaning excavating near or directly in connection to a historic building (Hædersdal 2012: 105, 107). Archaeologists might even conduct investigations on the building itself (Eriksdotter 2005; Feldt 2018). It can also mean working on purely archaeological remains of buildings sometimes in articulation to similar preserved buildings, as in this work. The key difference being in addition to studying building techniques, layouts and the transformation of the building over time, emphasis is on context and social issues more closely connected to archaeological methodology i.e. excavation, and mainly performed by an archaeologist.

In Norway, history after the reformation in 1537 is not considered to be in the scope of archaeology. This means that no archaeology must be undertaken connected to later periods, which instead is considered belonging to the agendas of other disciplines such as history, building conservation, architecture and so on, thus focusing on either written material or standing structures. Criticism arose regarding the fixed date of 1537 (Fagerland and Paasche 2011) and the matter was taken into consideration by the government but alas failed to convince. Ekroll (1991: 75), puts his finger on this issue when he discusses whether Oslo in 1537 should be considered a medieval town or rather as a Renaissance town, and how this is to be known without excavations? Materiality from the 16th century is scarce, which creates a gap, especially regarding the built environment and also regarding social differentiation (Sørensen 1991: 27). Still, the medieval period is well documented and so is the early modern on the part of historians (Andersson, Hansen, and Øye 2008; Brendalsmo, Eliassen, and Gansum 2009), and architects (Arne Berg 1989; Arno Berg 1965; Roede 2001). I am sure Norway will have to reconsider what will happen with archaeology for later periods in the future, since time has a tendency to move forward.

Finland is moving steadily in the direction of including later time periods in their research with urban excavations in several towns such as Turku and Lahti (Seppänen 2012; 2014) or research projects like for instance *Town, Border and Material Culture* concerning the town of Oulo (Ylimaunu et al. 2014). In Denmark, there have recently been some major urban commercial archaeological projects in Copenhagen, Odense and Helsingør to mention just a few. One important research project worth mentioning is *Urban Diaspora* (Linaa 2007; 2015), which has studied material culture, consumption as well as the cultural and national backgrounds of the early modern populace.

Other countries in Europe are working with early modern urban material in various ways and placing different degrees of importance to this material. Legislation that supports giving all time periods the same amount of attention and investigates everything from topsoil down to the sterile ground.[14] The UK has cared for its historic building stock, as mentioned earlier, and it is well integrated with the modern, giving British towns that layered sense of history Swedish towns often lack. The combination of a great attention to early modern archaeology and the continued presence of parts of the post-medieval townscape have the possibility to give the UK an edge in researching this period. Yet, economic and temporal restraints forces most archaeologists, regardless of country, to sometimes choose which period to focus on, meaning that the actual percentage studied of each period may be less even then desired.

[14] Department for culture, Media and Sport Scheduled Monuments https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249695/SM_policy_statement_10-2013__2_.pdf (viewed 2017-12-19)

The United States of America has long had a focus on the early modern period, since that entails the colonial history of the country, including the European presence and the cradle of the nation. It is therefore interesting to keep an eye on their research. Early colonial town formations like Jamestown (Price 2010) and Colonial Williamsburg (Goldish 2017) were among the first settlements and are now functioning as open-air-museums with continual excavations, and recreations of the townscape. However, the Colonial Williamsburg setting has been criticized by Mark P. Leone (2010: 17–25) on account of income being the driving force rather than historical accuracy or research. New Sweden (Dahlgren, Norman, and Risingh 1988; Lindgren 2010; Fur 2006) was situated close by and was also one of the first colonial settlements in the US. The early building stock such as the American country house (Glassie 1975; Meigs, Newbold, and Mellor 1925; Moss 1991), or other colonial architecture (Morrison 1987; Riley and Cousins 1920; Wood and Wood 2001) as well as social aspects (Deetz 1996) are important topics closely related to the scope of this study.

Finally yet importantly, it is vital to mention that wood architecture from the early modern period can and could be found in most parts of the world; to put Scandinavian wood construction in a wider context, on all the inhabited continents at that time.

Continuing on - my approach

This has been the background regarding material, comprising both previous research and methodology. As already mentioned, it is not within the scope or interest to use all these approaches but to choose a few to forward this study's aims. Archaeology is of course the main method, but the work will also rely on architecture, which provides useful methods and theoretical perspectives on spatial and technical matters. Written records are another source material relevant to historical archaeology. Comparisons of archaeological observations with historical sources will provide a base for analysis, which will enable a discussion on buildings in places rarely included in archaeological surveys i.e. outside the city gates. Preserved buildings are a source of knowledge worth comparing to archaeological remains. Dendrochronology will be used as a dating tool and for tracing the wood sources for building materials. The study will test how the use of different source materials and methods complements and reinforces each other.

The urban, buildings and city planning

Moving on from studies of the individual material object, the building, in line with micro archaeological theory. Shifting the focus towards the macro perspective that discusses the context of the building on a larger scale, in this case, the burgage plot and the town. The archaeological effort towards research on urban materials and contexts are outlined from the perspective of archaeology as a discipline as well as including history and the planning of landscapes.

From the end of the 19th century there was an interest in expanding the scope of Swedish archaeology from prehistory to historic periods, which included excavating churches, convents and priories (W. Berg 1893; Cnattingius 1966). Another focus was castles and fortresses such as Ragnhildsholmen (W. Berg 1883) or medieval and early modern towns such as Lödöse (Ugglas 1931) and Gothenburg (Almquist 1929; W. Berg 1882). Archaeology as a university discipline was still very young at this stage and few of the excavators had any formal training as archaeologists, but rather came from other backgrounds like history, architecture, art history or teaching. They were keen to use archaeology as a tool for verifying hypotheses that originated within their disciplines. In the 1960s, a new wave of researchers became interested in questions regarding medieval and early modern town deposits; Hans Andersson (1973; 1979; 1984) needs to be mentioned here as well as Erik Cinthio (Cinthio and Carlsson 1982; Cinthio, Hans Andersson, and Wienberg 2011) and Rune Ekre (1963; 1968; 1994) among others. Fortunately, it coincided with the big building boom of that period (more on that subject in Chapter 2). The methodology required for handling and understanding complex stratigraphy, was still in the developing stages and stripping large areas with machines was not yet thought of. Archaeology was, at this time, an up-and-coming discipline at the universities and attracted and produced, university teachers and researchers as well as students. In contract archaeology, a lot happened with major investigations in many towns and slowly the discipline proved capable of standing on its own feet within the historic periods with questions, aims and results that differed from the viewpoints of historians. There was a need to synthesis the outcomes of all the town surveys in Sweden and Hans Andersson started the project *Medeltidsstaden* (The Medieval Town) in 1976, which ran until 1984. The purpose of the project was:

> '*to provide a detailed survey and to describe the situation of urban archaeology and the consequences for physical planning' and 'to make a scientific evaluation of the recovered material remains with consideration to the multidisciplinary research regarding the origin and development of the process of urbanization during the middle ages*' (paraphrased translation) (Andersson 1976: 8; Ersgård 2013: 31–32).[15]

[15] 'detaljerat kartlägga och beskriva den stadsarkeologiska situationen och dess konsekvenser för den fysiska planeringen' and 'göra en vetenskaplig bedömning av det framkomna materialet med hänsyn till den tvärvetenskapliga forskningen rörande stadsväsendets uppkomst och utveckling under medeltiden'

The project would later also include Finland (Andersson 2009) that was part of Sweden between *c.* 1200 and 1809. The focus of the project was directed at the formal towns with town councils and privileges in the 13th century, thus historically documented. The lack of research on urban activity and settlement in peripheral areas of towns or of urban-like settlements without town privileges was eventually acknowledged by Andersson (2010: 63) many years later as a weakness of the project (Ersgård 2013: 30). Attention to other urban forms as well as the inclusion of later periods, was instead addressed in the anthology, *Urban Variation* (P. Cornell et al. 2018), suggested as a road ahead for urban archaeology in the future.

These topics have in fact come to the forefront of modern research along with a better methodology: larger urban areas have been excavated rather than narrow trenches, distributed unevenly around town. Recent large-scale building and infrastructure projects have in turn generated comprehensive archaeological investigations, which have facilitated more in-depth questions to be answered regarding the historic townscape.

The 1990s publications *Between artifacts and text* (Andrén 1997) and *Visions of the past* (Andersson et al. 1997) synthesized a lot of the dynamics in the Swedish discussion on historic urbanism thus far. Stefan Larsson points to the complexities of the urban stratigraphic deposits (1995) and one of Anders Andrén's contributions to urban archaeology with *Staden: himmel eller helvete: tankar om människan i staden* (*The Town: heaven or hell Thoughts about people in towns*) (1998) discusses the human aspects of city living.

Peter Carelli has focused his urban research on the medieval period and foremost the 12th century with deep studies on Denmark. Carelli used an inter-sectionary approach to analyse living space and the built environment. Through studying new technologies, e.g. water mills and iron production with spatial organisation in urban environments combined with trade and the ecclesiastical influence on the written language, church administration and the Christian belief system he ties the 12th century Danish world together (Carelli 2001). He suggests that the cosmological and at the same time capitalist influence on the way people thought and acted caused major cultural changes within society (Carelli 2001: 21). He highlights the benefits of using several sources of different kind to reach a better understanding (Carelli 2007: 16). One important point Carelli (2012: 15) makes is how important it is to avoid generalizing and be humble and open in regard to knowledge gaps where the sources are either missing, fragmentary or inconclusively analysed.

Going into the millennium the competitive tender system was introduced and took its toll feeding rivalry between the companies involved in contract archaeology. At the same time extensive urban investigations were ongoing. Many project leaders felt isolated and confused about the early modern city deposits that increasingly more county councils had included in the archaeological scoping documents. At this point, in 2011, Per Cornell received funding from *Vetenskapsrådet* (*The Swedish Research Council*) for the research project *The Early Modern Town* (EMT). He used the university as a neutral platform to open the discussions of urban archaeology both on a national as well as on an international level, thus to an extent cutting through the division created by the tender system. Two publications have come out of this project *Visioner och verklighet - arkeologiska texter om den tidigmoderna staden* (*Visions and Veracity – archaeological texts about the early modern town*) (Ersgård, Lars et al. 2013) where Lars Ersgård, for instance, synthesized the history of urban archaeology in Sweden up until then. The conference publication *Urban Variation: Utopia, Planning and Practice* (P. Cornell et al. 2018) initiated discussions on the complexities of urbanism. Large surveys coincided with the project such as *Staden Nya Lödöse*[16] and *Västlänken*[17] in Gothenburg. In Kalmar there were three projects; *Kvarnholmen*[18] investigations conducted within the fortification of early modern Kalmar (in 2008-2012) (Nordström and Tagesson 2009; Romedahl and Tagesson 2010; Tagesson 2013a; 2013b; 2018). The second project *Kvarteret Valnötstädet* in the medieval parts of Kalmar (S. Larsson 2018; S. Larsson and Stibéus 2017), which was a joint project involving Public Art Agency Sweden, the Swedish Centre for Architecture and Design, the Royal Institute of Technology, Boverket National Board of Housing, Building and Planning as well as the National Heritage Board. The third area involved surveys in and around Kalmar Castle.[19]

Halmstad and Jönköping were other sites discussed in EMTs seminars and workshops. The series of workshops/ conferences of the AACCP *Architecture, Archaeology and Contemporary City Planning* have also emerged from networking originating in the EMT project, in collaboration between Per Cornell (University of Gothenburg), Giorgio Verdiani (University of Florence, Italy), Liisa Seppänen (University of Turku, Finland), Adriana Velázques Morlet (Museo de Maya, Cancún, Mexico) and other scholars. A number of disciplines, from several countries, has

[16] Staden Nya Lödöse 2017 http://www.stadennyalodose.se/ (viewed 2017-12-19)

[17] Trafikverket 2017-05-23https://www.trafikverket.se/nara-dig/Vastra-gotaland/projekt-i-vastra-gotalands-lan/Vastlanken---smidigare-pendling-och-effektivare-trafik/ (viewed 2017-12-19)

[18] webb@arkeologerna.com https://arkeologerna.com/bloggar/kvarnholmen-i-kalmar/ (viewed 2020-01-27)

[19] 2018.04.05 webb@arkeologerna.com https://arkeologerna.com/bloggar/slotten-vid-kalmarsund/nu-undersoker-vi-kalmar-slott/ (viewed 2020-01-27)

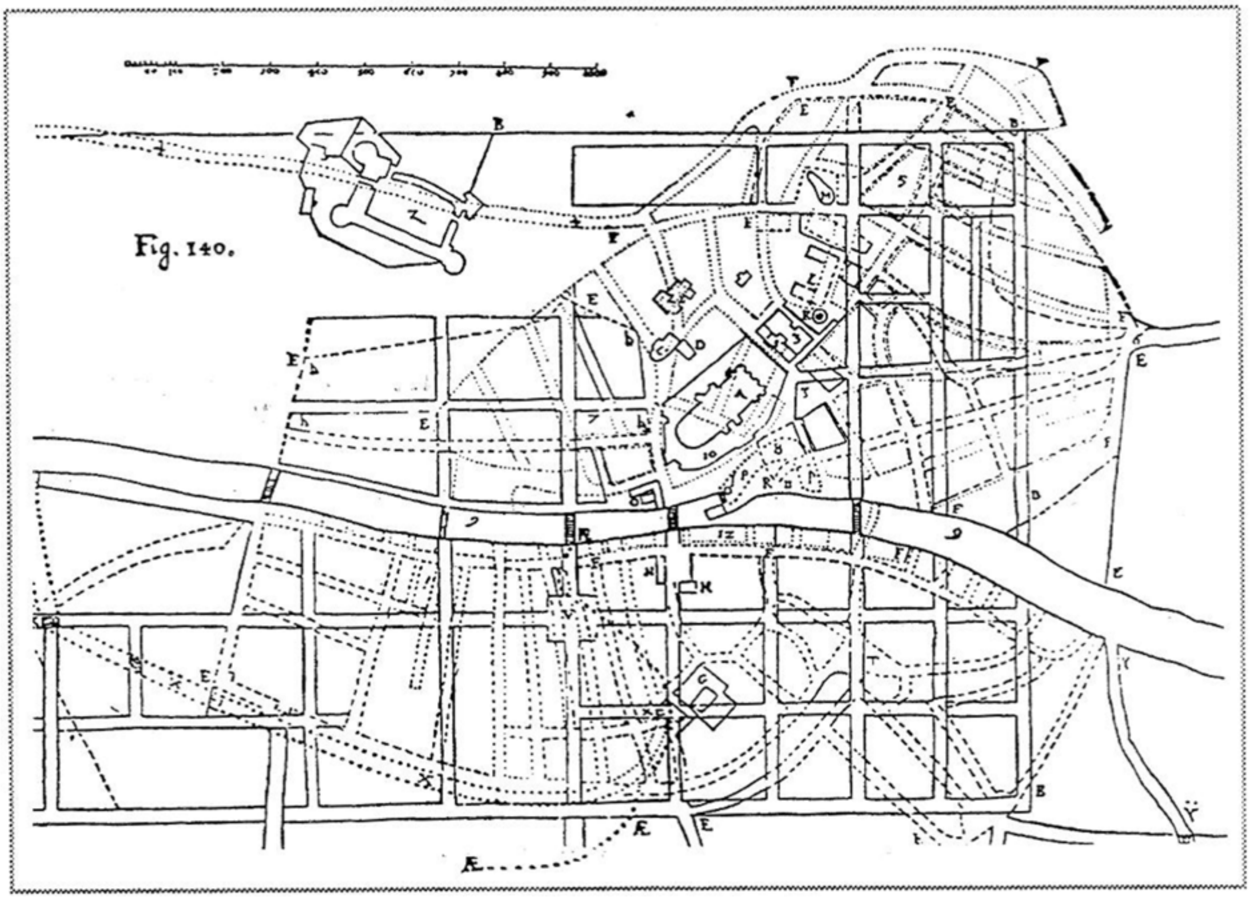


Figure 1. The plan shows the existing town plan of Uppsala as well as the future, planned one. Note the activity areas outside of the city gates as important parts of the city. 'The new Atlas plan' from Rudbecks' Atlas included in the Atlantica from 1679. This was Rudbecks' interpretation of the (late) medieval city plan (dotted lines) and the 'new' regulated plan, from Herdin 1932 (Qviström 2009; Nilsen 2013)

articulated the relevance of a historical/archaeological as well as an architectural understanding of the cityscape, when discussing contemporary city planning. Many of the ideas that contributed to this work come from discussions with this group of people.

It is equally important to mention a new way of collaborating with historians on town materials. Earlier attempts have been characterized by various disciplines largely doing their own thing, publishing in the same publications and on the same subjects or themes, but mostly without any interaction. Recently historians and archaeologists have been publishing and writing papers together with joint questions and aims where the results have been thoroughly discussed and analysed in collaboration. This is highly encouraging for future projects where historians and archaeologist have teamed up on issues of towns, people and urban social networks (Rosén and Larsson 2017), discussing burgage plots and the people living in them (Tagesson and Lindström 2016; Tagesson et al. 2017). Historical records and archaeological evidence of the social impact of war (Hjertman et al. 2017) and finally studies of the origins and structural make up of a town (Eliassen, Johansson, and Aasheim 2016; Eliassen 2018). These are just a few examples of how historians and archaeologists have crossed paths in a way recognizing the complexities of urbanism and urban research, it is an area of research that benefit from interdisciplinary talks.

Another important aspect to understand about the city is the planning process behind it. During the early modern period, Swedish towns were founded or regulated according to an ideal plan, on a massive scale. Nils Ahlberg, who wrote a thesis in landscape planning and art history, has done extensive work collating and interpreting early modern maps of town foundations and their associated regulations (Ahlberg 1998; 2000; 2005; 2012). These maps are of course of vital importance for archaeologists regarding planning and for what to expect of the urban surveys. Some of the historical plans were not realized but many of them were, and they can give vital information of locations of; streets, squares, plot systems as well as of fortifications and city gates or tollbooths giving the archaeologists an idea of what to expect when excavating. Important information of earlier town plans is sometimes displayed beneath the 'new' plan Figure 1.

In some cases, the plans also contain information about peripheral areas surrounding the towns, depicting settlements and productions sites as well as road systems. The old maps provide, on occasion, information on which areas that can be expected to comprise landfill, since urban land extensions were popular during the post-medieval period. The wooden houses were a great accommodator of the regulations of Swedish towns from ideal plans, on account of the relative ease with which the wooden houses could be moved, altered and mass-produced.

Chapter 4

Considering the omnipresence of wood – an exposé of wood materiality

To focus on wood as materiality in the human setting on the broadest of scales is to emphasize the importance and dependency on wood in early modern Swedish society. The purpose is to set urban buildings in a comprehensive picture of wood-use and to establish its omnipresence. This will also be the first step on a micro-archaeological scale focusing on the key construction element – wood.

The chapter is divided into two parts; the first part discusses wood in a general way, relating whatever spatial context to any given time. It sketches a theoretical approach to trees, and the use of wood and to its specific properties.

The second part of the chapter focuses on wood as an archaeological material. I have attempted to demonstrate the wide-ranging use of wood in everyday life in early modern society in Sweden, by exemplifying and discussing one year's catalogue of finds made from wood, from the Nya Lödöse project. Similarly, wooden structures are discussed to establish how wood was used for so much more than to construct buildings. Thus, determining its ubiquitous manifestations in the Swedish society.

The properties of wood

Wood bends, forms, is stable, exchangeable, hard, soft, heavy, light; most wood types floats, it is water resistant (up to a point), burns, heats and insulates, it is also resisting yet workable. Wood can have a distinctive smell, or it can be scentless. It can have healing properties as medicine i.e. willow bark traditionally used as pain medication or to lower fever temperatures.[1] Some tree specimens are poisonous such as the yew tree nearly everything on the tree is toxic, the needles as well as the fresh wood.[2] Bark can sometimes be used to make colour i.e. blue or red from brazilwood (Dean 2010). Bark can also be used in the tanning process where crushed bark from oak, fir or willow are soaked on hides (Rahme, Thompson, and Hartman 2001).

Wood exists in many different climate- and eco-zones, it decomposes and renews itself or can be grown on demand, limited only by altitude or by soil quality and depth. Trees need soil, sun and water to grow as well as wind and birds and other animals to spread their seeds. Wood as a material can be worked and reworked, reused, become driftwood and then worked again. It also exists in many forms: trees, bushes, coppice, pollards, deadwood. It consists of roots, trunk, bark, branches, leaves or needles. It can produce fruits, nuts, berries and cones as well as flowers, resin and pitch. In addition, trees provide shelter to mushrooms, and are home and food for many animals and insects. Wood is used as building material for humans but also by animals such as beavers, birds, porcupines, ants and many other creatures, not to forget the importance of the shade and shelter provided by the canopy. The root systems can be very old; one of the oldest, known, living, root systems in the world is located in north Sweden, a pine aged 9500 years, which started growing right after the latest ice age (Kullman 2013).[3]

There is archaeologically excavated building material, such as *Alvastra Pålbyggnad*, a Neolithic building constructed on piles in a bog, dated to 3000 BC, which shows the enduring qualities of the material, from a conservation perspective. It also gives some indication of wood use through Swedish building history. The oldest preserved secular building in Sweden is *Tiondeboden* in Ingatorp dated to AD 1229 (+/- 10 years) (Gullbrandsson 2011). The oldest log-timbered church is Granhult's church[4] dated to 1217 and the oldest dwelling is *Zorns Gammelgård* in Mora dated to 1237 (Raihle 2009). This evidently challenges perceptions of wood as a fragile and short-lived building material.

A wooden building can be long-lived or not, there can be several reasons behind this, such as maintenance of the body and roof, in addition to climate or wood quality. The foundation, location, social relevance and, indeed, to some extent the aesthetics of the structure can have an impact on durability.

[1] WebMD Natural Medicines Comprehensive Database Consumer Version https://www.webmd.com/vitamins-supplements/ingredientmono-955-willow%20bark.aspx?activeingredientid=955&activeingredientname=willow%20bark (viewed 2017-10-26

[2] Lars Petersson and Thomas Lööf May 2012 Sveriges hemslöjdskonsulenter i.e handicraft consultant.http://www.slojdhaller.se/material-1/2012/06/04/giftiga-traslag (viewed 2017-10-26).

[3] Mikael Falk 2008-05-13 Skogssällskapet https://www.skogssallskapet.se/artiklar--reportage/artiklar/2008-05-13-aldsta-tradet-pa-jorden.html (viewed 2017-09-22).

[4] Länsstyrelsen (?) http://www.lansstyrelsen.se/Kronoberg/Sv/samhallsplanering-och-kulturmiljo/kulturmiljoprogram/uppvidinge/Pages/granhult.aspx (viewed 2017-09-22).

Interestingly, the same weaknesses and strengths listed for the wooden house can be quantified for a house built in stone as listed for the wooden house. Masonry houses are also in danger of burning, because they usually contain many wood and other flammable substances: the roof structure, floors, doors, furniture, fabrics etc.

An important aspect to wood cultivation is the planning involved the temporal perspective. Early modern shipbuilding required large quantities of quality oak. The trees needed 144 years of growth before they were ready for use. The oaks planted by the Crown in 1831 on *Visingsö,* were ready in 1975 but by then the navy were not building wooden warships any longer.[5] Fir trees are preferably felled when they are circa 80 years old and thus require much less time than oak to grow. Nevertheless, 80 years was a long time in comparison with the Swedish average life expectancy of *c.* 33 years in the 1660-70s as an example, however slightly higher if infant mortality is excluded (Palm and Toivanen 2003: 79). Thus, owning a forest has mostly been a long-term investment, perhaps to secure the grandchildren's future. Still, the forest needs tending, and felling should be done with consideration.[6]

Another product originating from the woods is tar. After the felling of a pine tree the stump fills with resin, and after 15-30 years the stump is harvested by boiling the resin acids out of the wood by restricted air supply. The chemical reaction is a dry distillation where the tar wood does not burn but transforms into *c.* 15% charcoal and 4-5% tar, of the wood volume.[7] This example hints at a complex *châine opératoire* (Conneller 2011; Leroi-Gourhan 1993) of tar production.

Even though all these amazing properties belong to wood materiality, it can also be threatened by deforestation (Setälä et al. 2013), forest fires (Hellberg 2004), or environmental threats from pollution (Outola, Pehrman, and Jaakkola 2003). This is problematic since woods produce oxygen for us to breathe and help cleanse the air (Duursma and Boisson 1993). On the other hand, forest fires can also help re-generate woodlands, so the matter is rather complex.

Conneller (Conneller 2011) describes how the agency of the material should be understood not only by its properties but also from its human-material, animal-material or material-material processional interactions (Conneller 2011: 124). The question of intent within human-material interactions, seems to weigh heavily towards the human side and is all but non-existent on the part of materials. Storms and fallen down trees can impact heavily on people's lives and properties but the destruction was never intended (Hornborg and Delanty 2017).

The relation between humankind and the forest has always been ambiguous, with a mix of awe and fear. Liminal places or animals behaving out of character were often the focus within folklore accounts. Many of the supernatural beings of early modern Swedish legends 'lived' in nature or specifically in the woods (Stattin 2006). Conneller (2011: 124) refers to this kind of relation as supernatural-material processional interaction, often related to a belief system. Simon Schama (1998) discusses many aspects of man's relationship with woodlands, the route through the forest with the fear or getting lost, meeting dangerous animals or bandits. Another side to the experience were the late early modern idea of romanticizing and mystifying the forest for the upper classes to enjoy, a sort of creating the 'natural' to be more natural than its original state. A third relationship is of course economic and one of simply harvesting the riches of the woods. What was once free for all to collect became absorbed into private property over time. Thus, accessibility to the resources became a matter of politics and class struggle (Schama 1998). People living in or near the forest as opposed to people living in the plains or other areas that are not exposed to woodland, might have opposing experiences, imaginings or at least difference in view of the woods and their relationship with it.

Artefacts made of wood in archaeological record

Large amounts of wooden finds can come from moist soils with low oxygen levels. On many archaeological sites, wood materials are a bulk find. Yet, due to qualities like size and unwieldiness, wood structures are mostly merely recorded in the field, and only rarely conserved or stored in museums. This situation demands a keen eye, a knack for observing detail through careful recording, while the object or building part remains in situ. Due to being an organic material, it can be altogether missing from the archaeological record on other sites. Prehistoric sites often lack organic material from the record, which can affect discussions on materiality, where the importance of wood material might be forgotten or overlooked. The expanse of the woodlands, before, and in the early days of farming, is an interesting backdrop to prehistoric societies and their wood-use. Stefanie Klooß have listed 30 different species of wood at a late Mesolithic-early Neolithic site in Germany displaying part of the extensive use of wood materiality in pre-history (Hjørungdal 2016). Sites like these have the potential of laying bare practices and methods of tools, artefacts

[5] Statens Fastighetsverk https://www.sfv.se/sv/fastigheter/sverige/jonkopings-lan-f/visingsborgs-kungsgard1/ (viewed 2020-03-20)
[6] Skogsstyrelsen https://www.skogsstyrelsen.se/bruka-skog/avverka/ (viewed 2017-10-26).
[7] Bengt Ek (?) SkogsSverige https://www.skogssverige.se/skog/skogshistoria/gor-din-egen-tjardal/vad-ar-tjara-och-hur-tillverkas-den (viewed 2017-11-01)

and materials for construction and transport and the human-work relationship, thus the social dimensions of wood use (Hjørungdal 2016). The melting ice-sheet in the Northern hemisphere have revealed a growing collection of finds from the Holocene and onwards, displaying an array of wooden artefacts i.e. skies, bows and arrows, tools etc. (Pilø et al. 2018), which have helped make the material culture of pre-history more complete.

Woods' importance to early modern life in general, as well as a material in an archaeological context will be studied drawing on both Chantal Conneller's (2011) as well as Alf Hornborg and Gerard Delanty's (2017) discussions on materiality. Wooden artefacts in archaeological contexts have been analysed stratigraphically and contextually. When registered, the item is measured and sometimes drawn or photographed but also interpreted regarding, material, use, meaning and identity. At times, the stratigraphy dates the object, but it can also be the other way around where the object dates the layer. Dendrochronology is one way of dating wood; still, it is difficult to make use of the method on small crafted objects without sapwood and/or bark. Another method is radiocarbon dating (^{14}C), but it is seldom used to date tools or items from historical periods. Some objects can be dated from letters patent or granting charters, where the production site is known, and the production period is identified from either historical records or from stratified archaeological finds e.g. ceramics, porcelain or clay pipes (Nilsson Schönborg 2001; Rosén 1999; Wallin 1983; Åkerhagen 1985; 1994). However, wooden objects were often made domestically and can seldom be connected to specific known workshops.

Our most common tools are very old in their current forms i.e. the spoon, the knife, axe, plane, pliers, tweezers, hammer, awl etc. Many of these tools originate in the Iron Age (Guldberg 2014; Petersen 1951) or even earlier and are often constructed of a combination of metal and wood. These objects are not to be viewed as primitive. Rather their forms which are largely unchanged since the pre-history should be understood as; both expedient and practical but also sophisticated in its development if you will.

Wood was used in objects and tools of all kinds. It is of course impossible to cover all the types of wooden objects associated with early modern urban sites. The aim here is to consider how wide-ranging a material this was in everyday life and hopefully indicate roads ahead for future in-depth studies of wood materiality in Swedish archaeology. It is something that has not been widely discussed or synthesized before and for us living in the 'plastic age' it can even be hard to grasp.

Swedish ethnologists, where Sigurd Erixon set the tone, have worked extensively on common and mostly rural material culture. Their and his focus has been decorated objects and work tools with a preference for connecting the objects to certain geographical areas or interpreting the objects and buildings as belonging to specific cultural circles. These ideas are closely connected to *Kulturkreislehre* (Erixon 1938b; 1938a; 1982), where Erixon emphasized the word 'tradition'. Menghin (1940) used similar ideas when interpreting ceramics from the Linear Band Pottery culture. He concluded that since the contextual archaeology of this kind of pottery did not show any evidence of violence or war it could thus not belong to a Germanic culture. Menghin, thus thought of culture as essence. Nevertheless, in terms of archaeology Menghin actually derives his interpretation from what is *not* there rather than the actual physical evidence. In this case it led to a rather strange conclusion. A more in-depth discussion on *Kulturkreislehre* and its role in the construction of geographical borders is to be found in Cornell (2017).

Kulturkreislehre is a theory of the past and even though Menghin's long drawn deductions can be questioned, it is still important to take account of what is missing from any given context. Wood and other organic materials are often those missing parts. It is easy to forget woods' former importance to and impact upon society. What could have been used in its stead when, or if, wood was not available, or not the first choice of material, are questions that need to be asked. Driftwood is important but cannot suffice all needs on some windswept islands for example. Deserts are areas where woodlands are missing or very small and far apart. Depending on its primary purpose other materials i.e. bone, stone, metal, clay, leather etc. could have be used in the absence of wood. Today we struggle with replacing plastics with less environmentally destructive materials, maybe wood will find a renewed purpose in the future. Wood and plastic are similar in the sense that they can be used for so wide-ranging and differing aims. Thus, as happened with the wood, plastic will probably be replaced with not just one material, but several.

The everyday presence of wood – evidence from Nya Lödöse town

To demonstrate how wood was used in almost every aspect of early modern life archaeological categories of objects will be set in their everyday surroundings or use (not the archaeological context but a social and practical, reconstructed context if you will). The catalogue from the first year of investigation of Nya Lödöse, SU 2013,[8] which will be used as a case study,

[8] Information provided from the database of the Nya Lödöse project. See Appendix 1

contains a range of wooden objects; in this section I have excluded building remains.

Construction parts: wooden pegs, wedge, wood chips
In an urban environment, there is always construction going on, and there are a number of construction-related parts in the catalogue. These examples tell of a broad use of wooden pegs and wedges in all sorts of constructions. Wood chips tells of wood working, but they were also used for creating dry areas to walk on, placed as layers of wood chips all over the town surface.

Furnishings: door, door handle, fittings.
These finds give several glimpses of everyday life and interior practice. The door and the door handle are representative of the separation of areas sometimes considered private and public, but the door can also be a division between warm and cold or indoor/outdoor environments. The door can likewise separate things and humans or humans and animals. The fittings would suggest that doors or chests were locked.

Tools: ferule, rake
Tools convey other areas of use; the ferule, or paddle used to discipline children at school can be at once a tool of violence and child abuse, and at the same time a symbol of schooling and the status of the learned. The archaeological context for paddles has in Nya Lödöse been grave goods in children's and teenager's graves. Supposedly delivering a message of the deceased's identity as a pupil,[9] attributing the paddle symbolism of schooling.

The rake was used to gather hay or leaves.

Containers: lid for a wood box, several wooden containers, stave-built vessels and bentwood boxes, bowl, coffins
Every form of storage needs an appropriate container, particularly, the storage of foodstuffs. Some containers only need to hold things, and can thus be constructed of any kind of material i.e. cloth, rope, skin/leather, net, birch bark, straw or wood etc. In other cases, the container needs to be airtight or waterproof; ceramics, glass, metal or wood combined with wax, cork, resin, pitch or tar can be used to meet that aim. Often foodstuffs are stored in liquid and thus in need of a container that can hold the liquid such as glass, ceramics and wood containers as well as those made of stone or metal.

Bowls are other kind of containers without lids.

A completely different kind of containers are coffins. People die, and coffins are usually in demand, although not everybody was buried in a coffin in the churchyard at Nya Lödöse.[10]

The wooden containers from the archaeological data from Nya Lödöse meet many of these requirements for storage.

Personal items: rosary, half a wooden ball
The personal items in this instance are few, but the possible rosary tells of Sweden's Catholic past, but what the wooden ball was used for is hard to say? Maybe a child's toy, or part of a game of sports?

Food related items are missing from the 2013 catalogue, yet it needs to be pointed out that in the early modern period, the kitchen was filled with wooden food preparation and serving equipment.

Wooden objects as bulk-find

Combs in horn and bone (Christophersen 1980), footwear (Larsen 1992), sausage sticks (Weber 1990: 76–83), wedges and wood nails (Weber 1990: 160–63) are discussed as raw materials, production, use, importance, as well as regarding quantity and quality. These studies have proved the potential in researching frequently occurring objects/materials.

Many of the items from the Nya Lödöse catalogue were domestically produced, even where living in a town might have facilitated purchase if someone made superior products. Cederbourg (1739: 131) describe how wood items such as masts, planks, rafters, wood for ships and timbers as well as all sorts of household utensils made of wood and wood containers were shipped in from the provinces of Värmland and Halland to Gothenburg. Chairs, tables, tea tables, or tea boards as well as chests and cupboards came from Halland too (apparently much sought after on the English market).

Tools are closely related to humans; they are crafted themselves but at the same time made to facilitate other kinds of work. The tools can also be pieces of vernacular art, often displayed at cultural heritage museums. Gertrude Grenander-Nyberg (1974) points out that a loom was, in a vernacular context, often situated in the main room and treated as a piece of furniture. The main room/parlour was where the family resided and where guests were entertained and therefore the loom often had ornamentation. A much plainer type of loom was common in upper class environments since the loom was located in more secluded areas of the house such as the attic or in the bakery, and probably

[9] Clara Alfsdotter 2014-08-06 Staden Nya Lödöse http://www.stadennyalodose.se/artiklar/2014-08-06/gravgavor-till-skolbarn/ (viewed 2017-09-22).

[10] Axel Hansen 2016-11-06 Staden Nya Lödöse http://www.stadennyalodose.se/artiklar/2016-11-02/trangt-i-graven/ viewed 2017-09-22

operated by servants (Bringéus 1979: 59). After the Industrial Revolution the tools lost some of their earlier importance but were subsequently rediscovered in people's leisure time as hobbies where old crafts were taught anew (Bringéus 1979: 42–43). Of course, artisans still use tools as do we all in every aspect of life, but tools made of wood are definitely becoming rarer.

The study of tools has comprised the study of use, practice and movement as well as grip and context of use, of which the work by Harald Høgseth (2007) is a good example. Studies have been made of artisans demonstrating the tool in use, but perhaps tested in overly-constructed environments at times, often taking place at open-air museums and such. Other researchers, adopting an ethnographic approach, have tried studying the practice of certain tools in more 'primitive' or 'natural' surroundings, visiting other cultures in faraway geographical locations where the tools are still in use. However, access to materials and specific cultural practices can vary greatly, which can create problems when drawing conclusions (Bringéus 2003: 48–49).

Consider then the array of woods available through the international trading and colonial projects established in the early modern period such as the Americas, Africa, Australia or Asia. There were hard woods like mahogany as well as soft and extremely lightwood like balsa, the majestic size of redwood and the versatility of bamboo and a range of other wood species. Certain construction methods demand certain types of wood or at least some woods are better suited to the task. Hard woods, such as oak, are preferable when building timber-framed or post and plank constructions. Oak is worked while it is fresh; it only hardens after it has dried after a period of rest. The long growth time makes oak less sustainable for house production from an environmental point of view even though the house itself is of potentially long duration (Rosberg 2009). In Sweden, log timber building on the other hand was almost always done in pine, or sometimes spruce (Nilsen 2014: 576).

Knowledge of the properties of different sorts of wood was important when selecting the right kind of material for each purpose. Agneta Boqvist (1978: 107) wrote:

> '*Every artisan possesses knowledge of wood selection. This understanding contains all kinds of knowledge about the properties of different kinds of wood; that birch draws water, that pine leaves a flavour and that alder and aspen are best suited for clog making, but that the latter tends to crack. Free-range fir that grows adjacent to mires is best suited to mats and herring bags and that fallen pine is lighter and tougher than birch. Casks are usually made from pine, but withies of fir are used for the hoops. The basket-maker can identify whether a wood is good enough by assessing the growth of the tree in the woods'* (Fjellström 2003: 65). A paraphrased translation.[11]

Urban wood construction and infrastructure

Wood construction could take many forms in the urban environment and leaving buildings aside there are plenty of other kinds of structures to consider, with examples from archaeological reports from Söderköping, Vadstena and Falun as well as Nya Lödöse and Gothenburg.

Who owns the woods? Where does the wood come from?

There are two ways of finding clues to the question of origins regarding wood supply. Historical sources might have information on the subject. In connection with town formations and urban fires, it was common that the crown donated large quantities of wood or entire forests. Sometimes the town owned woodlands of its own detailed for example in the Magistrate's minutes (Grauers 1923) or other from contemporary sources describing how the wood used in Gothenburg originated from the provinces of Värmland, Halland and Bohuslän along with pitch and tar from the provinces of Värmland, Västergötland and Småland (Cederbourg 1739: 130–31).

Dendrochronology can sometimes provide answers on provenance, revealing from where the individual log or building material came. In the case of oak from Nya Lödöse the building material came from northern Halland from the region of Kungsbacka and Varberg (Rosén and Öbrink 2017: 32).

Conservation strategies

The excavation, SU 2013 Nya Lödöse, will be used as an example on how wood is handled in the field and after, as well as regarding conservation principles applied to the wood material.

A conservationist was employed on the project and was present in the field a few days a week to participate in the archaeological fieldwork and was also pivotal in determining strategies for handling sensitive objects, thus making object management an integrated part of the fieldwork.

[11] *'Varje slöjdare besitter en kunskapsfond i ämnet av oanat slag. Denna kunskap innefattar all möjlig kännedom om de enskilda träslagens olika egenskaper. Att björk drar till sig vatten, att tall lämnar smak och att al och asp är lätta träslag som passar bäst till träskor, men att den senare gärna vill spricka. Att friväxt gran som växer vid myrar passar bäst till mattor och sillakassar och att fallfur är lättare och segare än björk. Att laggkärl vanligen tillverkas av fur men att banden göres av granvidjor. Redan på trädets växt i skogen kan korgmakare se om det duger till korgämnen...'*(Boqvist 1978:107).

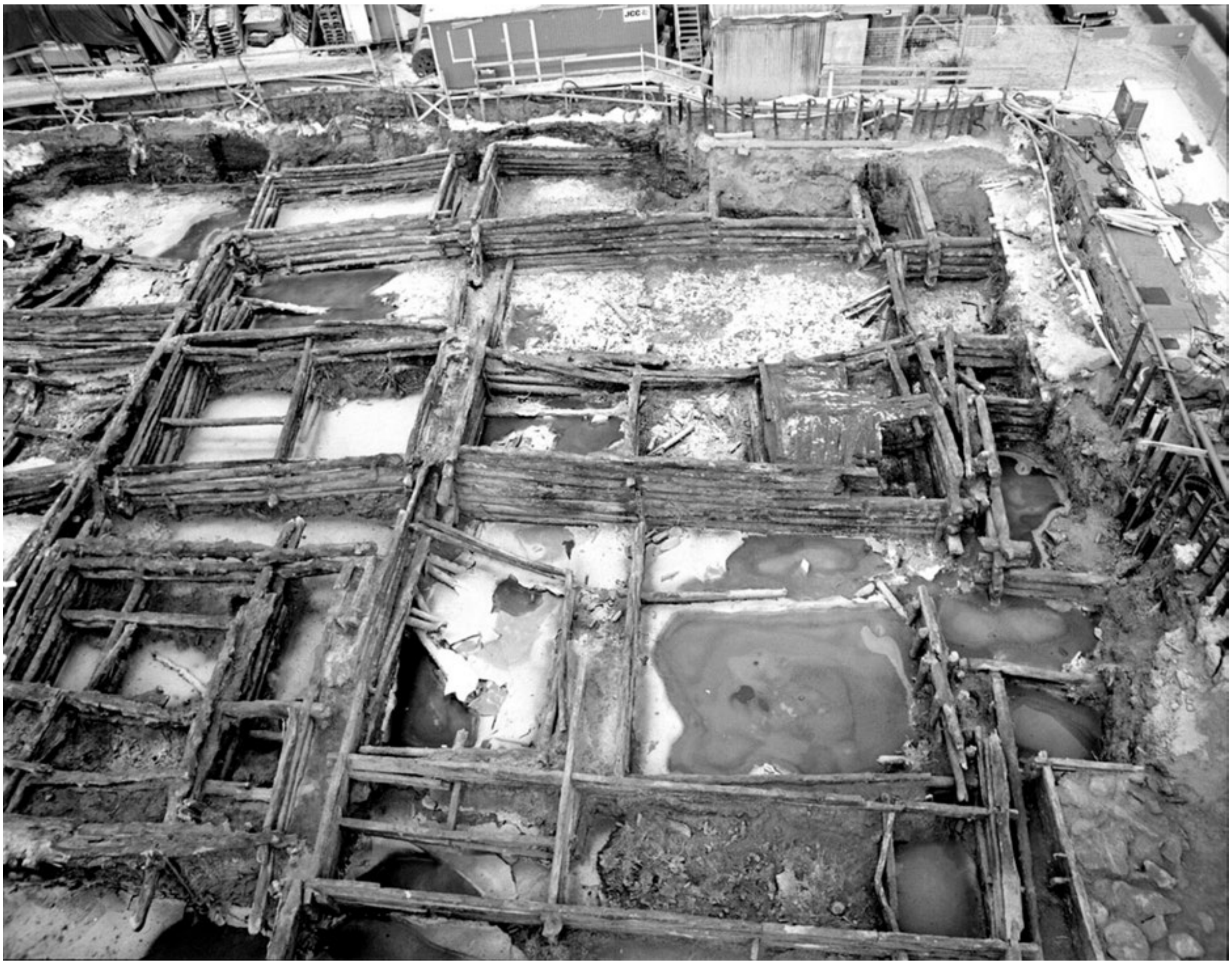


Figure 1 A system of box revetments emerged during excavations in Kv. Ansvaret 1984-1985, Jönköping

The finds collection policy was dictated by the nature of the archaeological context: For each context individually i.e. all objects were collected if from a primary deposit. Most objects were retained from secondary deposits. Finally, only selected objects were collected from tertiary deposits. Object categories that were present, or missing, from the contexts could help analysis on how localities, surfaces or layers had been used in the past. Some surfaces had been cleaned, while others had been used for rubbish assembly, or were connected to buildings destroyed by fire (Rosén and Öbrink 2017: 29). Samples for dendrochronological dating analysis were collected and sent to be analysed. Many wood samples were taken, of which 99 were sent to be analysed. Nonetheless, a number of samples were not possible to use for various reasons: too few year rings (under 60); unusual types of wood such as aspen or alder; or due to unclear archaeological relationships with other samples. The pine wood in this sample had been fast growing thus had too few rings to date with any certainty. It was established that oak was the favoured wood for house construction, although it might be more indicative to suggest that oak was the preferred wood type for sill beams since that is what was most commonly excavated (Rosén and Öbrink 2017: 32).

Box revetment

Before laying out the town grid, the ground that the town was founded on needed to be as dry as possible, it was also important that it was high enough not to be flooded by nearby rivers and such later on. During the 17th-18th centuries, priorities were typically made for finding advantageous spots of military concerns when choosing locations for new town formations. Marshy surroundings were thus not considered problematic but fortuitous; conversely, the town-dwellers might have differed in their opinion.

One way of stabilizing and creating dry land to build on can be achieved, through the use of box-like timber constructions, box revetments, filled with sand and shrub/coppice. On top of which more layers of sand, soil and wood chips were strewn. The foundations for houses and streets could be constructed after that. During excavations in: Nya Lödöse (Rosén and Öbrink

2017), Göteborg (Roth 1935), Jönköping (Nordman and Pettersson 2009) and Falun (Grälls 1989) archaeologists have found extensive use of box revetments. Some of these sites include a remarkably large collection of wood material as shown in Figure 1.

Wood layers

Construction-work in wood or wood-working always generates a large amount of wood chips, these are among the smallest and most insignificant residue but at the same time they are ubiquitous in Swedish urban environments. The wood chips are probable evidence that woodworking has been practiced in the local area, this residue was gathered and used for drying out and stabilizing roads and courtyards. It was also used over the entire urban area, thus a part of infrastructural improvements is clearly evident as stratigraphic layers in urban archaeology (Jeffrey 1984; Lorentzon 1983; Öbrink and Rosén 2017). Wet underground demands constant relaying of layers of wood chips.

Another recognizable wood layer is that of burnt wood from urban fires, a well-known facet of Swedish archaeological contexts. Some historically established fires of larger urban areas can help date construction phases. Of course, it is important to be wary not to mistake one fire for another; most towns had plenty of small confined fires. Västra Nordstaden, Gothenburg, is one area where the fire of 1669 destroyed most of the district. The residue and debris of that fire is often clearly visible in the stratigraphy, which also has been confirmed by the dating of coins and ceramics from the same layer (Jeffrey 1984: 11; Lorentzon 1983: 10).

Moat

Strategies for town protection have been imperative in many areas for the most part of the early modern period. One way was to build a surrounding moat and a fence or palisade of some sort primarily for protection from a charging enemy on horseback. One example of a moat construction was found in Nya Lödöse. There were continuous complaints of the town's weak defences and during the Danish wars,[12] this was proven accurate time and time again when they failed to protect the town (Hjertman et al. 2017). The construction of the moat was, however, a complex one, which the construction list clearly shows, detailing the individual parts of the structure after excavation. [13] Besides the large amount of soil, wood is the other major component in the earthworks. Wooden revetments were used to stabilize the soil dug out from the ditch, and then the soil was used to construct the wall around the town. Within the moat sharpened poles were then erected to prevent the enemy from storming the walls through the ditch.

A number of elements were constructed in wood in the defensive system at Nya Lödöse poles belonging to the palisade on top of the moat, construction parts belonging to a tower, some sort of gate construction, a wooden chute set in blue clay to carry water as well as a revetment *c*. 7.5 m × 2.5 m. An abutment for a bridge set on timberwork as well as a building, dated to 1496, were connected with the moat.[15]

There are several mentions of piling as a defence from the riverside and as defence within the ditch. Some of the piling has also been interpreted as protection from erosion or as fencing. It is clear that wood and soil were the primary building material and not stone.

Toll fence

One feature often clearly indicated on Swedish historical city plans are toll fences. They are interesting of a range of reasons first of all it seems that the fencing has commonly been constructed in wood; this claim is partly based on the use of the word *staket.* In the Swedish Academy Dictionary,[14] *staket* refers to a construction made of wood or iron connecting posts by planks or splints, many alternative construction methods are listed. In the Cambridge dictionary the word *fence* is referenced as '*a structure that divides two areas of land, similar to a wall but made of wood or wire and supported with posts*'.[15] The word *paling* is described as '*a fence made from long, thin pieces of wood*'.[16] The ways many of these fences are depicted on the plans suggest a wooden structure. The fence had to enclose an entire town and so iron would have been impractical. The Cambridge dictionary also points to the fences' acting as a divider between two areas of land creating an outside and an inside of the fence. Of course, this was the important factor when dealing with and controlling customs duties for people and products entering or exiting the town. There was also a different jurisdiction inside the city walls/toll fence, than outside where other laws were in place. In many towns, the toll fence was mainly a symbolic divider, easy enough to surpass if someone really wanted to, yet in other towns, the fence was constructed in more sturdy material to be an actual obstruction (Bengtsson 1999).

[12] The wars in question were primarily with Denmark. The wars have been named the Nordic Seven Years War 1563–1570, and the Kalmar War 1611-1612.

[13] List of the construction parts of the moat in Nya Lödöse. See Appendix 2.

[14] Svenska Akademien 2017 http://www.saob.se/artikel/?unik=S_10817-0016.cT91&pz=5 (viewed 2017-08-18) www.saob.se spalt S 10831 band 30, 1986

[15] Cambridge Dictionary 2017 http://dictionary.cambridge.org/dictionary/english/fence (viewed 2017-08-18) www.dictionary.cambridge.org

[16] Cambridge Dictionary 2017 http://dictionary.cambridge.org/dictionary/english/paling (viewed 2017-08-18) www.dictionary.cambridge.org

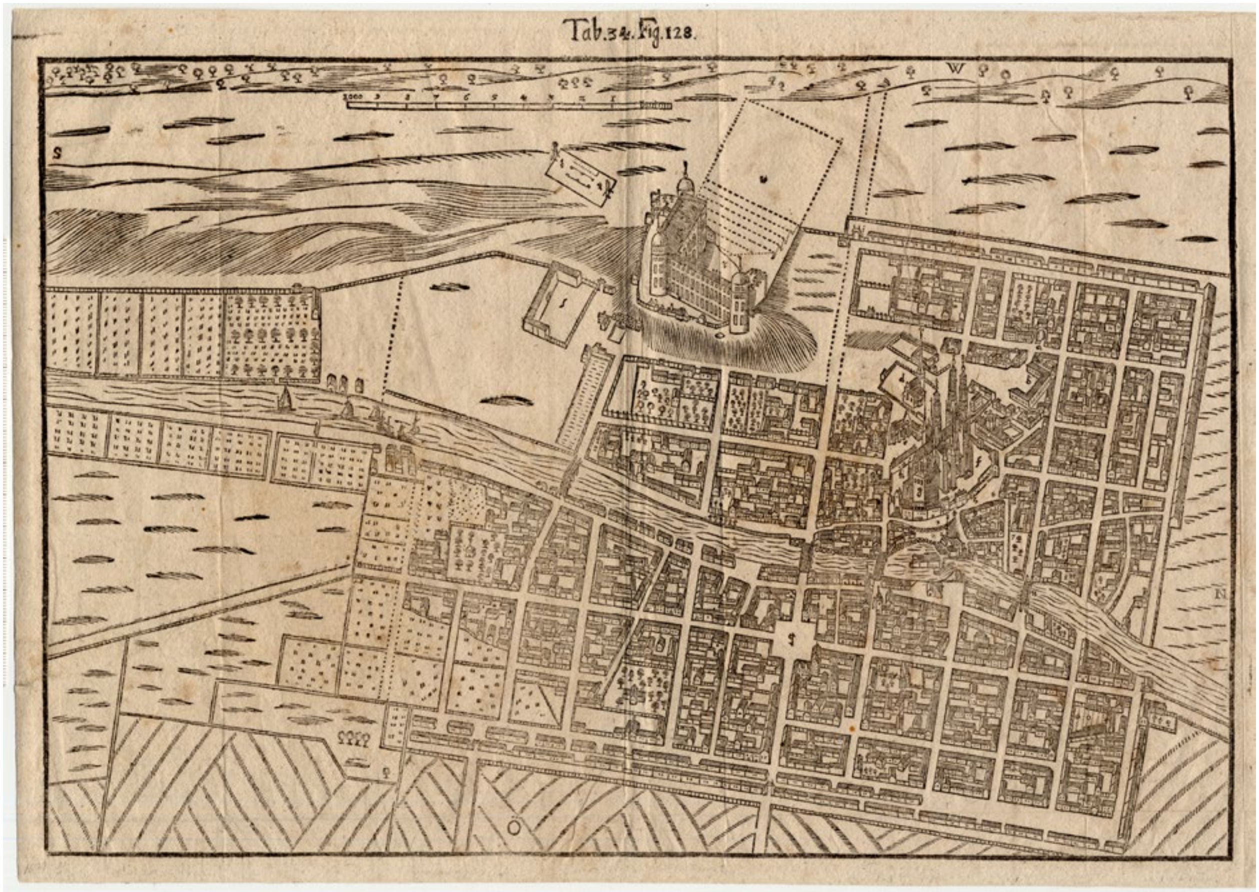


Figure 2 House map from before the town fire of 1702, Uppsala. Note the creative way of using cowsheds as a town wall. A map from Rudbeck, Olof, the older., Atland or Manheim, Atlasbandet [Uppsala, 1679], Tab. 34, Fig. 128. No known copyright, public domain.

Uppsala had an interesting solution according to the Fredrik Arkrelius house map drawn before the big city fire of 1702 *Figure 2*.[17] The map shows how stables, cowsheds and barns had all been placed circling the town creating a solid wall between the town and the surrounding countryside with only a few openings for city gates. This would also have solved the problem with animals and animal waste within the city blocks. These structures cover two and a half sides of the town leaving the rest to be delimited by a regular toll fence. The king, Gustav I Vasa (1523-1560), wanted the townsmen to construct a proper fortification surrounding the town but that was never built (Ahlberg 2005: 569). Remains of this early modern wall of animal sheds have still not been found archaeologically in Uppsala. It would have been interesting to know if it was realized or if it was only a plan. It would have been a smart way of solving two problems in one go.

The toll fence on the plan of Jönköping from 1624 was built with bastions in wood Figure 3,[18] perhaps to facilitate guarding and visual control of the town border. There was probably little defensive value in the toll fence in itself in regard of actually stopping enemies from storming the town, but when constructed on top of earthworks it became more effective.

Wells

Wells were often constructed in wood and are therefore an important part of the assemblage of wooden constructions in towns. A constant access to water sources is of fundamental importance to human settlement. Drinking water for humans and animals is needed, and so is water for cooking, cleaning and for various production processes. In the initial phases of settlement in Gothenburg the canals were meant to function as a water source, though it soon became apparent that the canal water was not suitable for drinking (Kjellin 1959). Consequently, the populace had to turn to the few wells within the city walls for its supply. Those who had a well on their property could get a tax reduction if they shared the water with their neighbours.[19] Nonetheless, those wells were not

[17] In *Johan B. Bussers Uppsala beskrivning 1773*.
[18] Krigsarkivet 0424:056:017 Jönköping. Fortifikationen. [På baksidan]: Jönköpings Stad och Slått. 1624 Ca Thome.

[19] FIIb:2, 1789-1797, picture 6

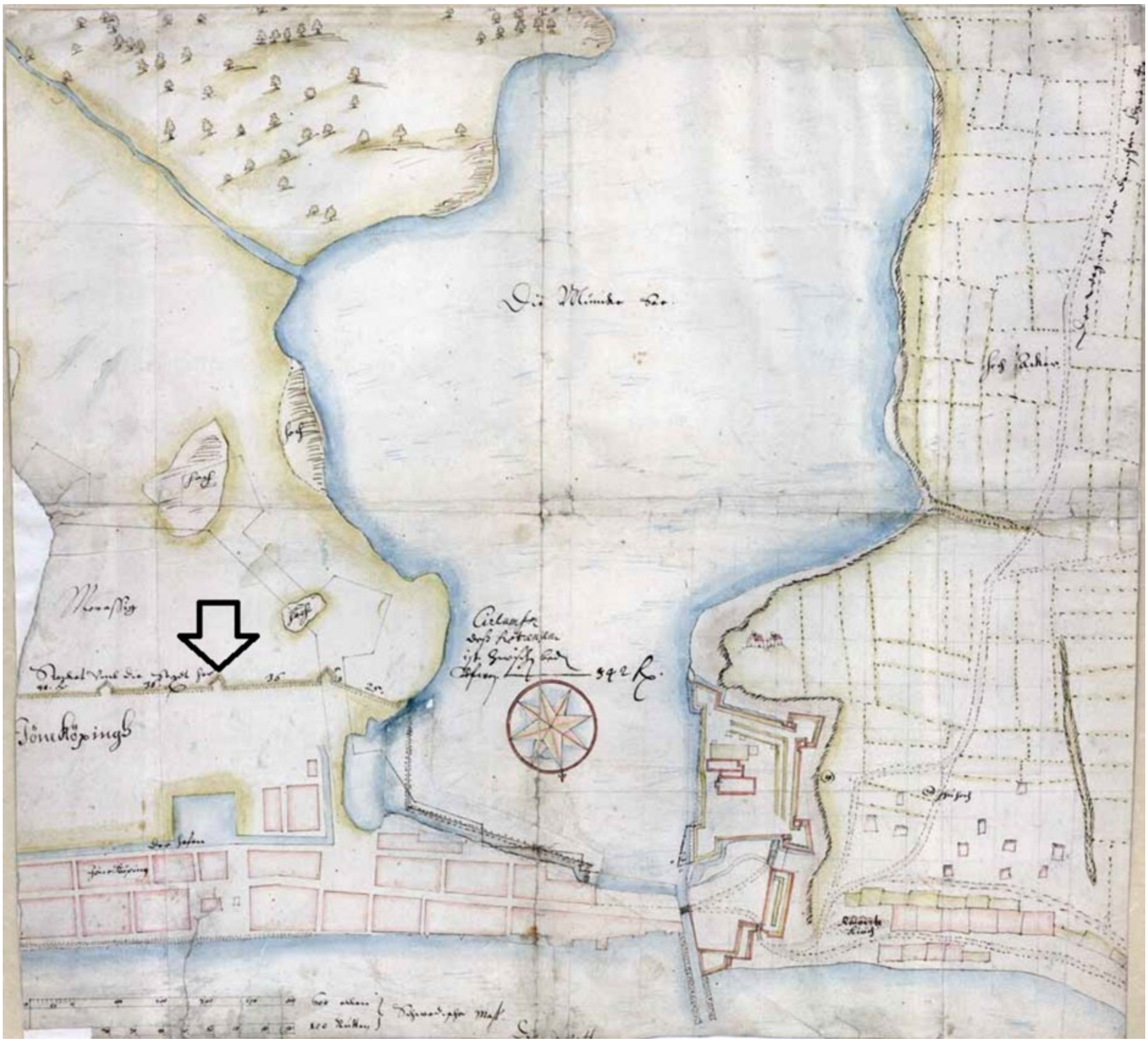


Figure 3 Toll fence with bastions on top of earth works in Jönköping 1624.

sufficient to supply the whole town so water had to be fetched from Hisingen (a nearby island opposite the river Göta), by boat or from Kallebäckskällan (Kallebäck's spring), by cart (Andersson, Fritz, and Olsson 1996: 132–74). Eventually, wooden pipes to central Gothenburg at Domkyrkotorget (the cathedral square) and Stora torget (the big square) connected Kallebäckskällan. The project started in 1785 (it took about ten years to complete the pipeline and lead the water 6-7 km to the city centre).[20]

One of those wells was probably well 1, at the town hall excavations in 1935. The well was constructed in planks of oak, 0.30-0.35 m wide and 0.03 m thick. The wooden construction was 1,10 m deep filled with pebble-stone and coarse sand. No finds were found (Roth 1935). Another well at the same site was well 3, constructed in pine in a log timber construction. The back of the well had for some reason a large gap (Roth 1935).

Jetties/bridge

A marine archaeological survey was conducted in *Säveån* (the river Säve, which ran through Nya Lödöse) in 2012 where a few remnants of wharfs and bridges were identified. These will typify waterfront construction.

Construction 4 (Trench 1); parts of the construction measuring 4-5 m^2. The structure was located 1.2-1.3 m under the current land surface, although the total extent of the remains are not known. It was interpreted as either a causeway or a bridge (Bergstrand 2013: 20). Constructions 1 and 2 consisted of a number of piles

[20] Marie Hendefelt 2010-08-10 http://www.alltidgot.com/kallebacks-kalla/ (viewed 2017-09-12)

forming a jetty oriented with the flow of the stream and partly across it. The constructions were connected and presumably originated from the 17th century (dated through dendrochronology, although exact dating was not possible due to the quality of the timbers) (Bergstrand 2013: 16–17).

The construction of wharfs and jetties was often conducted in the wintertime,[21] with a similar type of structure as the box revetment, earlier mentioned, thus a box made of log timber. The box was built on land and then dragged out onto the ice, a hole was sawn in the ice-sheet in the right position for the wharf or jettie and the timber box was then sunk. It was made to fit into the rest of the structure with a number of identical boxes creating the length desired. The timber box was hence filled with stones to become stable. A part of the box or super structure emerged out of the water to allow a surface for walking, loading and the securing of ships and smaller boats.

Boats/ships reused for construction

Ships are closely connected to urban sites and harbours for transport of people and goods, thus intimately connected to commerce, the navy and fishing, as well as for most marine activities. Worn-out ships were often used as foundation for wharfs, and for blocking entrances to the harbor in times of war. The timber from old ships were sometimes reused as building material for houses as well as for firewood. Cities were almost always situated close to water, be it the sea, a lake or a river, since passage over water was a lot easier than over land where horse- or oxen-drawn transport were more limited in terms of the weight of the loads and distance in travel on poorly constructed roads.

Waste bin/Rubbish pit

During the excavations in the city block *Polismästaren*, Gothenburg in 1983 several pits were examined. Here follows three examples; the rubbish pit in plot A, phase 1 was constructed in secondary timber measuring 2.7x2.7 m with a depth of 1.2 m. It contained horns and parts of sculls of cattle along with several matrix of renaissance-style figure tiles. In plot C, phase 1 there were two rubbish pits just north of the building measuring 1x1.2 m, and 2x2 m respectively. The first pit had a lid, and the foundation structure of the building, in phase 3, had been used as the Western wall in the second pit. Finally in plot E, phase 1, there were two pits; in the western part of the plot and in house 1. There was a pit ca 1x0.8 m (*binge* 5) in the floor in the house, filled with manure, wood chips, plant parts as well as pieces of leather. The other pit had been constructed with planks nailed to corner posts, which contained refuse and a copper coin ¼ öre, by Queen Kristina 1643.

These examples reveal a few things on the use of wood and its implementations. First of all it gives clues to domestic waste disposal and the location of the rubbish pits within the plot. It also gives evidence of waste bin construction; they were, in these cases, constructed in part with reused wood and to some extent integrated with older building parts. There was also one example of the use of lids. The waste bins were placed in dug out pits, thus holes in the ground lined with a wood construction. There were also clues to what was disposed of from human or animal waste, to food waste or damaged items as well as production waste. A coin, evidence of accidentally dropped items of worth. These are only a few examples in a category of building structure that can appear in a wide range of construction techniques, contexts and appearances.[22]

These structures are all in some way part of the chaîne opératoire of town formations, from the smallest part i.e. the wood chip to the system of buttresses underground and moats or toll fences surrounding the town to water sources and waste control within the burgage plots. All these elements play their parts in the infrastructure of town development.

Wood as fuel

Firewood is another important factor when discussing wood material in historical settings. If a wooden artifact or a construction part broke to the point of no repair, the chances of ending up as firewood was enormously high. Wood materials are also the first to expire in urban fires if subjected to the flames. This helps to explain why wood artifacts are less common as archaeological finds then they should be in light of their omnipresence in the past. Yet, everything wooden seldom parishes after a fire. Old photos from the turn of the century, 19th and the 20th, reveal an almost tree-less surrounding around towns. Woods were pushed further and further from urban settings due to the constant collection of firewood and need for construction materials, another reason was the expanse of farmland compared to the present day.

Paul Warde discussed the demand for firewood in pre-industrial England and has come to the conclusion that firewood was in much heavier demand than building material for the middling person and the average supply of timber (including firewood) needed per family/year was ca 20 m³.[23] There was also the animosity

[21] Sustainable heritage http://www.sustainableheritage.eu/traditional-log-construction-techniques-jetties-and-bridges/ (viewed 2019-07-27)

[22] These case studies are contextually discussed further in Nilsen, Forthcoming: *En stad växer fram- Göteborgs innerstad, före branden 1669*. Nya Lödöseprojektet. Göteborg.

[23] From Paul Wardes' conference paper '*The use of wood as a fundamental resource in pre-industrial society*' at the 2017 Winter

between the woodland owners and the poor in need of firewood, thus collecting dead wood in the forests. The landowners claimed the wood was in scares supply and that the poor were robbing them (Stridsberg and Mattsson 1980: 38). At the same time, the landowners claimed that they wanted to maintain the natural beauty of the forests to be enjoyed. The poor on the other hand needed firewood and could see themselves deprived of old costumes and rights to free collection of deadwood, coppice and shrubs (Warde 2006).

Coal became more important for fuel consumption by the end of the 16th century in Britain.[25] Charcoal was forest consuming to produce, but more energy rich than simply firing with wood. An introduction of fossil coal i.e coal and brown coal, facilitated the industrial revolution (Kent et al. 2010). Coal was mined in Sweden from the 18th century foremost in in the province *Skåne*. As an example, the city *Malmö* had problems with the supply of wood. Due to the expanse of the farmlands, the woodlands had been pushed out of the region surrounding the city early on (i.e. medieval period) and the high cost of land transports made firewood and building materials expensive. Turf was widely used as a supplement for firewood, however strategies for securing a firewood supply was well in place through trade with the north western parts of *Skåne*, as well as from harbours in the provinces of *Halland* and *Bohuslän* in exchange for farm products (Berggren and Eliasson 2010: 693–94). To highlight the importance of wood in an historical setting, Paul Warde found this passage.

> *'1682, leading German agronomist Wolf Helmhard von Hohberg observed, 'Were we not to have wood, then we would have no fire, then would we have to eat all meals raw and freeze in winter, we would have no houses, would also have no lime or bricks, no glass, no metal, we would have neither table nor doors, neither stools or other furnishings'.*[24]
>
> *'In short, wood was the raw material that permitted early modern life. The most significant of these uses was undoubtedly domestic fuel consumption'* (Warde 2006).

Maybe we can jokingly refer to this period in time as the Wooden Age due to the dependency of wood material in the same sense as we talk about a Stone Age, Bronze Age or Iron Age.

Conclusions

Wood had a role in almost every part of early modern society it was also a part of the environment and dependent on climatic influxes. While traveling through the forest the trees could fall and hinder the journey but wood could also facilitate transport through constructions like the cart or the boat. Wood is a living matter and can grow and twist but it is also possible to shape into uncountable objects. It warms us, and shelter us and let us fashion tools to help our everyday life, at the same time it can resist us, and burn us as well as crush us with its weight. It can live and prosper without us but it can also flourish in our midst. The omnipresence of wood and specifically in archaeological contexts warrants it a chapter of its own, to make us reflect on how the world would have functioned without it. In the early modern era, the presence of wood would have been seen, heard, smelled as well as touched. Large quantities of wood were needed for construction, fuel and the production of artifacts, which is, or should be, reflected in the archaeological material. A lack of wood would also have struck at the core of society. In the following chapters, more in-depth discussions on the construction of buildings will follow.

Conference by Vernacular Architecture Group VAG in Leicester, England.

[24] Quote from Ingrid Schäfer, '*Ein Gespenst geht um*'. Politik mit der Holznot in Lippe 1750–1850. Eine Regionalstudie zur Wald- und Technikgeschichte, Detmold, 1992, p. 21.

Chapter 5

Urban vernacular wood constructions – three modes of building

Three sections of Chapter 5 will be dedicated to examining the building stock built in wood in urban settings. This is step 2, in my scale of research where the buildings themselves are studied, divided into the building techniques of corner-notching/log construction, timber-framing and post and plank. The aim is to be able better to compare the techniques from the interrogation of layout, function and use; as well as the use of windows and chimneys; the number of rooms and storeys; the house measurements; various strategies for insulation floor type as well as the use of panelling or paint. Another issue regards the combination of several building techniques in one building. The quality of the archaeological data varies a lot between the techniques, which has created a need to compare with source material from other disciplines. This has led to interesting discoveries methodologically regarding the potential of combining materials above and below ground, as well as written and visual sources.

One result was discovering that the strict geographical delineations between the three construction techniques, which have been accepted in previous research, could be questioned. Another result is that the pure number of diverse functions that the building techniques were used for refutes previous research when it comes to its prevalence and place in society i.e. a timber-framed house outside the provinces of Skåne and Halland was not automatically built by a 'foreigner', its uses and place in society was more complex than that.

5.1 Five Swedish early modern towns – a background of local urban history and archaeological investigations

The main investigation concerns the following five towns: Nya Lödöse, Gothenburg/Göteborg, Jönköping, Falun and Stockholm Figure 1. Here follows very brief town histories and excavation histories as a background to the discussions in sections 5.2-5.4.

Nya Lödöse

The town Nya Lödöse was founded in 1473 not far from the estuary of the river Göta and by the river Säve, to some extent an attempt to move commerce from the old town Lödöse (founded in the 11th century 40 km up-river) to a more propitious place closer to the sea. Most (but not all) townspeople and probably some houses were moved to the new town, originally called Götaholm but soon changed to Nya Lödöse (New Lödöse). This was the only Swedish town, at this time that had direct access to the sea on the west coast. The land on the opposite side of the river, the island Hisingen and further upstream, the province Bohuslän belonged to Norway. The Danish province Halland had a border close by to the South. This was thus a highly political borderland.

After a decree from King Gustav I, in 1547, the residents of Nya Lödöse were ordered to move to the area adjacent to Älvsborg castle. The castle was nearer to the estuary of the river Göta, where a new town, Älvsborg stad, was founded. The new town then suffered defeat during the Nordic Seven Years War, the populace consequently moved back to Nya Lödöse in 1563 (Andersson 1973). Thus, there is a natural break, a hiatus, in the building chronology in the archaeological layers of the Nya Lödöse site.

The town existed, with some interruptions, up until Gothenburg was founded in 1621, some 4 km away, still, on the bank of the estuary of the river Göta. A few centuries later the former site of Nya Lödöse was given the name Gamlestaden, meaning old town, and the area was eventually incorporated into Gothenburg in 1718. The area was also called Hospitalet, the hospital, for a time.

There must have been some sort of city plan and system in place when establishing the plots and streets in Nya Lödöse. It is clear that there was measuring involved, probably by using a measuring string and walking along the riverbank. The natural form of the riverbank has then influenced the width of the plots creating slight variations in size (Öbrink, Williams, and Nilsen 2018). There was a grid system in place but not as rigidly bound as grid systems a century and a half later. The streets thus followed the horizontal line of the ***Säve*** riverbank with alleys coming vertically straight up from the river. The streets were primarily cobbled.[1] The town was, unfortunately, known for its ineffective fortification system after a number of sackings (Hjertman et al. 2018).

[1] From Nya Lödöse, staden under Gamlestaden. Stadsplanering. Arkeologiska undersökningar i Gamlestaden 3.

Figure 1 A map of Sweden showing the location of the five towns discussed in this survey, Nya Lödöse, Gothenburg, Jönköping, Falun and Stockholm.

Excavations in Nya Lödöse started in the 1920s when Sixten Strömbom (1924) arrived with the aim of finding out more of the abandoned town's history and physical boundaries in connection with the 300-year Jubilee of Gothenburg (in 2021 the 400-years' jubilee will be celebrated). Finally, in the 1960s Hans Andersson (1973) led a contract archaeological survey of parts of the town remains in connection with the expansion of the road networks. Other small-scale surveys then followed in the subsequent decades. Then, in 2013-2017, the largest archaeological excavation ever undertaken in west Sweden was conducted,[2] which has profoundly changed the knowledge of the site/town (Öbrink and Rosén 2017).

Gothenburg

The people in Nya Lödöse were forced to move when a new town, Gothenburg, was founded 4 km to the west, in 1621 even closer to the estuary of the river Göta. Therefore, it is more than likely that many of the urbanites dismantled their houses in Nya Lödöse and brought them with them to the new town. Thus, some houses, from the earliest phase of the town development, could in fact be the same houses in Nya Lödöse as in Gothenburg, inhabited by the same persons.

2 A joint venture contract archaeological project was formed by Rio Göteborg Natur- och Kultur Kooperativ, Arkeologerna - Statens historiska muséer, and Västarvet - Bohusläns Museum/ Lödöse Museum and Studio Västsvensk Konservering.

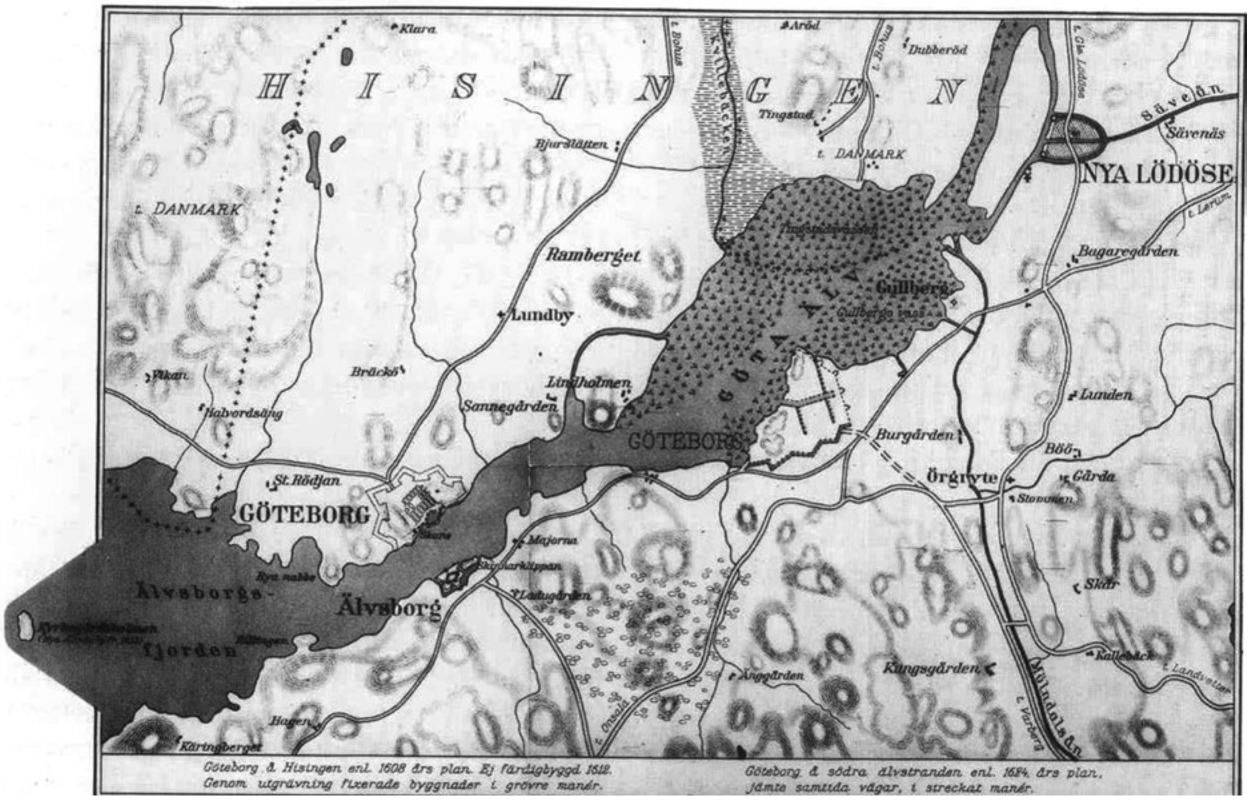


Figure 2 Map over the town formations near the estuary of the river Göta in 1624 (Lilienberg 1928).

King Gustav II Adolf recognized the importance of the site for Sweden with its location by the river and connection to the sea. He decided that after the Danes repeated attacks on Nya Lödöse, *Älvsborgsstaden* and Karl IX's *Göteborg*, both short-lived and more or less failed town formations in the immediate surroundings; it was time for a modern fortified city on a new site i.e. Gothenburg was in the making. On the map *Figure 2* Karl the IX's Gothenburg/ Göteborg is situated opposite Älvsborgstaden, while the newly founded Gothenburg/ Göteborg is located a bit up river on the same side as Älvsborgsstaden and Nya Lödöse.

In the previous town foundations in the estuary, the citizens had moved in first and then been asked/urged to finance and build fortifications, something, which they seemed to have been very reluctant to do in spite of the constant fear of attacks. When founding Gothenburg, lessons had been learned and a modern, state of the art, system of fortifications and canal system were built first and then the populace was invited to move in and to construct their houses.

This is a rare drawing, by Pehr Hector Loffman,[3] of Gothenburg in the 17th century Figure *3*. Very few depictions exist of Gothenburg from the town's early years. Loffman was called *'Architecteur Civil'* at his father's funeral service. The image has been drawn from the location of what is nowadays called *Kungsparken* (the King's Park), a park just south of the moat. The drawing favours information rather than a correct perspective, depicting the moat, fortification and city gates with soldiers on guard. One of the outcrops within the city walls, *Stora Otterhällan*, is covered with trees, historic accounts tells us it was an oak wood (Cederbourg 1739; Scheele and Simonsen 1999). There are ships and smaller vessels on the river Göta, and people traveling on foot or by cart on roads leading into the city from the north, south and west. Immediately to the west the suburb, Haga, can be seen with its houses and gardens. The artist has been helpful, leaving a numbered list with houses and important features of the town. The cathedral and the German church both have different towers than today. The generically pictured residential buildings seem to be quite low, with chimneys. A few houses are both larger and higher, with two chimneys. A brickworks are found in the foreground, outside the city gates.

The city of Gothenburg was a very good example of a new town formation Figure *4* from the early 17th century, with a regular street grid around a Dutch style canal system within the city walls. It was a new kind of town built to meet a Europe of unrest and new ways of conducting war with gunpowder. It was built with the help of both Dutch and German technology

[3] Ed. Östen Dahl 2007-09-20, Kv. Biskopen 1.32 ,by Olga Dahl. www.gbgstomter.se (2019-07-18), The drawing can be found in the database Alvin through the University Library at Uppsala.

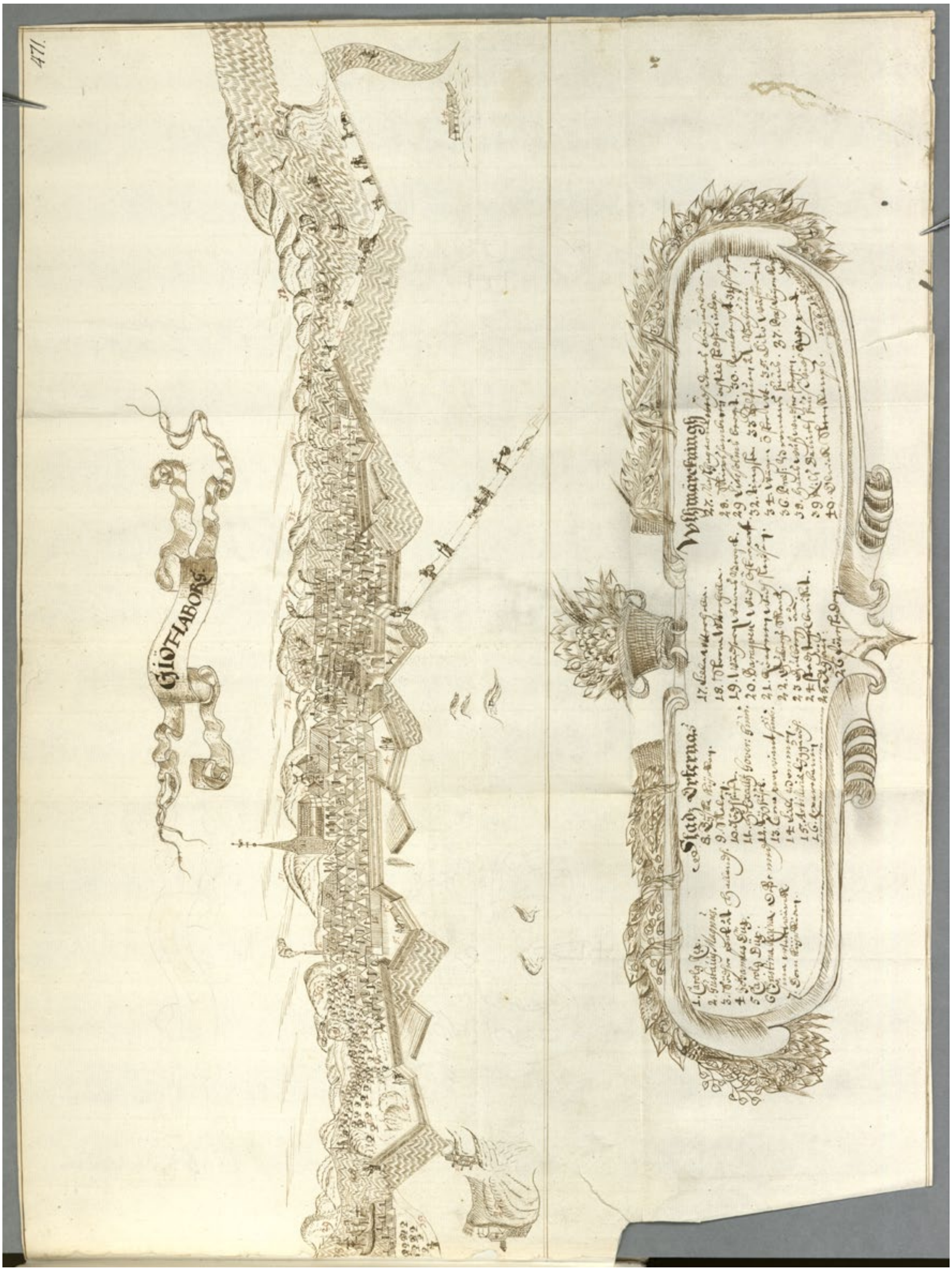


Figure 3 A depiction of Gothenburg from the 17th century. One of the few that exist. By Peter Hector Loffman. Stored at Uppsala Universitet. No known copyright.

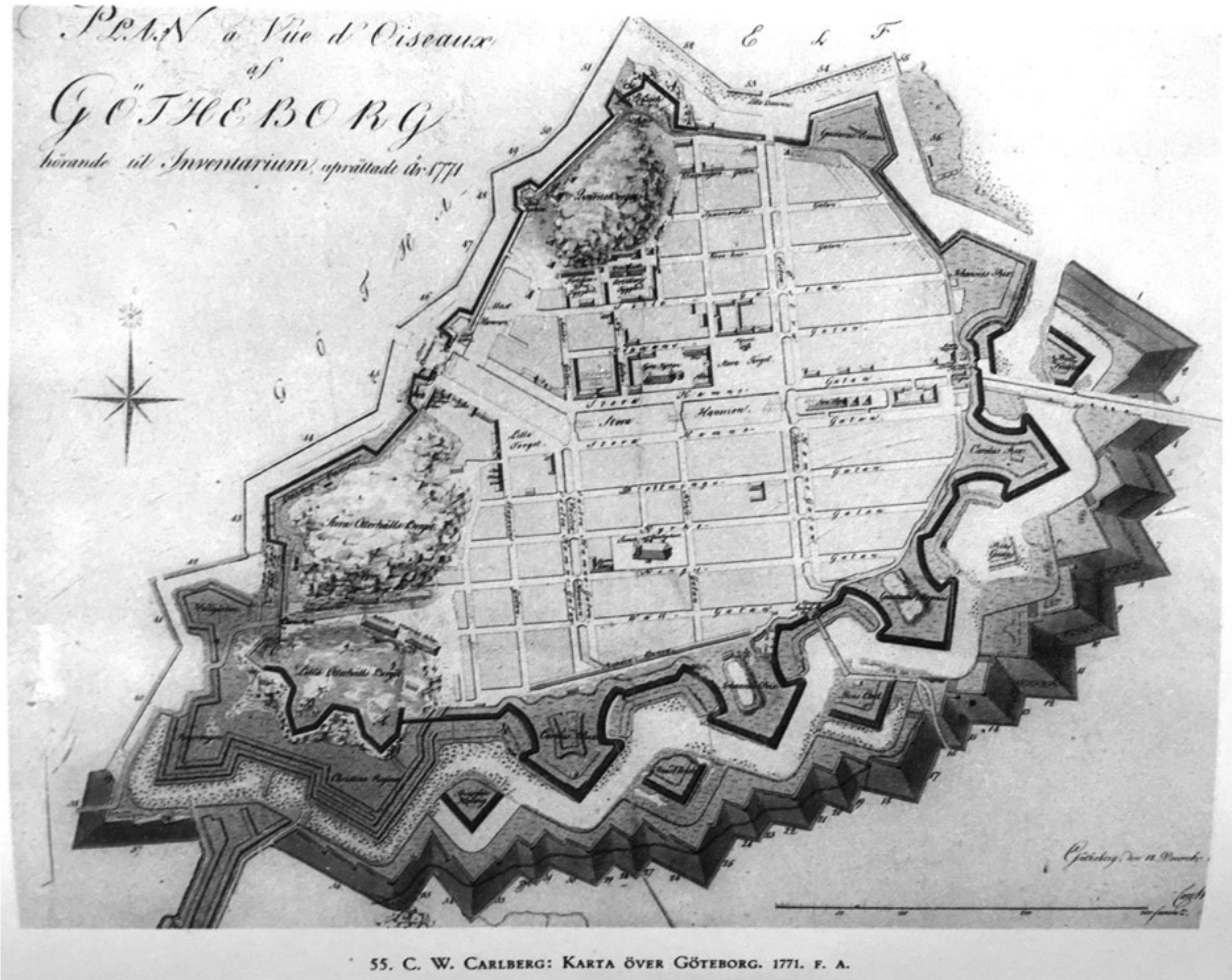


Figure 4 A city plan of Gothenburg in 1771 drawn by Carl Wilhelm Carlberg.

and workforce. The harbour town had always had a multicultural base of people from around north-western Europe with a Dutch, German, Scottish and English presence, which helped Gothenburg to thrive over the centuries.

There has been an early interest in archaeology in Gothenburg, both for prehistoric as well as historic sites, since the end of the 19th century and on. The scope of most research has favoured the early modern period, due to the lack of a medieval past. Nonetheless, there has been much interest in the rather large number of attempted city formations in the immediate area inside and outside of the Swedish realm during the medieval-early modern period.

Within the city fortifications, the oldest building layers are from *c.* 1619 when construction of the foundations and the canals were commenced. Archaeology have been sporadically undertaken within the city walls since the beginning of the 20th century but it was during the big city reordering and demolition programmes throughout the 1960s and 70s that archaeology gained more traction within the city council and more structured contract archaeology came into play (Ersgård 2013). The town has largely been built on clay and peat, which has been fortuitous when it comes to the conservation of organic materials. It means that archaeological remains of building materials such as wood is very often in good condition (Nyborg 1986: 118–21). Yet, the quality of the surveys, their documentation and prioritising, has varied a lot over the decades.

Jönköping old town and new town

Jönköping Old Town, or West Jönköping received its town privileges in 1284 and acted as a successful border town towards Denmark, guarding a gateway to Sweden so to speak. It is situated on the southern shores of lake Vättern and believed to have emerged at a crossing point on a nearby stream, a place where people naturally gathered (Claesson 1993). Workshops such as smithies, iron pot foundries and crafts in bone and horn dating from the medieval period have been found during archaeological work beneath the modern town (Jansson 1999).

The Danes were spotted en route to sack Jönköping, in 1612, so the Swedes took the difficult decision to burn down their own town. After the Danes had passed, it was decided to reinforce the castle in accordance with the latest in fortifications technology and build a new walled town immediately to the east, in a location easier to defend (Ahlberg 2014).

Conversely, the old town area was never completely abandoned after the town relocation but was used, perhaps in defiance of government ordinances, to build and live on account of the land being drier as seen in Figure 3 in Chapter 4.

The hiatus and rebooting – of Jönköping

In 1612, after the old town to the west was deliberately burnt to the ground, a new town, East Jönköping, was founded on the other side of the castle/fortress. The land was marshy and difficult to build on, except for the bank of sand where the wealthier grabbed plots; however, the new site was easier to defend (Nordman 2014). In this case all the houses on the west side were lost to the fire so mass-production of prefabricated buildings, including houses, most likely log-built, must have been organized shortly after to house the urban population on the new site. The canal system was only partially realized within the town area. The city grew to be a very important contributor to the war effort with gun foundries and cloth production as its main source of income, with a skilled workforce partly recruited from outside Sweden, foremost from Belgium and Germany. There were massive fortifications planned to circumscribe the whole town, but were never realised after the peace treaty was signed with Denmark in 1658, changing the border making Jönköping an inland town in the centre of Sweden Figure 5.

Jönköping was heavily hit by the city's demolition programme during the 1960s and 70s and lost a very big part of the historic building stock. At the same time or soon after, rescue archaeological excavations began in connection with demolition and construction projects in the town. Large parts of Jönköping have been investigated archaeologically and much is known about the city formation, its building stock and plot system from the medieval as well as the early modern period (Stibéus and Tagesson 2008).

Archaeologically, the Old Town, or west Jönköping (1284-1612), is known for its many deep, medieval stone cellars constructed with drystone walls and spiral steps providing access into the cellar itself (Nordman 2010; Nilsson and Kallerskog 2008; Jansson 1999; Varenius 2008). However, the ground is very dry and not ideal for the preservation of organic materials, thus no timber have been found that can identify with any certainty what kind of building techniques were used in west Jönköping.

Figure 5 0424:056:015 Jönköping, the fortification. [on the back side]: Plan and situation with design of Jönköping, 17th century, Krigsarkivet.

Figure 6 West and East Jönköping (Nilsen 2013: 72) by Rich Potter. The blue field is the Old town or West Jönköping, the pink field is the location of the former fortification and the green field is the New town or East Jönköping.

The fortified castle with a moat was geographically located between the two historic town formations, as illustrated in Figure 6.

The early modern town, east Jönköping (1612 onwards), has seen many comprehensive surveys involving a large part of the historic town area. The eastern part of Jönköping will be the scope of this study. Organic materials have been better preserved on the east side; especially the system of timberwork underpinning the town, consisting of gabions and box revetments that the town to a large extend rests on, and which are deeply inserted in the swampy ground (Nordman 2014). However, the building remains closer to the surface have been more unevenly preserved, often leaving only the stone foundation to reflect upon. Archaeologist have a very good understanding of the historic town grid and burgage plot system in Jönköping. There were various town plans produced during the early modern period in relation to the formation and fortification of Jönköping, but many of those plans were never realized (Nilsen 2013) as seen in *Figure 5*. The city wall/fortifications and the new town were originally ambitiously planned but had to be heavily downscaled when the border to Denmark was moved to the coast of Halland. The downscaling has been confirmed by archaeological investigations (Nordman 2014).

Falun

The urbanization of the area and the town's origins are due to the exploitation of the copper deposits near Tiskasjöberg. A letter concerning the proceeds of the mine to Bishop Peters shows the mine was already in use in 1288. The area has been a place for mining since prehistory but production was systemized and increased in the 13th century (Wehlin et al. 2018: 7). The site was slowly urbanized with the workers of the mine settling and building a community, while also functioning as a *thingstead* – a Scandinavian assembly place during the Viking and early medieval periods. The king had property there and eventually set market days (Ersgård 2013: 41; Wehlin 2018: 7, 11). In 1641 town privileges were in place, after a couple of previous failed attempts, and a city plan proposal followed suit five years later (Sahlström 1961: 19). An earlier city plan from 1624 *Figure 9* had a very regularised town grid, in accordance with the principles of ideal town planning, with a surrounding fortification. Yet, the 1624 town plan made no concessions for topographical obstacles for the grid, thus the plan was never implemented (Sahlström 1961: 18). The town plan was planned to be laid out on a largely green field site, that would also have meant obliterating an older way of organizing and shaping the townscape (Råberg 1987: 41). At its height, Falun was deemed the second largest town in Sweden. Still, the

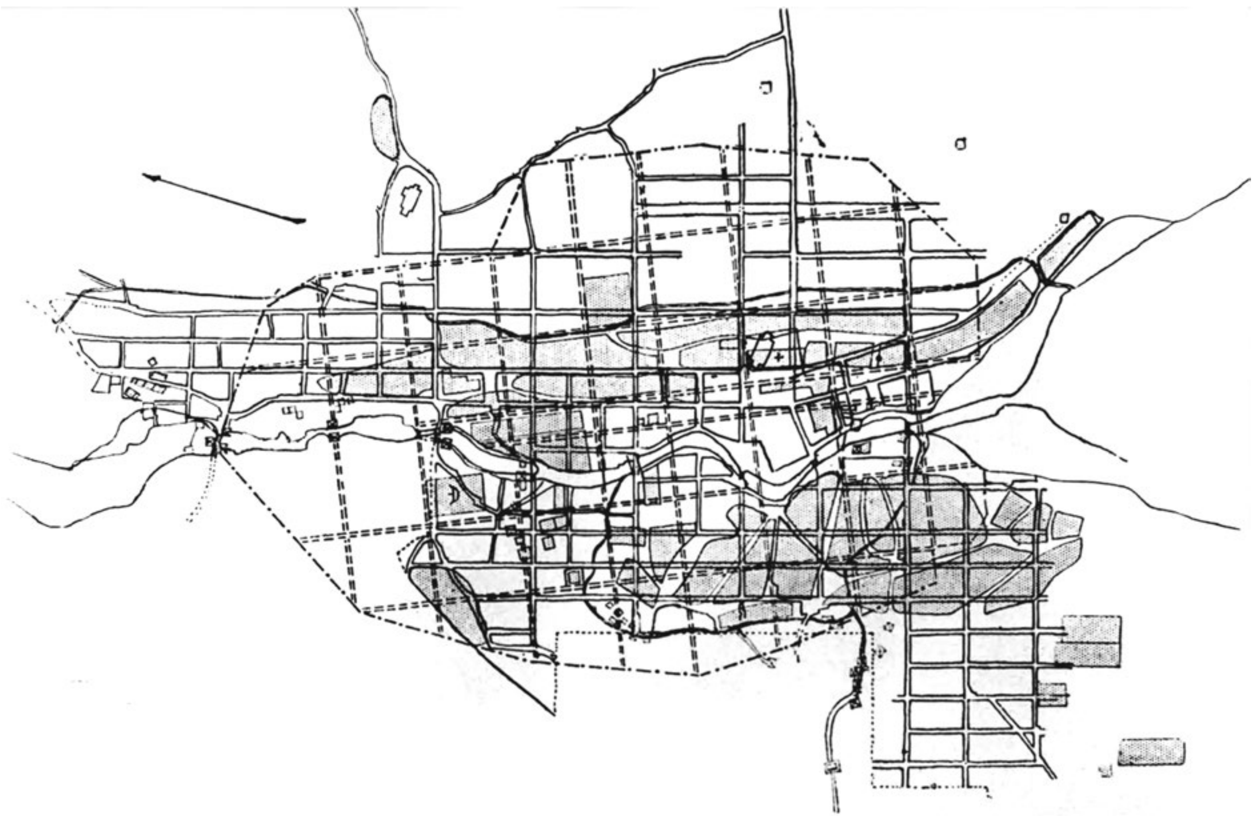


Figure 7 The oldest map of Falun, drawn in 1628. Svenska planteboken, Riksarkivet. (Wehlin et al. 2018: 14)

steady increase in population suddenly came to a stop and only half the city as planned came to be; moreover, the fortification was never realized either (Wehlin et al. 2018: 13). Because of the mine, the town initially grew in a Klondike manner and expanded its demographic to become one of the densest, as well as being one of the most important towns in Sweden during the 17th century. Conversely, it then quickly declined in size and importance during the 18th century when the demand for copper diminished. Before regulating the town in 1646, houses were placed in a more unorderly fashion with plots of various sizes, as shown in Figure 7.

After a number of devastating town fires in 1761 the town lost 350 houses on both sides of the river, resulting in a great loss of the older urban building stock (Wehlin et al. 2018: 17). This has had a profound impact on the number of preserved houses in Falun that predate 1761.

Of particular consequence, when it comes to Falun, is of course the mine, known as the Great Pit, which has had a deep impact on the environment and surrounding landscape. It has also had an unequivocally important position in Sweden's economy and export over the centuries. One by-product of copper production was the red paint (Wehlin et al. 2018: 20) that has coloured Swedish building stock since the 17th century and still does today. Another culturally important product to come out of Falun, in this case the cattle drive, was the *Falukorv*, a sausage made of ox-meat. The oxen's hides were used as ropes in the mine, thus a huge number of animals were driven to Falun. Their meat was made into sausages with a recipe that is still enjoyed today. It also meant that the mineworkers and their families ate more meat than the average Swede during that period. Another by-product of the mining at Falun that ought to be mentioned is slag, which existed in abundance Figure 8. The quantities of slag inspired the people of Falun to use it in all sorts of innovative ways since it was gathered in enormous piles around town. It was used ubiquitously as a foundation material to stabilize the ground under the buildings and for creating dry

Figure 8 Slag in and around Falun was a material originating from the copper mine and used in a number of ways. Photo A. Nilsen.

surfaces. Sometimes to a depth of several metres. It was also used as a building material for houses, but it never caught on outside Falun.

There is so far little archaeological evidence of the medieval town, founded in the 13th century, but ample evidence of buildings from the 15th century onwards revealing traces of the second attempt to establish a town along the river Falu. Large parts of Falun have been archaeologically investigated, with the most work done from the 1970s onwards.

Stockholm

The city was founded by Birger Jarl in the mid-13th century. Some permanent settlement has been detected before that time but the site as such would not appear to have been fully urbanized. The area around Stortorget seem to have been the locus for development at first. The city grew exponentially during the 14th century to become the largest and most important city in Sweden. It was situated most advantageously by the lake Mälaren and the Baltic Sea. Commerce benefitted from the location as well as from a string of trade agreements controlling the interregional markets and trade routes. Stockholm developed into a collection point for products coming in and out of the region. The Hanseatic League controlled a large section of the commerce from the 1300s to the 1540s (Johansson 2000: 6).

Stockholm slowly developed into a capital (Figure 10). It was early on a residence for the royal family; conversely, it was an ambulating court favouring several royal castles around the Swedish realm. The royal castle in Stockholm did not become the permanent residence of the royal household until the 17th century. The government followed the court until it too was permanently settled in Stockholm during the 17th century. The city thus started to function as a capital in the 17th century, even though it had been called a capital even earlier (Sandberg 1991: 382–84).

Stockholm initially had a building stock of largely wooden houses. In the 17th century, an increasing number of stone houses were erected in the Old Town or Stadsholmen district. A large increase in the population during the 17th century made the city expand outside its walls to include *malmarna*, the Sands, where Norrmalm grew the fastest (Sandberg 1991: 17). A rectification of the city plan was set in motion in the 17th century affecting foremost Malmarna (Ahlberg 2005). Many houses were forcibly moved, or demolished, to realise the grid plan Figure 9. There was a decree forbidding the erection of wooden buildings in the 17th century, which however, was largely ignored within the unregulated building stock in the city fringes. The law was more strictly upheld in the centre of town (Råberg 1987).

All these developments put together made the early modern period and specifically the 17th century a dynamic time for Stockholm.

Hans Hansson (1907-1972) was a very important contributor of the earlier works of urban archaeology in Stockholm. He wrote a thesis about the city walls of Stockholm (1956) and conducted several surveys in the Old Town *(Gamla stan*), the royal castle and in connection with the construction of the *Tunnelbana* (Stockholm's underground railway) (Hansson, Gyllensvärd, and Cramér 1960).

A lot of the archaeological evidence relates to seafaring, with bulwarks for wharfs and quays. Other urban features i.e. the city wall, the street and plot grid as well as the royal castle have also been given a lot of attention. The Old Town contains many palaces that belonged to the elite but also a large number of multi-unit structures for ordinary folk. Large, often medieval, vaulted cellars are other key features of the Old Town. More humble dwellings in wood have been found, foremost by the waterfront in for instance the *Slussen* area (with surveys ongoing) and on *Malmarna*. The focus of archaeological investigations was at first the oldest, that is the medieval (1200-1500s), urban parts of Stockholm but the extensive demolition programmes of the 1960-70s highlighted the importance and need to survey and research the early modern buildings and deposits, as well. There has been a mix of big and small investigations resulting in a relatively good overview of historic Stockholm.

Figure 9 A map of Stockholm around 1650, an excision of a city district. LMV: A99-1:11.

5.2 On the comforts of log timber buildings – keeping warm and movable

Log timber construction is a technique used frequently within the Swedish building stock and is rooted in our Scandinavian vernacular past. This chapter aims to address questions on the prevalence of, the construction techniques of, the use of and social dynamics for these buildings and their urban context.

Background and timeline

In Norway, log timber buildings defined a type of building, which initially could be seen as urban housing, right from the start in the 10th century. Archaeological evidence from Trondheim and Oslo shows a connection between log timber buildings, wall benches as well as wooden flooring and corner hearths (Christophersen and Nordeide 1994; Schia 1987).

Sarah Croix (2015) mentions a set of elements, within new kinds of large settlements often referred to in the literature as urban, regarding building technique, house size and plot size. These are relatively similar over Scandinavia during the Viking Age and constitutes a break with the traditional longhouses from rural settings. Birka, Ribe, Kaupang and Hedeby all had houses measuring 4-5 metres wide, 6-12 metres long, thus about 24-60 m^2 with a mixture of houses with loadbearing walls or loadbearing posts.

The log timber buildings are among early examples of houses with loadbearing walls i.e. post and plank as well as timber-framed buildings for instance. This was thus a break with the older tradition of load bearing posts as was the case in long houses. Yet, the late Iron Age longhouses contained rooms and functionalities that were very similar to the early medieval building practices, even though these functions were divided into several building units in medieval houses (Streiffert 2005: 137). Even the size of the rooms for specific functions persisted into the medieval period.

The layout of one to four rooms with a vestibule or a porch, from the original 10th-century log timber buildings, persists over time and can be found all the way up to the 19th century, continued as a general pattern through form and size (Linscott and Nilsen 2018). Log timber building can take many forms, and while several modernizations and alterations took place over the centuries, some of those forms were very old and, in fact, never went out of use.

The connection between urban settlements and log timber building was not as strong in Sweden as it was in Norway. Yet, there is some evidence of early log timber building in Sigtuna from the early 11th century (Ros 2009; Rosberg 2009), Enköping from the 12th century (Larsson et al. 2019) to mention only a few places.

Operative approach

Leaving aside the origins of log timber building, this chapter will focus on the urban, early modern (1470-1850) log-timber house. This will be a micro study to examine log-timber buildings within the burgage plot over time and in various urban settings. A comparison will be made of samples of the building stock from excavations in Stockholm, Jönköping, Gothenburg, Falun and Nya Lödöse. The sample (see Appendices 3a and 3b for detailed descriptions) is not intended for a statistical discussion but should rather be seen as an experiment in Levi's sense.

The level of *variability* within the sample data will be investigated, both in terms of use but also in layout and social connotations. The archaeological examples will be compared to preserved buildings, as well as historic images and drawings along with photographic evidence of demolished buildings to get a comprehensive view of the building stock. Another source of data is log-timber buildings mentioned in historical documents such as probate inventories, fire insurance records and magistrate's records.

Lefebvre (1991) points to the social use of buildings and spaces as production of space. To be able to discuss and compare the building material, Bedal's (1995: 19) concepts of reference levels in building archaeology will be used; room/spatial level (*Raumstruktur*) will inform on layout, the building constructional level (*Baustruktur*) of the building technique, and the social structure (*Sozialstruktur*) about who lived in these environments. Finally, the functional level (*Funktionsstruktur*) revolves around use and meaning (Lefebvre 1991; Volmer and Zimmermann 2012: 24). These are concepts that are well adapted to understand and interpret spatial, social and structured practices within the built environment.

The methodology for collection, registration and documentation has varied a lot for this type of building. This of course also counts for the dataset discussed, which has an impact on the level of detail and accuracy. Therefore, some of the reports give more information to work with than others. The reason that the documentation from Gothenburg was produced much earlier than the other investigations in the sample is due to later surveys not coming in contact with full buildings to the same extent.

I was, in fact, part of the team working on site at Nya Lödöse, and I had the privilege to add some questions regarding the survey of the buildings. A specific question I raised was of insulation layers, in consequence taking the question of heated rooms to a new level. Thanks to insulation being recorded during the excavation it was possible to address several new kinds of questions: Which rooms were heated and how do they correspond with the uninsulated rooms? What functions could be linked with insulated rooms? What materials could be identified as insulation? What building techniques could be linked to insulated and/or heated rooms? Insulation is unfortunately not a question that have been widely researched in Swedish archaeology so far.

Ideally, Stockholm should have been a part of this survey as well. Unfortunately, I have not been able to find good examples of early modern log-timber constructions from Stockholm apart from a number of wharfs and bridges. The log-timbered buildings, that I have come across, have been badly preserved, in many cases only as a row of sill stones (which could indicate any number of building techniques). Stockholm will therefore be included through preserved buildings and historical sources, and hopefully the report from the Slussen project will shed new light on the log timber building stock in Stockholm, after publication.

Log-timber construction – Glossary and method

Log-timber buildings are constructed from horizontal timbers laid one on top of the other forming a massive wall. Corner notching interlocks the timbers at the corners, which in turn can have a variety of cross sections; square, round, diamond etc. (Volmer and Zimmermann 2012: 196). A tight fit is achieved by inserted grooves on the lower side closing the gap. A warm and draft free indoor climate is thus created by inserting insulating materials within the gap i.e. clay, cloth or moss, thus, sealing the building with the weight of the timbers. One course of timbers is added at a time creating the four walls simultaneously (Volmer and Zimmermann 2012: 200). The weight of the roof is carried through purlins in the gable walls and with rafters on the long walls. This technique lends itself well for assembling and disassembling for repairs, reconstruction or moving without too much trouble (Figure 1).

Very little foundation is needed for a log timber building on dry ground; four corner pad stones suffice, even for tall buildings, like churches. Some buildings might need some sort of ventilation, which can be achieved through raising the floor on to the sill beams i.e. sheds and other storage facilities. For heated houses, a seal is placed between the four corner pad stones under the sill beams. One way of sorting that was by filling the gap with a row of small stones. Ground frost from the ground is handled through the heat seeping down through the floorboards (Sjömar 1988: 80).

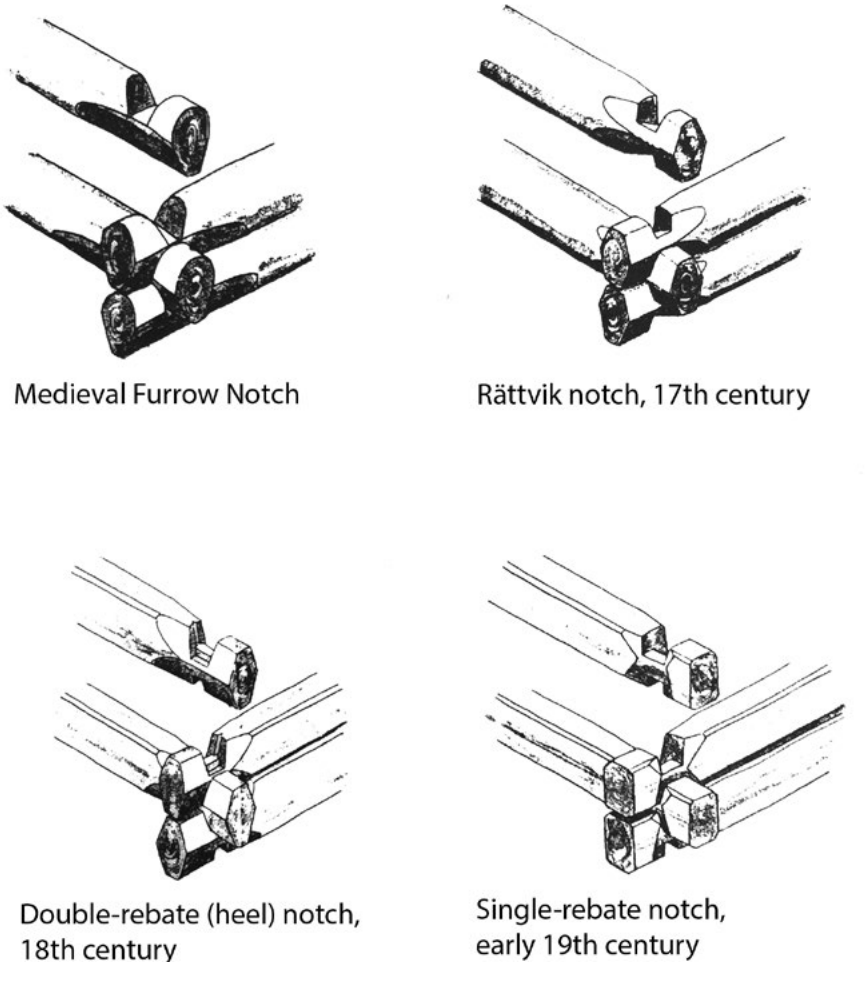


Figure 1 A sketch of corner notching methods from different centuries, with examples from the province of Dalarna related to log-timber construction. There are over a hundred different ways of shaping the corner notch with more, or less sealing properties from a viewpoint of insulation. Roland Andersson originally made the drawing, and it was part of an information board at Gammelstan in Norrboda provided by Dalarna County Administrative Board.

Heavy constructions such as fireplaces with chimneys needed a stone foundation and often some reinforcement of the ground beneath. Sjömar (1988: 80) points out that the building (wood construction) and the chimney (stone/ brick construction) might sag differently over time, hence they should preferably not be attached to each other.

Log-timber buildings in urban environments 1470-1800

The building remains of log-timber buildings from archaeological surveys will be discussed from a number of themes. These will regard layouts, functions/uses, the use of windows and chimneys, house measurements (external measurements), the number of rooms and the number of storeys as well as strategies for insulation. The sample - archaeological remains and dating

The sample consists of, examines and compares 42 archaeological remains of log-timber buildings from the towns Nya Lödöse, Gothenburg, Jönköping and Falun. The aim is to look for similarities and differences over time. For a description of the individual town histories and the excavation histories, see Chapter 5.1. *For closer building descriptions, see Appendices 3a and 3b.*

The investigations at Nya Lödöse and Västra Falun were recently conducted, and thus they use somewhat more current archaeological technology and science. The older investigations operated with a different set of resources. It is important to realize that my sampling, of course, only gives a glimpse at urban life and not the whole picture.

Layouts of urban log-timber buildings

A few terms particular for Swedish archaeology is explained in *Table 1*. To understand the building parts uncovered archaeologically and to be able to connect them to relevant parts of preserved buildings this survey is directed towards investigating basic modules. This is also a deliberate way of not using building 'types' as reference, and although discussing types can help identify similarities, it sometimes leads to ignoring diversity. To get around this problem, grammatical structural transformation (Chomsky 1965) is used to examine the individual parts before conclusions are made of the whole structure, which also goes hand in hand with a micro archaeological approach.

Basic modules

A basic module or unit is recognizable through internal access, if it is possible to move from one room to the next without exiting the building and if the walls are solid i.e. built with the same timbers. On the other hand, if the walls have been pieced together, it would most likely mean two units have been joined, usually visible in the vestibule or between floor levels (Figure 2).

The back streets of Gothenburg display a repetitive house pattern before the fire of 1669. The typical residential house (Andersson et al. 1986) had an entrance from the long side into a porch/vestibule, sometimes divided into two rooms with one storage room and one vestibule (Figure 3). From there, there was an entrance to the main room called '*stuga*' in Swedish, perhaps best rendered as 'parlour' in English, which I propose to use. The entrance was usually situated next to the corner fireplace. Sometimes the floor by

Table 1 Terms and explanations

A point of clarification: archaeological objects and remains are named in different ways or systems for each individual contract archaeological project. This is due to diverse systems of documentation; archaeological firms/museums might choose different approaches.
In the Nya Lödöse project a building named 1:1:1 indicates (plot 1. house 1, phase 1). This was a very big site with a complex stratigraphy.
The smaller site, in the Kv. Dovhjorten in Jönköping, had another system calling a building KG 24 for example meaning feature 24.
The measurements mentioned are all collected from the various archaeological projects thus the level of accuracy might differ between them due to preservation status or of other reasons i.e. 3m, 3.27m or 3.2m.
The term porch is used for an external open/or closed entrance
The term vestibule is used for an internal entrance and hallway.

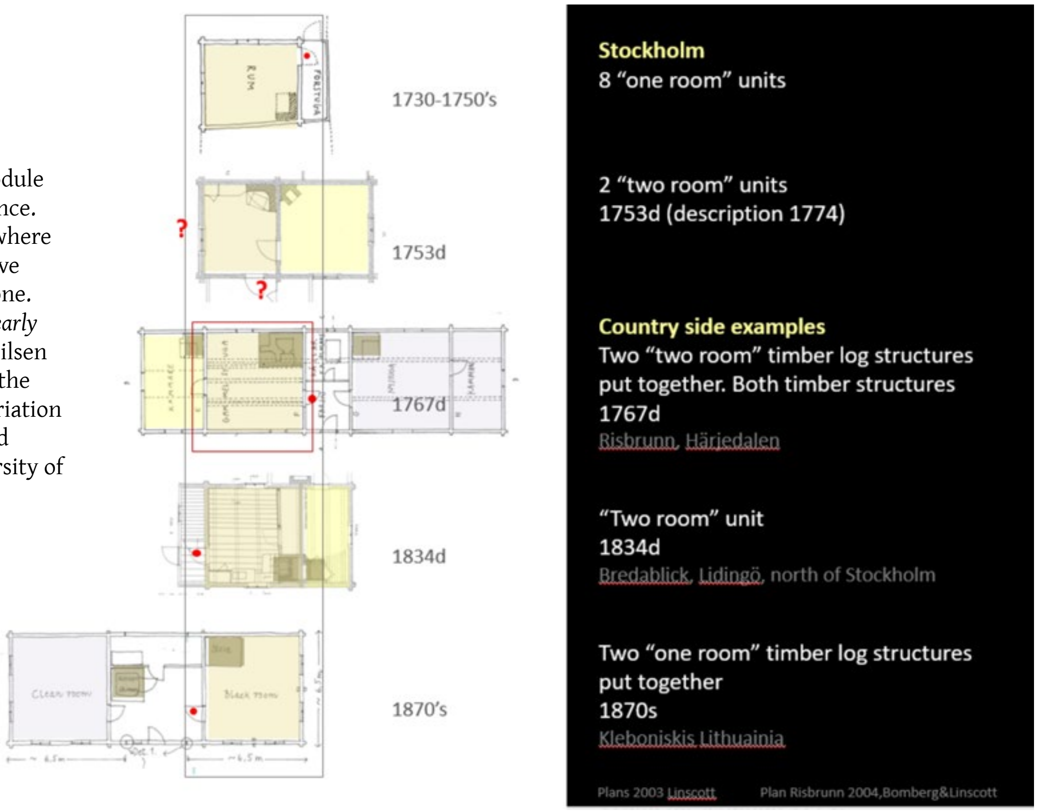


Figure 2 The basic module or single room residence. The second module, where two basic modules have been constructed as one. From '*Wood houses in early modern urban areas*' (Nilsen and Linscott 2013) in the conference Urban Variation – utopia, planning and practice at the University of Gothenburg.

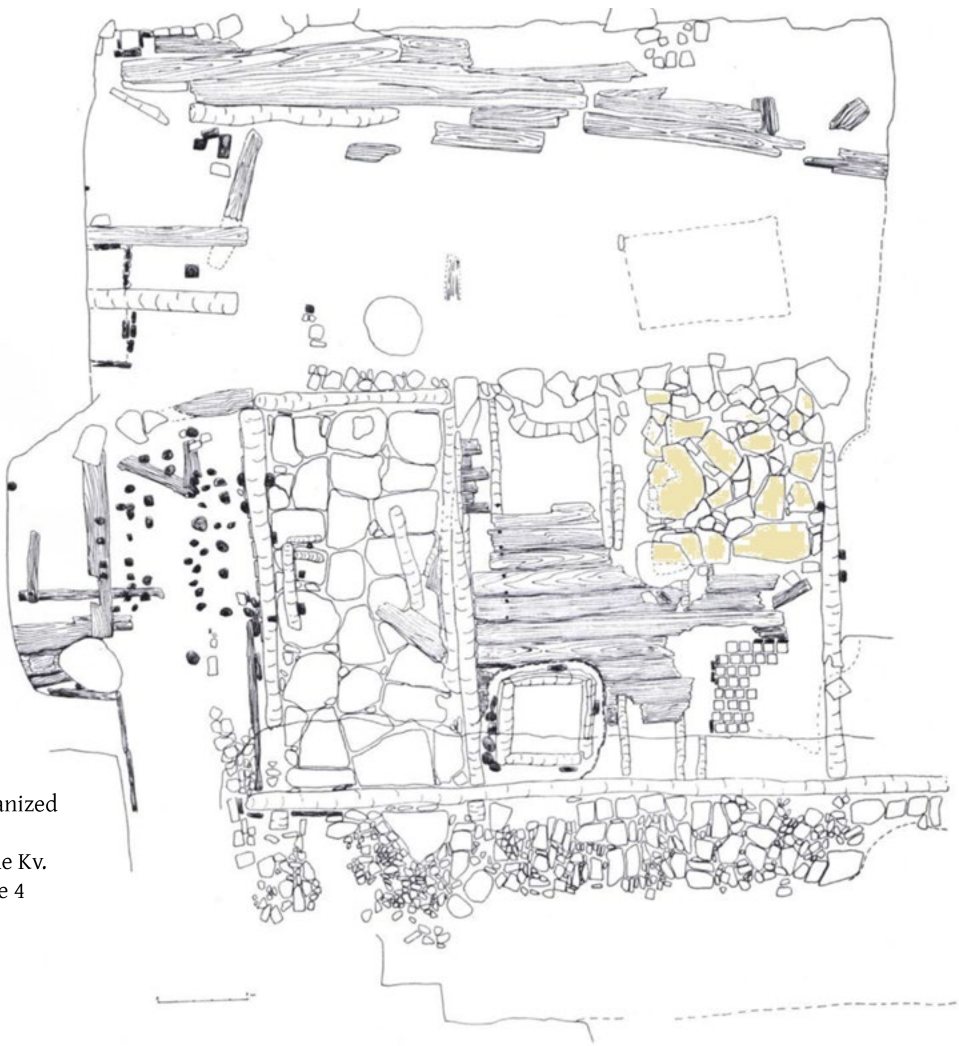


Figure 3 These are rooms organized in a single file with a corner fireplace coloured beige, in the Kv. Gamla Teatern, House 1, phase 4 Gothenburg (Jeffrey 1984).

the entry was strengthened by the use of tile or stone. These two to three rooms make up a basic module often identifiable by the use of the same timbers on the side walls (Linscott and Nilsen 2018). Sometimes a chamber with a wooden floor was added next to the parlour, with an internal entrance to the room.

Another basic module could be added on the opposite side of the vestibule, thus enlarging it by piecing out the timbers in the walls of the vestibule (shown in Figure 2 in the example from 1767 and 1870s). This would also add another parlour, heated or unheated depending on use. Sometimes, this was either used as a separate accommodation/flat, or the whole building could be used for one household.

The log-timbered residential house had a type of floor plan known from the late Viking age and onwards, from first urban and then also rural settings (Croix 2015; Linscott and Nilsen 2018). It is, however, interesting that a similar way of building and organising the living environment persists over time and space in such a repetitive manner. Similar floor plans were found in Nya Lödöse, Jönköping and Falun as well.

Tagesson (2019: 14) talks about single file floor plans and double file floor plans where he studies layouts with rooms in a single row, or rooms in a double row, thus a layout two rooms deep (as displayed in Chapter 6.2).

While I have focused on the centrally placed stack which it is possible to walk around from one room to the next in a circular motion through connecting doors in the double floor plan. The archaeological data from this survey has only given examples of single file layouts, and in the typical row of houses, this type of layout becomes even more distinct. The main building from *Kv. Dalpilen* may have been an example of a house with a double file layout, because of it being wider than the surrounding buildings with single file rooms. The internal layout was not sufficiently preserved to draw a definitive conclusion.

The row of houses

When outhouses were attached to the residence or rather placed in immediate proximity, it formed a row of buildings. The outhouses are most commonly identified in terms of archaeological data by their having had separate entrances, a mix of floor constructions and through archaeobotanical sampling. The outhouses could also be constructed in more than one floor level.

When comparing a row of houses from KG 24 phase 2:3 from the 1630s in Jönköping,[1] with 1:2:1 in Nya Lödöse

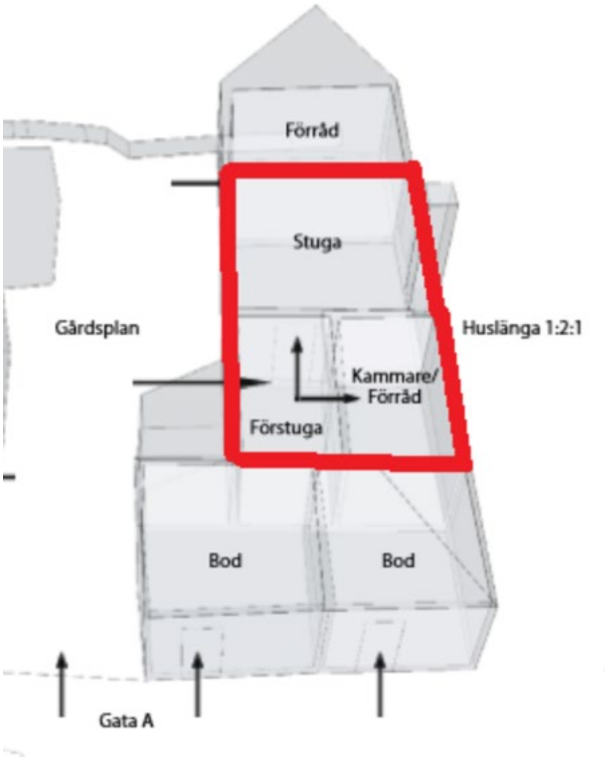


Figure 4 Layouts of 1:2:1 Nya Lödöse (Öbrink and Rosén 2017:129). Bod translates to shop, Förstuga – vestibule, Kammare/Förråd – Chamber/ storage, Stuga- parlour, Gårdsplan – courtyard, Gata – street.

from the 1480s-1540s, the following functions/rooms have been identified:

1:2:1 Nya Lödöse

Two shops were located facing onto the street, with their entrance from the street front (Figure 5). Behind the shops inside the courtyard the row of houses continued with the residence, made up by the vestibule divided into two rooms with one room probably used as a larder or as storage. There was another small room by the entrance, maybe another storage facility. From the vestibule there is an internal door leading into the main room or parlour, next to the fireplace. Finally, the last room/building in the row was a storage room, perhaps with a separate entrance. Thus, it is possible to see this row of houses as three modules attached to each other; the shops, the dwelling and the storage room. They could just as easily be detached and form individual bodies without losing their intended purposes.

KG 24, phase 2:3, Kv. Dovhjorten, Jönköping

This row of houses has five different units or modules; a storage room or possibly a servants' quarters (thus a dwelling), a smithy, a kitchen, a larder and a privy.

[1] KG 24 is the name or identifying number of one set of building remains in Kv. Dovhjorten. in Jönköping.

Figure 5 KG 24 in Kv. Dovhjorten in Jönköping (Bramstång Plura et al. 2012:36).

Again, these modules do not depend on each other but are placed together for space saving purposes only.

The core of the row of houses is the earlier mentioned basic module i.e. the construction with one main room or parlour with a corner fireplace and a vestibule with a storage room attached. The entrance to the parlour went through the vestibule and was usually placed at the gable end of the room, next to the fireplace. The basic module could be either found in all the investigated building remains, as detached buildings or integrated into a row of buildings.

One interesting aspect in identifying a function is through, the use of, the unheated, but often insulated, vestibule as a sort of lock *(Sw. sluss)* before entering the parlour, which was heated (Figure 4). A vestibule is thus a strong marker for a residence. This kind of double door entry to heated rooms persists into modern times. Next to the dwelling, there was a smithy with a corner fireplace in the southeast corner. The position of the fireplace might indicate that the entrance to the room gave an exit straight from the outdoors, accordingly not through a vestibule. The same goes for the next unit/room, the kitchen, also most likely had an exit without a vestibule. According to the report, there was a doorway in the south wall, into the next room, which seems to have functioned as a storage room or larder for victuals. If the corner fireplace in the kitchen had been placed at the southeast end of the room as opposed to the northwest side, the larder would have looked more like part of a vestibule. My hypothesis is that direct entry from the outside to a room indicates some kind of working environment rather than a dwelling, whereas the presence of a vestibule is a strong marker for a residence.

Once the basic module was in place other rooms could be added, according to the individual needs of the owner/user. However, within this material the variability has been somewhat limited when it comes to layouts. There were rooms added but not in a way that radically changed the layout. An added chamber or storage rooms have not altered the depth of the room structure or changed the general complexity of the residence. The separation of kitchen and parlour have not been seen in this material, apart from in the row of houses, Kv. Dovhjorten KG 24 and the Kv. Dalpilen, where the separate kitchens have been interpreted as units in place for feeding the workforce.

To complicate matters a bit let us take a look at 3:8:1 (Figure 6) and 4:3:1 (Figure 7) from Nya Lödöse (Figure 7). In both buildings, there was room A, which was the parlour, then rooms B and C, which could be interpreted as the usual vestibule and storage/larder. Then there were additional rooms D and E, which are more confusing. Room E, is a small room roughly the size of room C, and room D was an equivalent to room B. Could it be an additional chamber/bedroom, unheated by the looks of it, with a separate vestibule? Perhaps quarters for servants?

Practice and variability - in social space and production

The variability is mostly visible in the wide range of functions, and specially adapted buildings to accommodate certain purposes, Expressed in terms of heated/unheated spaces, insulated/uninsulated rooms, fireplaces, intended workspaces for specialists, buildings for storage and for animal husbandry as well as living accommodations, and let us not forget the privy. Another way of looking at variability is by addressing purpose in a different way: similar building techniques were indiscriminately used for privies, living accommodations for people and animals, for working, storage and commerce. Corner notching was certainly an all-around technique that was well fitted to early modern society.

It is, however, also important to point out that not all the buildings were placed in a row. Some were built as detached buildings, and remained so over time, thus forming the internal building environment of the courtyard and the burgage plot. A few detached houses come through in this chapter but they will be more closely discussed in Chapter 6.2.

All the houses in this survey except for the main building in Kv. Dalpilen, from Falun, had their gables towards the street. The oldest material, here represented by Nya Lödöse, had the residence placed in the mid-section of the plot with shops closest to the street. It is a bit more unclear if that pattern persisted or if the residence was placed closest to the street, in the data from Gothenburg. The uncertainty comes from un-excavated parts of the buildings, protruding into the current streets, which might change what we know so far.

Functions/uses of urban log-timber buildings 1470-1800

The sample includes 42 buildings analysed from four Swedish towns Table 2. Fewer samples were collected for analysis i.e. phosphates, dendrochronology, archaeobotany and so forth from the older (that is 1970-80s) investigations. Thus, the individual use of each building was not discussed in any detail, apart from the buildings with a fireplace. The functions identified showed a sample of urban practices within burgage plots in the past. There were spaces for people, animals, living, storage and commerce, as well as for work. It also gives evidence of the diverse use of log-timber buildings in urban environments. At the same time this is a very crude distinction; there were a whole range of other activities going on at these places that does not show up as evidence in the archaeological material.

These are evidence of a wide range of functions/uses and there are complex backgrounds to most of these. To give one example of the general background of taverns or public houses in Falun - a dispute from 1654 15/1 was about officials attributing a poor character to people living close to the mine in Falun,[2] calling them bad elements and complaining about illegal taverns and beer distribution at the sheds of the miners.[3] Conversely, there was centralisation and monopolisation of the taverns at the mine (Sahlström 1961: 32–33) suggesting a financial reason behind the complaints of the miners, rather than a social one. Jumping ahead in time to the 1760s there were 16 main taverns in Falun and another 60 or so minor ones (often connected to the livelihood of widows of miners) (Hülphers 1762: 265). This number should be seen in the light of the total number of citizens that came to 6904 in 1760 (Hülphers 1762: 261) which would give 1 tavern for every 90 persons (including children), which indicates a rather high alcohol consumption in Falun at this time.

[2] Sahlström used information from *Lysningsakter* (Bergslagets arkiv)
[3] More info in K.G. Hildebrand page 377 ff

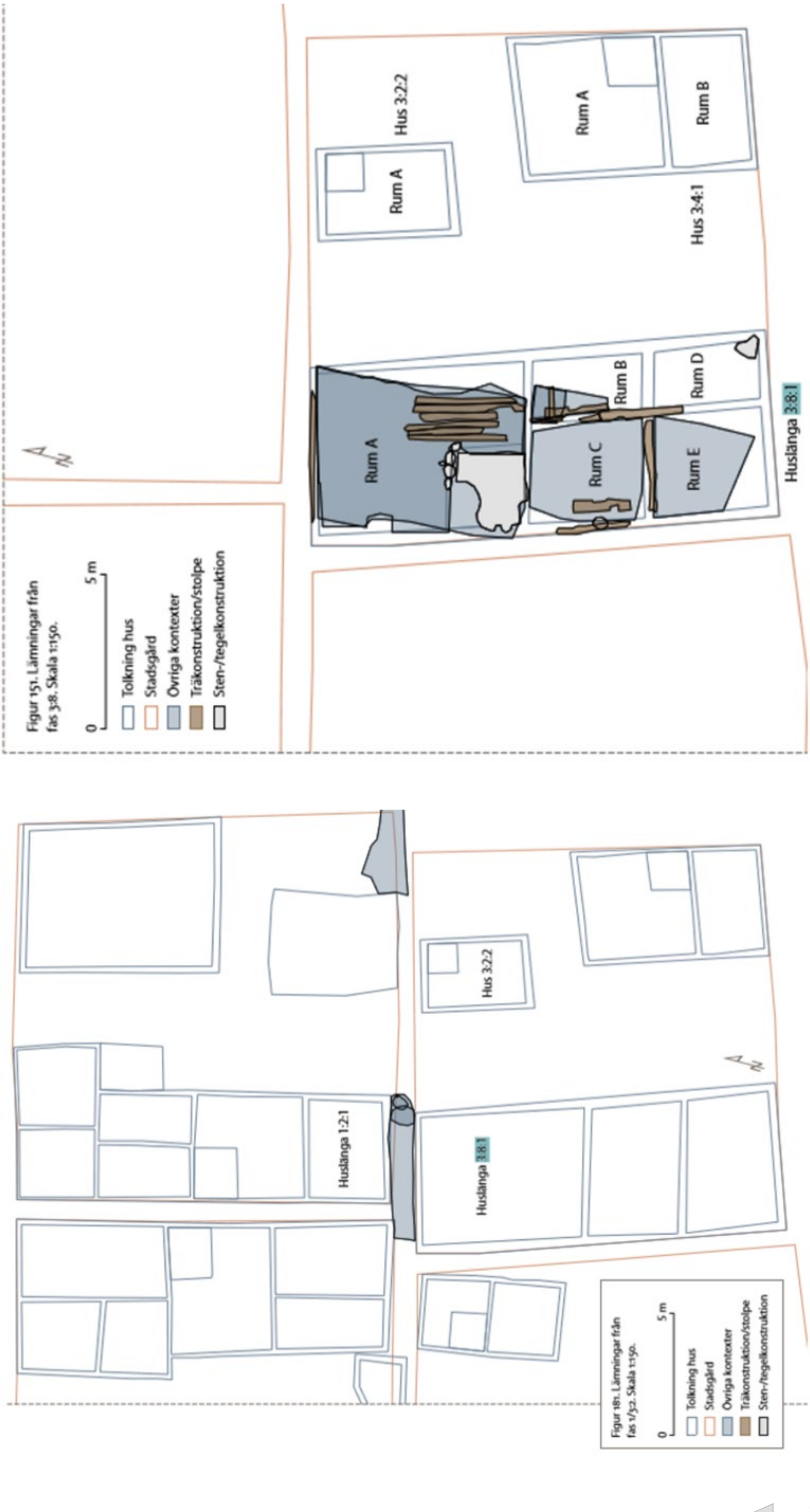


Figure 6 Layouts of 3:8:1 in Nya Lödöse (Öbrink and Rosén 2017: 51, 260)

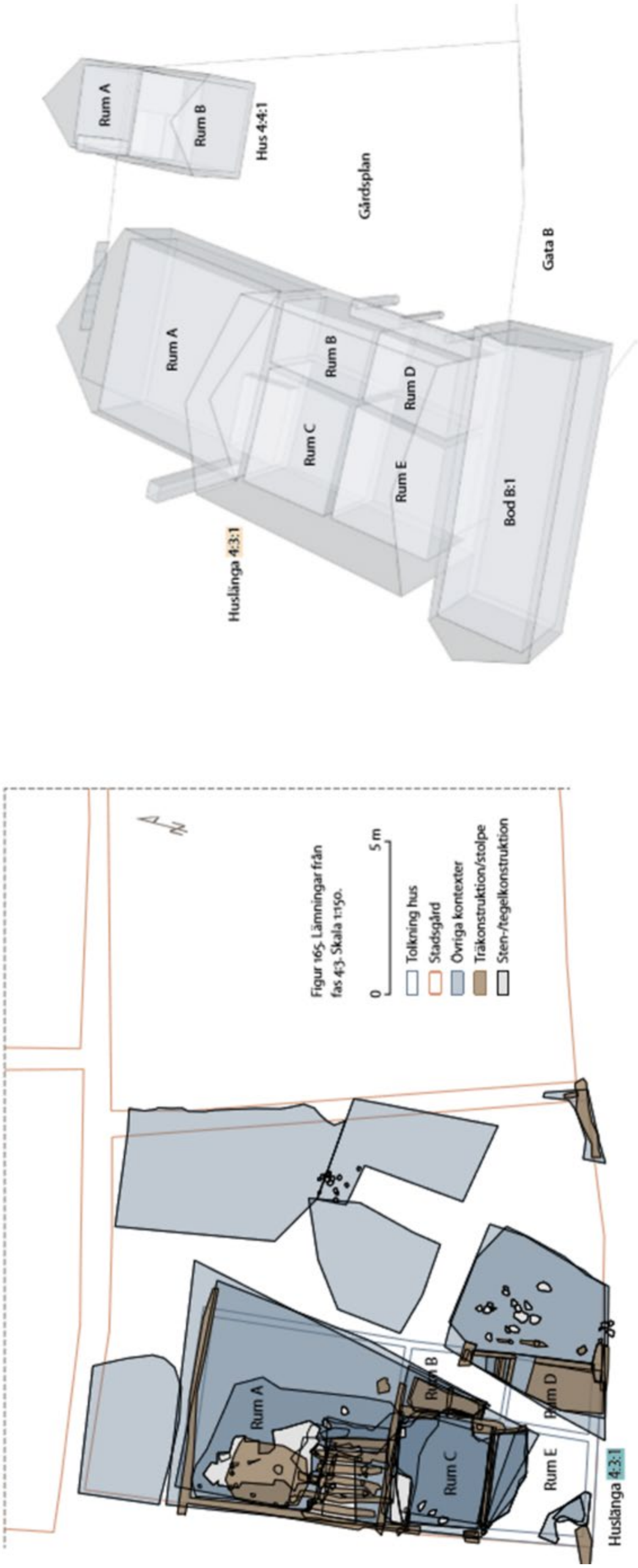


Figure 7 Layout of 4:3:1, Nya Lödöse (Öbrink and Rosén 2017: 51, 260)

Table 2 Function/uses of urban log-timber buildings 1470-1800. Some had more than one function, often residence and something more. The table is based on data from archaeological reports (Appendix 3a and 3b).

Function	Nya Lödöse/ 8 buildings/ 1470-1624	Gothenburg/ 20 buildings/ 1620-1669	Jönköping/ New town/ 5 buildings/ 1640-1800	Falun/ 1 building/ 1670s
Residence	4 + (1)	10		1
Pig sty	1			
Stable	1			
Byre	1	5?	2	
Storage/larder	6			(1)
Workshop	2			
Chamber/ porch	1			
Shop/ chamber	1			
Shop/ workshop	6			
Storage/ chamber	1			
Storage/ shop	1			
Workshop/residence?		3	2	
Woodshed			1	
Unestablished?		2		

Table 3 Number of rooms within the log-timber building stock in the archaeological sample detailed in Appendix 3a and 3b.

Number of rooms	1	2	3	4	5	6	7	8
Nya Lödöse/ 8 buildings/ 1470-1624	2	1	1 (1)	-	4	1	-	-
Gothenburg /20 buildings/1620-1669	1	12	2 (1)	4	-	-	-	-
Jönköping/ New town/ 5 buildings/1640-1800	2 (2)	-	1	2	-	-	-	-
Falun/ 1 building/1670s	-	-	-	-	-	-	-	1

Number of rooms

Another interesting factor of comparison from a time perspective is the number of rooms that the urban log buildings contained *Table 3.* As demonstrated through this figure, one-room buildings were common, often functioning as outhouses of some sort or other. The two-room building seems particularly typical in Gothenburg, but that is probably only half the truth since many of those buildings were not fully excavated. Three-room buildings had yet another common layout; the number in brackets is for additional buildings that might have had the third room, which was not conclusively determined. Four-room buildings are not present in the material from Nya Lödöse, but could be found in Gothenburg and Jönköping. Yet, in Nya Lödöse there are quite a few five-room buildings, as well as one with six rooms indicating a row of houses rather than a detached house. Ideally, the number of rooms should be counted for the individual house, rather than the total number of rooms in the row. There could also be rooms on additional floor levels. Sometimes the room division and the division of bodies of houses can be hard to determine, since the quality of the building remains might differ greatly from site to site. Thus, this table is to be taken as a possible interpretation and not as definitive proof.

Number of storeys

The 42 buildings discussed all had one storey, of course, and three buildings had some remnant construction parts that might have indicated a first floor *Table 4.* Three houses had possible traces of external stairs and one had remnants of a balcony. More houses most likely had a first floor, the trouble is finding the traces archaeologically, and it is something that will be further addressed in Chapter 6.1 in this volume.

Table 4 Number of storeys in the archaeological sample detailed in Appendix 3a and 3b.

Number of storeys	1	2
Nya Lödöse/ 8 buildings/ 1470-1624	5	(1)
Gothenburg /20 buildings/1620-1669	20	-
Jönköping/ New town/ 5 buildings/1640-1800	4	(1)
Falun/ 1 building/ 1670s		(1)

Measurements of houses

A pattern can be seen in spite of all buildings not being completely investigated. The measurements are more certain when it comes to the width than the length *Table 5.* The length, however, indicates the difference between small, sometimes one-room buildings i.e. privies, woodsheds or byres, and the multifunctional row of houses that emerged on urban plots, the largest one from the 1700s. Conversely, the row of houses makes the length of individual buildings difficult to establish. The smallest width measurements probably reflect small buildings such as privies or woodsheds. When the measurements come up to 4-5m in width that would indicate an actual house/dwelling of 'normal' size. Log-timber buildings also quite often follow the limitations/possibilities and geometry of the material, in this case the natural length of the pine/spruce log, c. 8m. The width also reflects the maximum weight of the roof that the timber walls could hold without creating a need for further reinforcement, such as loadbearing inner walls. Unwin (1997: 148) discusses the traditional vernacular house as conforming to the human scale, with which I would agree particularly in terms of width and height.

Table 5 House measurements in the archaeological sample detailed in Appendix 3a and 3b.

House measurements	Length	Width
1400s	7.7-1m	4.5-6m
1500s	6.3-13.7m	5.3-7.3m
1600s	2.5-17m	2-8m
1700s	5.8-18m	3-8m

Strategies for a warm indoor climate – insulation

Table 6 Materials used as insulation in the archaeological sample detailed in Appendix 3a and 3b.

Insulation strategies	Sea sand	Earth	Sand	Peat	Wood chips	Clay	Birch bark
Nya Lödöse/ 8 buildings/ 1470-1624		1	4	2		2	
Gothenburg / 20 buildings/ 1620-1669	1		8		9	9	
Jönköping/ New town/ 5 buildings/ 1640-1800			2		2	2	
Falun/ 1 building/ 1670s			2			1	1

Sweden is a cold country especially during the winter months and people have always tried to find strategies for eliminating draughts and damp to create as warm and comfortable an indoor climate as possible *Table 6*. The early modern period, and the 17th century, specifically, is often today referred to as the Little Ice Age (Eriksdotter 2013), corresponding to a significant drop in temperatures, which affected the climate during two and a half troublesome centuries.

A number of materials could be used to insulate the house/foundation i.e. sea sand, which is quite coarse keeps warmth very well. Earth could probably do the trick equally well, but it could be a bit compact and could cause problems with mould, which goes a long way explaining the limited use of it. Sand was a good and much used insulator, letting through damp and air but at the same time keeping the warmth. Silt was a large component in the sand, in the material from Falun. Peat is an interesting material, in Nya Lödöse it was used in unheated rooms, which is a bit odd, but then again there were several examples of insulated unheated rooms. Peat is a porous material that can easily be cut in desirable sized squares and then used as building material e.g. Icelandic traditional turf-houses (Eldjárn 1971; Ólafsson, Ágústsson, and Kristjánsdóttir 2006) or it can be used for firing in the stove.[4] Squares of peat were also used in Viking age Ribe (Croix 2015; Frandsen and Jensen 1988b: 25; 1988a: 4–5, 8) as a stabilizing foundation layer, which was helpful in damp environments, but not used in direct contact with the houses.

There also seem to be an omnipresence of wood chips, the uses and functions of which have been discussed. Its use as foundation layers or insulation in houses, often mixed with other materials, seems the most widespread. Clay is another material, which archaeologists come across as insulation, used as a damp-course or barrier and even sometimes used as part of the construction for holding up floors, for instance. Birch bark was very common as insulation and functioned as a barrier against damp on roofs but was also used, much in the same way, as an insulating layer in the floor construction. Three examples of multiple wooden floor levels, with sand in between, have emerged from this material. Could multiple floor levels also be an insulating strategy rather than evidence of remodelling? Linscott (2018: 861) mentions the use of double flooring in preserved buildings in Stockholm that might have similarities to the archaeological data. Layers of manure were present in some building remains but have hardly functioned as insulation (not intentionally at least). It is not impossible that manure could have been used for insulation, there are many examples of that internationally but in this particular context is it unlikely. The manure, should rather be seen as residue from animal husbandry within the premises, producing a naturally warming chemical reaction. Slag is another find material, although probably too coarse to be used as insulation; instead it should most likely be

[4] 2016-2020 Reyjkavík City Museum https://reykjavikcitymuseum.is/node/1058 (viewed 2020-03-16)

interpreted as a foundation material to help stabilize the ground.

Log-timber technique is known for its sealed construction and that can be achieved through a number of strategies. The most basic method is in the way the corner notch was hewn/constructed making use of how the wood would move, shrink and seal (for more on this see Sjömar 1988, 114–15; Berg 1986, 19–26). Additionally the grooves were filled with moss (Pleurozium Schreberi), wall-moss or house-moss, or otherwise pieces of cloth or old rope (*drev*) (Sjömar 1988: 127; Berg 1986: 19).

These were a few examples of insulation from this limited survey, there are most certainly more variations to be found. It is an important and interesting topic to discuss in relation to houses, and the quality of living conditions.

Types of floors

Closely connected with insulation strategies are of course the floors themselves *Table 7*. Many rooms had combinations of floor types, sometimes for additional comfort or for practical reasons, or else making use of what was available at the time. Wooden floors were, in this data, by far the most commonly used in residential rooms but quite often also in other spaces. Sometimes there was an underlying layer or floor of clay below a wooden floor. Outbuildings have sometimes had simpler floor types such as sand, clay or beaten earth floors.

Table 7 Types of floors in the archaeological sample detailed in Appendix 3a and 3b.

Types of floors	Wood	Earth	Tile	Stone	Clay	Sand
Nya Lödöse/ 8 buildings/ 1470-1624	7	2	2	2	2	
Gothenburg / 20 buildings/ 1620-1669	15		1	3	2	1
Jönköping/ New town/ 5 buildings/ 1640-1800	3			1	3	
Falun/ 1 building/ 1670s	5					

Sjömar (1988: 80–81) has found information on advice given by Christopher Polhem in 1739 regarding how

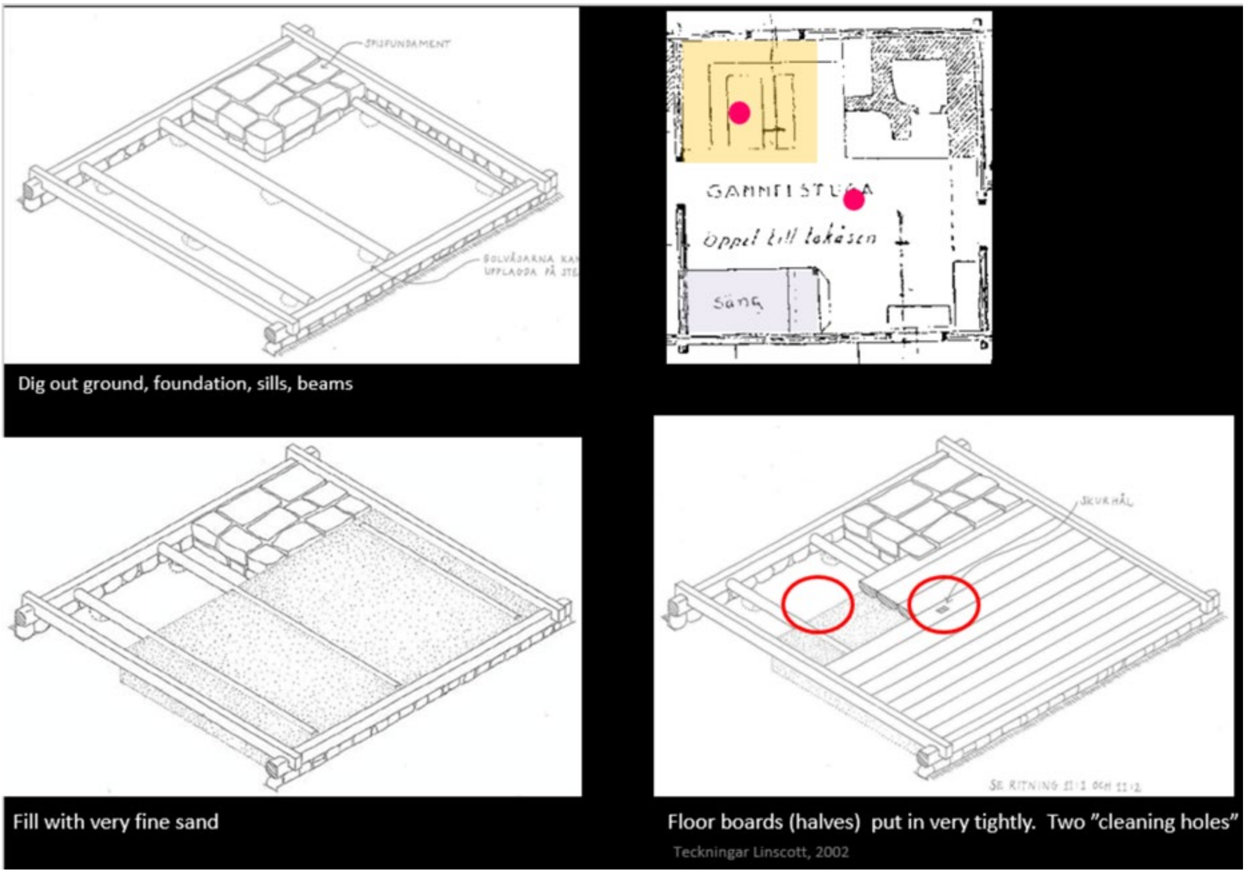


Figure 8 Floor construction. Drawings by Kina Linscott, 2002. (presentation Urban Variation conference).

to keep a house from rotting.[5] As mentioned earlier, there were many new town formations built on boggy ground that by extension had a negative impact on wood structures. Polhem points to the problems with ground frost, making the pad stones move up and down and skewing the house. The sill beams would then come in contact with the ground, and moisture would enter the wooden construction, making it damp, unhealthy and smelly as well as allowing deleterious fungi to grow. This could be avoided by digging and placing the pad stones deep enough not to be affected by ground frost, that is to say two to three ells (1,18-1,78 metres) under the corner stones and one to one and a half ells (0,59-0,89 metres) under the stone foundation wall (Figure 8).

Polhem goes on to discuss the various problems with building on clay or damp sand. This would require a frame, comprising vertical and horizontal beams, to prevent the pad stones from sinking. Stones would be stacked with the larger stones on the bottom and the smaller ones on top leaving the trench open until the building was put in place. Filling the trench with shingle or gravel which would have had a draining effect after controlling that the pad stones were in a good position (Sjömar 1988: 80–81).

Sjömar (1988: 85) discusses floors in outbuildings and says that ventilated floors were created by elevating the construction. This could perhaps be the reason why so many outhouses seem to have earth or sand floors. Another reason could be that there was a need for spaces for keeping animals as well as for messier work.

It was important to dig out anything that could develop mould or fungi, such as soil, peat or wood chips, within the stone foundation wall under the house. Instead the space was to be filled with dry material such as slag, chalk mixed gravel, sand or clay etc. Sjömar even mentions crushed tiles or seaweed. It was all to be packed hard around the joist system and up to the floor boards (Sjömar 1988: 89). Polhem also mentions ways to make the floors even more sealed through adding chalk on top of the floor filling and adding a wall-bench of chalk 15cm wide and the same height as the floor joists (Sjömar 1988: 89).

This substantial discussion on floors has been included because this, the floor construction and insulation, is a pivotal part of the archaeological data. The materials and constructions mentioned by Sjömar and Polhem are recognizable from the reports discussed in this chapter, and as such, this helps put these construction methods into their historical context and setting. The wide use of wood chips as filling in the archaeological data seem a bit odd from Polhem's point of view. It certainly would be interesting if archaeologists were to find evidence of the use of chalk on top of the floor filling in the future.

The uses of window glass and chimneys

Table 8 Window glass and chimneys in the archaeological sample detailed in Appendix 3a and 3b.

Window glass and chimneys	**Nya Lödöse/ 8 buildings/ 1470-1624**	**Gothenburg / 20 buildings/ 1620-1669**	**Jönköping/ New town/ 5 buildings/ 1640-1800**	**Falun/ 1 building/ 1670s**
Window glass	4	2 (2) +?	?	?
Chimneys	2	-	-	1

The early modern as a concept is about a shift in society on a whole range of issues, one of which is the slow but steady change in the indoor environment not only for the elite but for a large part of the population as well. The introduction of window glass is another; yet, during the 15th and 16th centuries the glass was thick and green and not really, see-through *Table 8*. This means that their relation to the window was very different from ours today, it cannot have been about connecting to what was happening outside by looking through it and most windows did not open. It did not even bring that much light into the building when compared with modern windows but nevertheless it brought something, some small amount of light and colour (Qviström 2009: 29–30) making the room into something other than a square closed box. Owning a house with windows might have given the property holder a level of status. Its introduction must have made some difference to those people who spent a lot of time indoors. This material was present as early as the formation phases of Nya Lödöse, although not in all buildings, nevertheless showing that a transition from ecclesiastical and elite buildings to the middling sort had occurred or was underway. The low count of window glass from Gothenburg, Falun and Jönköping is connected to method of collection and registration during investigations, rather than a reflection on the use of windows. To conclude, there was a lot of window glass retrieved and entered into the finds collections, but the sherds were not connected to individual buildings, which makes further interpretations complicated.

The use of chimneys was another important innovation. In Britain, the technique of building chimney stacks had been around since the 13th century (Johnson 1993: 53). When the technique was introduced to Sweden is unclear but it would appear not to have come into general use until the latter part of the 15th century. An open hearth with the smoke seeping out through a ventilation gap under the roof, or a smoke

[5] Christopher Polhem 1739: 137-139. Tankar om hus-bygnad. I Kongl. Swenska Wetenskaps Academiens Handlingar och ByggningzMemorial emot de feel och olägenheter som i allehanda hushåldzbyggnader ibland plä yppas, i Polhems efterlämnande skrifter, Ed Henrik Sandblad, (Lychnos-bibliotek 10:1, Uppsala 1947:241)

opening/'skylight' in the roof was used before the chimney, no inner ceiling could be used in rooms with this kind of heating solution. There is a link between chimneys and the introduction of bricks in the 13th century, but the availability and affordability of bricks are other factors to consider (Ihr 2014: 95). Nya Lödöse comes across as being a modern town following the latest trends and innovative techniques.

The chimney enables the use of ceilings, which are hard to find in the archaeological material but can be found in preserved buildings. The introduction of the ceiling and chimney were also connected to a wider use and construction of the first floor (Johnson 1993: 69). Johnson confirms Hubka's (1986: 430) reflections, and argues that there rarely were radical new ideas within the craft tradition but rather a re-ordering of the hierarchy of ideas within a common grammar.

Conversely in the Swedish material there was a clear break in house production for about a hundred years after the black death (Sw. *digerdöden*) during which very few new buildings were built (Ersgård and Lagerås 2016). Thus, the five-generation hiatus in house construction contributed to a shift in techniques and construction methods, although not so much in layouts. When comparing pre-plague and early modern construction Ersgård and Lagerås (2016) see tendencies towards less visible craftsmanship in the building stock and more focus on effective production methods. Production strategies were set in place to be able to produce many houses very swiftly in connection with urban formations, town fires and after enemy attacks. Thus, carpenters, sometimes in loosely formed societies i.e. *Alesnickarna* (K.-E. Andersson 2001; 2006; 2008), in woodland areas could build a large number of houses for the urban communities, in all truth mass production.

New and improved heating technology made it conceivable to make use of more rooms. The multitude of chimneys also changed the appearance of the exterior of the buildings as well. The indoor environment was improved by harnessing the smoke and channelling it out to the open. Even more so when the smoke and fire were completely held in the firebox of a ceramic stove, allowing the house owner only to experience the warmth, but not the light from the fire. It also meant that more rooms could be heated and used in wintertime. Previously, almost all activities had been confined to the parlour in the colder parts of the year. The re-use of bricks could perhaps account for the lack of chimneys in the material from Jönköping and Gothenburg. There are ample mentions of chimneys in the historical records such as the fire insurance records and Magistrates records.[6]

Town comparison

To sum up the facts from the log-timber building stock from Nya Lödöse. The traditional layout, which can be found from the late Viking age onwards, of parlour/ porch/ storage room (larder) is present in the early phases (1480-1540) but can also be seen to continue through into the late building phase (1570-1624). There are remains of window glass from the earliest phase and these continue to be found sporadically in the later phases; there were a variety of rooms that potentially had windows i.e. the parlour, the shops and one storage room. There is thus a surprisingly early use of windows in ordinary people's residences in Nya Lödöse. There is a single example of a building constructed in mixed techniques i.e. log-timber technique and timber-framing technique.

Chimneys appear in this dataset around 1500. Insulation layers were widely used and not only in heated rooms, with examples of insulation made of peat, sand, clay and earth. There are no physical traces of any secondary heating sources apart from the fireplaces in the parlours. It seems to be common to have had several storage rooms in the dwelling, perhaps some of these might be understood as sleeping-chambers or living rooms, but the data is not conclusive.

There are byres represented in the material and thus evidence of the presence of animals, in this case horses and pigs, on the burgage plots. Several shops/ workshops have been studied; they all seem to be situated two and two, next to each other facing the street with the residential building to the back. The shop entrances that have been found faced the street. While the entrances to the residential building have come through the porch on the long side and thus, from the courtyard. There is some evidence of re-use or conversions. Sill stones have been used but only sporadically and rarely for the whole house, instead large parts of the buildings have been placed directly on the ground. The parlours all have wooden floors, but the other rooms have a mix of floor constructions i.e. wooden floors, clay floors, earthen floors and tiled/ stone floors. A question is whether a clay floor can, in fact, be used as an insulating layer? One house from 1500-1540 had two porches and one house from 1570-1624, had had a tiled roof. None of the eight buildings had external panelling. Finally, one building showed traces of potentially having had a first floor.

The archaeological building remains from Gothenburg were dated through fire horizons and finds of coins, clay pipes and ceramics. Dendrochronological analysis has not been used, but it was recognized as a future possibility

[6] Ed. Östen Dahl, 2007-09-20 A database of Magistrates records, probate inventories and fire insurance records of the plot system and inhabitants of Gothenburg 1637-1807 assembled by Olga Dahl www.gbgtomter.se viewed 2020-06-13

(Andersson et al. 1986, 176). Archaeobotanical sampling was introduced into archaeological investigations in Gothenburg at this time. It is to be considered an early application of botanical sampling in a historical archaeological setting in Sweden and should be recognized for its contributions to the discussion and wider understanding of the material and environment. It was in fact the first introduction of this type of multi-disciplinary cooperation within archaeology in Sweden. However, the findings were only referred to in rather general terms and not presented in detail in the archaeological reports, which makes it difficult to be sure where the samples were taken specifically. In this regard, it is evident that the interdisciplinary approach to archaeology has been through a lot of methodological development since the 1970s-80s.

The exact location of the window glass could have helped identifying what type of buildings had windows and if there were any change in that respect over time, but finds locations are only rarely mentioned in the report texts. There seem to be rooms continuing under current streets on many plots; a question we must ask ourselves is whether they could represent shops on the street front, similar to the ones seen in the Nya Lödöse material? It is impossible to know without further excavations. Sill stones are more frequently used in the Gothenburg data than in that from Nya Lödöse, perhaps due to a wetter ground with more clay in Gothenburg. There are only brief mentions of chimneys, or brick-debris that might indicate their presence such as in Kv. Sparbanken. Somewhat surprising is the lack of ceramic stoves or secondary heating sources, however, tiles belonging to a 17th-century ceramic stove as well as tiles from a renaissance ceramic oven was found in two rubbish pits in Kv. Sparbanken. The tiles thus seem to be present but in secondary contexts, rather than in situ, unfortunately, which makes interpretation difficult.

The functions of workshops or storage facilities are hard to identify without archaeobotanical sampling. Several buildings had manure under the floorboards, which might suggest they were used as byres. There is one building with a large baking oven where the baker Sven Printz was registered to have lived (1658-1704) in the appropriate time period followed by his widow Cecilia (Jeffrey 1985) according to *Baking oven records*, other than that it has been hard to pinpoint specific crafts in the buildings. It is always difficult to know for sure if the persons owning the estate is the same as the ones who lived there.

Panelling seem to have been introduced in the 17th century, which could be another insulation method as well as being aesthetically pleasing to the eye. Looking at the size of the buildings they seem to be slightly narrower than in Nya Lödöse, although when it comes to length it is harder to make comparisons since a large part of the buildings in the Gothenburg material were not excavated to their full extent. The Nya Lödöse material as well as the buildings in Gothenburg were placed with their gables towards the street. No mention or indications of any of the buildings having a first floor have been included in the reports. However, it is more than likely that some of the buildings had more than one floor.

The buildings from plot 2 in Kv. Dovhjorten in Jönköping have been much harder to understand than the material presented from the other towns. This is mainly due to bad conservation conditions, which have caused the wood material to disintegrate. It makes it hard to distinguish for certain between different building techniques and internal layouts. There were hardly any exact measurements presented in the report, thus the numbers are measured from the plans and only approximations. This material is included to show what archaeological building data often look like and why it is sometimes difficult to understand and interpret when organic materials are missing. There were a lot of fragmented pieces of window glass at the site, both green and clear types set in lead frames (Bramstång Plura et al. 2012: 89). Still, the window glass has only occasionally been associated with a specific building.

The archaeological remains discussed from Falun are examples of two quite different social milieus. Kv. Dalpilen had a large, probably two-storeyed, main building with associated buildings on either side such as a kitchen, a larder, storage and a supplementary residence. The burgage plot by the river would have given a rather substantial impression signalling a wealthy family with other residents, perhaps servants or relatives.

The two small buildings in Kv. Västra Falun (which is next to Kv. Dalpilen) belonged to a different stratum of society. A tavern and possibly the kitchen that supported the tavern. Nevertheless, it was probably not the shabbiest of places since the type of drinking vessels used in the facility were quite sophisticated and rare. These two buildings would have shown strong similarities with the houses discussed from Gothenburg and Jönköping.

Preserved buildings from the 18th-19th centuries

In order to get closer to the wooden buildings the study re-orientates towards the preserved building stock. In order to visualize how functional and widespread the use of log timber technique was in the Swedish society, presented here (Figure 10) are a selection of photos (clockwise from top left). The building in Visby harbour called *Café Bron* has an interesting façade and a roof that certainly gives the wooden house a more sophisticated

Figure 9 Examples of log timber buildings in Sweden. Gripenbergs slott was photographed by Berit Wallenberg Public domain raa.se. The rest of the buildings, photos by A. Nilsen.

look. The top centre image depicts a double base unit cottage with a central vestibule and corner fireplaces; this building is located in Gammelstan in Norrboda. In the top right corner there is *Gripenbergs slott*, a manor house for the upper aristocracy built in wood in the 17th century, situated near Tranås. In the bottom left corner is a privy, squeezed between two houses in the space called *vret* in Swedish, photographed in Gammelstan in Norrboda. In the bottom centre is a single base unit cottage from Falun with a corner fireplace. Finally, landed estates, on city ground but outside the city limits, were used for food and tobacco production from the 17th century onwards; *Burgårdens landeri* belonging to the city of Gothenburg was one of those estates. These buildings in log timber extend from the less visible buildings, like the privy, to more substantial constructions like the 17th-century mansion, all built in wood.

The preserved urban buildings in log-timber technique yield examples of a wide range of functions, uses, sizes, social standing and importantly, changes over time. However, in historic times there were additional buildings that are largely missing today, foremost outhouses of various kinds. There are not many intact urban log-timber houses left from the 15th and 16th centuries, but mark the external staircases combined with balconies, jetties and the introduction of chimneys, windows and secondary heating sources that defined a new way of building and living. In the

17th century these modernizations largely continued and were made more broadly accessible for the wider public, a further addition was more rooms and complex layouts. Panelling and the use of house paint also became popular. Still, the windows had green glass, thus letting only a little light into the rooms and not much use for looking through. In the 18th century finally the windows become see-through and at the same time increase in size.

Buildings archaeology

Building conservationists and architects have ways of examining preserved buildings to explore the building history, by using an investigative perspective where the building is examined using tools like seeing, feeling, measuring, drawing and writing and also photography. Intending to answer a number of questions, for example what, when and how something happened but preferably also trying to go deeper, placing the occurrence on a timescale and viewing it from the perspective of different sources of knowledge and documentation. The analysis and the documentation go hand in hand and occur simultaneously to result in a descriptive and analytical text and drawing. The construction is presented in a scale of drawings from a large scale overview, to down-scaling, achieving more detail (Almevik 2012; Sjömar et al. 2000). Other methodological possibilities were of course possible, like scanning or the use of dendrochronology but for the purpose of this study, the above-mentioned methods were used.

Kina Linscott and Anna Blomberg examined three preserved small historic wooden buildings in *Vita Bergen* in Stockholm dated from the 18th to the 19th centuries in 2000-2004. They used the method mentioned above in a historic building analysis. They established a goal with the investigation, inspected the ground and foundations under the buildings, the joists, and timbers, thus the body of the building. The facades including windows and front door, the roof, metal works, the fireplace and chimneystack were also examined, along with the external paint job and electricity. Hence, this was an in-depth inspection; key to getting this level of information about a building is getting behind the wallpaper and panelling and into the floor and attic. The easiest way of achieving this is to work during or just before a major restoration. *For closer descriptions of the individual buildings, see Appendix 4.*

Since there have been issues with finding good archaeological data regarding the log timber building stock in Stockholm, the houses surveyed by Linscott and Blomberg exemplify corner-notching in the capital. The houses are situated in what was once a marginal, hilly and peripheral part of the city called *Vita Bergen*, inhabited largely by working class people. The houses are in situ and form a cluster of houses where the external living environment to some degree is preserved. Here the buildings and their layout will be in focus.

Three buildings from *Mäster Pers gränd* were discussed in the reports, in several phases of their building history. Three phases from the 18th century and four from the 19th century. These phases have been deduced from descriptions in the fire insurance records from 1774, 1812, 1860 and 1889 and from traces from conversions in the buildings seen during the investigations.

The layouts have included one to two main rooms and associated vestibules/porch and storage facilities that came from dividing the vestibule into several small spaces. On some occasions, there were also examples of a shed or a cellar with separate entrances.

The spaces/rooms have been named differently during the course of the century possibly reflecting changes in use.

It would seem the word ‘kitchen’ come into use in the early 19th century (according to this very small data sample) Table *9*. Other functions that earlier were practiced in the main room/ parlour/ *stuga* were possibly separated from the kitchen at this time. Perhaps the word chamber also reflects the separation of kitchen and bedroom, at least theoretically. If it was separated, in actuality, might be a different question depending on the number of inhabitants.

Table 9 Layouts and room division in the preserved buildings in Mäster Pers gränd, Stockholm.

1730	MPg2 Svanken	Vestibule + room
1774	MPg2 Svanken	Vestibule+ chamber + room + vestibule (cross passage)
1774	MPg2 Verkstan	Vestibule + room with fireplace + chamber with ceramic stove + porch + cellar
1812	MPg8b	Vestibule + room
1860	MPg8b	Vestibule + room + kitchen
1889	MPg2 Verkstan	Vestibule+ kitchen with fireplace and iron stove + room with ceramic stove + shed+ cellar
1889	MPg2 Svanken	Room+ kitchen+ porch

Table 10 Measurements of the buildings at Mäster Pers gränd, Stockholm.

Object	Length	Width	Square meters
MPg8b, phase 1	7m	5m	35
MPg8b, phase 2	7m	5m	35
MPg2, Svanken, phase 1	5.2m	4m	20.8
MPg2, Svanken, phase 2	10.2m	4m	40.8
MPg2, Svanken, phase 3	10.2m	4m	40.8
MPg2, Verkstan, phase 1	7.1+3m (+4m)	4+1.6m (+2 m)	33.2 (+5.7)
MPg2, Verkstan, phase 2	7.1+4,2m (+1.7m)	4+1.6m (+4 m)	38.34 (+5.7)

The base module – room + vestibule- is used here by itself or as two base modules combined back to back (Linscott and Nilsen 2018). Then subdivisions into more intended spaces were achieved by dividing existing rooms into several smaller rooms/spaces. There are also examples of adding an external porch sometimes constructed in another building technique, thus attached to the original body in log timber. MPg2 had a shed connected to the gable end of the building as well. There is a shift in heating sources in this material, from the use of a fireplace only, into a fireplace with an iron stove and the added ceramic stove in the adjoining room/ chamber. When the vestibule was moved from the gable to the long side of the building, the vestibule - entrance to the parlour – corner fireplace - all at the same wall, formula, seem to loosen and become less prominent. Compare MPg2 Svanken, phase 2 with MPg2 Verkstan, phase 1 and 2. The layouts all have rooms in a single row.

The sample houses, in Vita Bergen, are all in one storey. The insulation methods with the use of earth, clay, moss and birch bark in between double flooring go well in line with the archaeological and historical sources. The ceiling was insulated in a similar way. The houses had windows and chimneystacks, many of the houses had panelling and some were painted. There was residual evidence of turf roofs on some of the buildings.

These measurements come from houses with one or two rooms intended as living spaces, the rest of the rooms have other uses (Table 10). Compared with the archaeological data the buildings from *Mäster Pers gränd* fit right in. The sometimes, larger houses from the archaeological data, comes from rows of houses rather than the individual residence, that these buildings represent. Stockholm thus seem to have a similar building tradition as the rest of the towns studied when it comes to log timber buildings.

Historically documented log timber buildings and dating

To give a glimpse of another Nordic town from the same time period let us glance over to Norway. The historian Finn-Einar Eliassen (1995) has been conducting a survey of the seaside town of Mandal in South Norway. He examined the layouts of buildings as they have been described in fire insurance records, baking oven records and probate inventories from the 18th century. When comparing his results from a small harbour town, there are a number of similarities but quite a lot of differences that come to light. The most apparent similarity is the change from one-room houses with a multifunctional parlour/ *stuga* to more intricate layouts divided into more rooms. This is something that happens in continental Europe and the British isles as well at this time (Atzbach 2012; Johnson 1993). Another similarity is the close connections with the world, through people involved in shipping, which comes across in the interior of both poor and rich houses in the probate inventories. Where the poor have odd furniture or items from faraway places while the richer might have the full dinner table with appurtenant chairs as well as the full china set rather than odd pieces. This is something that probate inventories give evidence of in Gothenburg as well, as a harbour town (Nilsson Schönborg 2001).

There are however certain differences as well, in Mandal the amount of two-storey buildings has been low and has only gradually increased. There were a large number of small one-storey buildings. A quarter of the houses in Mandal were less than 30 m^2 in size (Eliassen 1995: 1:491) which compares well with the sample data from the preserved buildings in Stockholm. The average value of a house in Mandal was c. 130 rd (Danish Riksdaler) in 1803,[7] which seem extremely low even when comparing to the peripheral district of Majorna outside Gothenburg (see Chapter 6.2). Even the most affluent had properties that were valued much lower in Mandal, than similar ones in say a big town such as Gothenburg. Returning to the layouts, as mentioned earlier the buildings had their plan divided into more spaces/rooms, the most salient change being the division of parlour and kitchen and the additional chamber (Eliassen 1995: 1:494–95), so far the changes go hand in hand with the Swedish material. Nevertheless,

[7] There is probably something to be said about the exchange rates between Denmark/Norway and Sweden at this time.

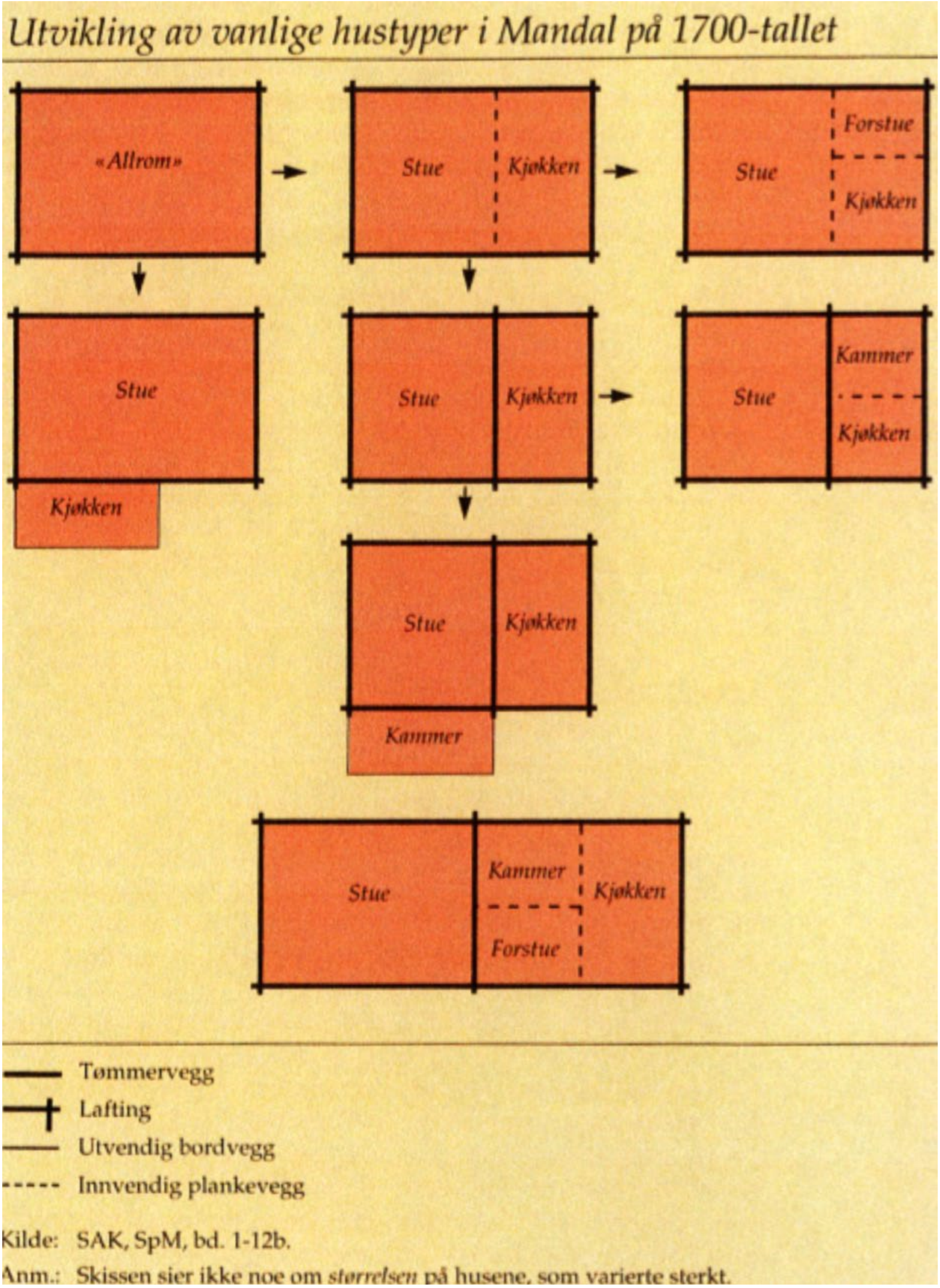


Figure 10 Layouts of 18th century buildings in Mandal, Norway (Eliassen 1995).
Stue - parlour, Kjökken- kitchen, forstue - vestibule, kammer - chamber, allrom - living room

the houses and layouts have gone from looking the same (to a big extent) in Norway and Sweden up until this point it would seem (Linscott and Nilsen 2018). The layouts of the houses in Mandal have some of the same components but were divided or organized differently than the Swedish buildings. The most prominent difference being the lack of adjoining outhouses, which might account for some of the differences in value. The late 18th century Swedish buildings can sometimes have a circular layout (see Chapter 7.1) but there are no such layouts in the Norwegian material from Mandal; however, from Stavanger there seems to be some examples (Eliassen 2014: 311).

Log-timber building outside the Nordic area

Log-timber buildings can be found in many parts of the world, the technique seem to follow the belt of pine forests since it lends well to straight timbers of pine and spruce. In the Nordic countries it is foremost Sweden, Norway and Finland (Berg 1989; Rosander 1986) that have adopted this tradition but it is ubiquitous in Eastern and Central Europe (Atzbach: n.d.; 2012) as well as in North America (Glassie 1975; Kelley 2000). Log-timber buildings can also be found in China and Japan (Zwerger 2015) among other places.

The building technique has qualities of warmth if constructed with insulation in mind; it can be assembled without extensive knowledge of building beforehand, and thus popular with the pioneers in North America for example (Vollmer 1978).

However, it is also possible to construct highly elaborate and technical structures, which takes a lot of craftsmanship to achieve. In the Nordic countries the height of craftsmanship, on a general level, could be found just before the plague in the 14th century. It is evident from the building stock built thereafter, that too many generations and knowhow were lost following the disaster to fully hold on to the technical knowledge (Berg 1986: 26–29; Ersgård and Lagerås 2016: 78; Sjömar 1988: 29–30). Another important quality of log timber building is the relative ease with which it can be disassembled and taken apart, then re-constructed at a new location or with other building parts. It meant that it could be 'mass-produced' in times of need such as after urban fires, wars, new town formations or during town regularisations. Historically, wooden buildings have been viewed as movable objects and part of a personal estate, rather than 'grounded' property thus real estate (Forsberg 2001: 168)

Contributing living space - four town formations over the course of the early modern period

There is room to discuss both variability and uniformity within this data. Certain traits keep returning or reappearing over time and in space. The form of the house is often uniform, but the individual room distribution and internal structure can vary a lot. The technique itself stays recognizable over time. There is a shift from, or maybe an addition to, since the two main forms existed side by side, the row of houses to the buildings with rooms built two rows deep, surrounding a central stack. There was also a shift in where the dwelling was placed on the burgage plot during this rather long time period between the 1470s and 1850, from being centrally placed in the plot, to a gable towards the street and finally with the sidewall as the street front.

The building technique was used to construct big and small buildings, and for the rich as well as for the poor. The Swedish building stock in wood or in this case, log timber, can in many aspects represent a cross section through Swedish society from the simplest cot, to the modest croft on to the burgage plots of the city and the working estates, wooden manor houses and not the least the building stock related to the church. Houses constructed in wood are often described as ramshackle and impermanent even though the oldest remaining, still standing house in Sweden originates from the 13th century.

The multifunctional row of houses is present throughout this material and a multitude of activities and practices were taking place within the buildings and burgage plots. There is a difference between a house and a row of houses. A row of houses contains of several more or less connected/attached buildings. There is usually more than one entry door to the row and a number of different functions have been given specific spaces i.e. the residence, the out houses and the byre. By calling the whole complex 'a house' it becomes too simplified and it makes further analysis problematic when considering functionality and construction. A row of houses can often be constructed in more than one building technique. It might be easier to think of the construction as modules that have been added in one go, or in several steps over time and joined together (Stoklund 1996: 141–43; Qviström 2019: 353). One way of identifying the unit can come through recording which rooms had connecting doors, thus enabling movement within the module. Separate modules mostly had a separate entrance, as for example the shops in Nya Lödöse. The rooms could be divided into insulated and uninsulated, as well as heated or unheated spaces. There could be a multitude of strategies to achieve a draught-free indoor climate, and the reason why could also vary. There was rarely a heated uninsulated room, for good reason, since a lot of the heat would get lost in the draught. However, the data presented here has plenty of examples of un-heated rooms with insulation. Perhaps the insulated, unheated spaces were connected to keeping vermin out, foodstuffs dry or simply protecting the warmth in the heated rooms when opening middle doors. One observation, that stays true until the turn of the 19th-20th centuries, is that there was rarely a direct entry from the outdoors to the heated parlour/rooms. There was always an entry through an airlock i.e. porch/vestibule/through passage making it possible to close the front door before opening a door to a heated room

The residence only made up a small portion of the space. There are some indications that more rooms came into residential use over the time. Evidence of the addition of chambers to the parlours for example, but this data is oddly lacking in alternative heating sources, apart from fireplaces. The ceramic stoves and cast-iron stove are missing from the material, except from the Kv. Dovhjorten, KG 24 that might have had a cast-iron stove. It is also important to consider the possibility of introducing movable heating sources into some rooms such as chambers and offices i.e. heated bricks, braziers or similar devices. The separate kitchen seems to follow the introduction of the double file/circular layout from the early 18th century or in the 'working' kitchen supplying cooked food for a workforce. The hall was introduced in the late 1600s through a concept of change in polite life. Perhaps it was also a way for some to distance themselves from the less well-off and at the same time approach the living standards and customs of higher levels of society. Storage facilities are crucial for the household concerning food, wood and textiles. Nevertheless, storage was also needed for storing food for animals and keeping a stock of supplies for a shop or a workshop within the premises. As mentioned, the archaeological data only rarely give evidence of an upper storey, but those were common and were a great provider of space for dwelling and storage.

Log timber buildings were in the majority in most Swedish towns during the early modern period and, which is also reflected in this study, in the number of investigated remains. It is a building technique that lent itself well to mass-production. There is ample evidence of ready to build building-kits produced in woodland areas such as Risveden (K.-E. Andersson 2008: 26–27; Bäckström and Wallin 1911: 22; Frendberg 1967: 77–90) in Västergötland close to Gothenburg by local carpenters, *Alesnickarna*, and then transported into town through log driving on the river, or, equally, house timbers shipped from Åland to Stockholm (Dahlbäck 1985: 179) in the late medieval- early modern period. During town formations, after larger urban fires or enemy attacks there was a need for large-scale constructions in the sense that a number of houses needed to be build or replaced as quickly as possible to house the destitute citizens. The log timber building is also the most common residential construction, which means that this building technique in fact housed the most people.

The possibility to make changes and innovations to the town plan were always going to be easiest right at the beginning of forming a new town, starting with a blank canvas, so to speak. This should be especially prominent in the study of Nya Lödöse and Gothenburg, or West (Old) and East (New) Jönköping. Conversely, the continuity might also be at its highest when the burghers dismantle their houses in the old town to move them to the new town, which means that both towns for a period shared some of the same physical materiality, inhabitants and to some extent form.

Modernities, such as chimneys and window glass changed the appearance of the house both indoors and externally; yet, the use and distribution of chimneys is still a bit unclear since they were only recorded in a portion of the buildings. Panelling to cover the log-timbers is another sign of modernity. The panelling would also help conceal what kind of building technique that was used in the building and in case of the use of mixed building techniques; it also made the house appear more uniform. Something that has not been addressed in this analysis is house paint, which definitely changed the look of the façade. The storeyed house is an important urban factor making use of confined plot space, over time there was a change from external staircases to internal ones and there was a prevalence of jetties. All these changes in detail were instrumental to give the urban house a more contemporary look, and more familiar to the modern eye.

Conclusions

The Swedish early modern log-timber building had a number of traits connecting it to the European cultural sphere such as the introduction of chimneys, windows and upper floor levels, the use of jetties and balconies as well as more complex room structures. The building technique itself was the most prevalent in European countries with coniferous forests.

Log-timber buildings are very good for keeping the warmth in and the cold out; they do not necessarily require architects for construction and skilled carpenters were the most prominent contributors to both the preservation of a traditional way of building but also in going with the times and building houses that fitted the European urban concepts. The possibility of building without nails made it comparatively easy to disassemble and re-construct as well as changing faulty building parts. These features made the log timber building adaptable, practical and movable.

Log-timber technique was used in all sorts of buildings made for a variety of purposes. However, the technique was one of the most popular in dwellings due to its thick walls and excellent insulating properties.

5.3 The prevalence of timber-framing

The second micro study is centred around Swedish timber-framing (*Sw. korsvirke*), and concerns its form, its use and distribution, as well as raising questions regarding its place in Swedish society.

Timber-framing has, in the context of research, been strongly connected to the southern and south-western parts of Sweden, with an emphasis on the former Danish provinces of Skåne (Scania) and Halland (Augustsson 1992: 55; Henriksson 1997: 24; Melin, Melin, and Melin 2014). In the glossary of timber buildings by Volmer and Zimmermann (2012a) there is a figure depicting the outline of the practice of timber-framing in Europe (2012b: 31). Swedish timber-framing is in this distribution restricted to Skåne. Sidén (2008a: 13) also places early timber-framing strictly within the region of Skåne, at least in the 1300s.

The study aims to extend the scope beyond these two provinces, whose timber-framing building stock is well known and to investigate whether timber-framing technique can be found elsewhere in Sweden. To achieve this aim, the distribution of timber-framing, in largely, although not exclusively, urban contexts of eight counties has been the focus of this study.

The method of micro studies (Levi 2019) concerns an albeit restricted number of cases but enough to develop a discussion.

> *'Microhistory, then, sets out to create generative procedures that can use a given general issue to test a multitude of possible outcomes, in different contexts under a variety of conditions; procedures that can then suggest new problems and new questions that propose a rereading of the initial unwarranted generalizations of an insistently generalizing historicist vision of history'* (Levi 2019: 45).

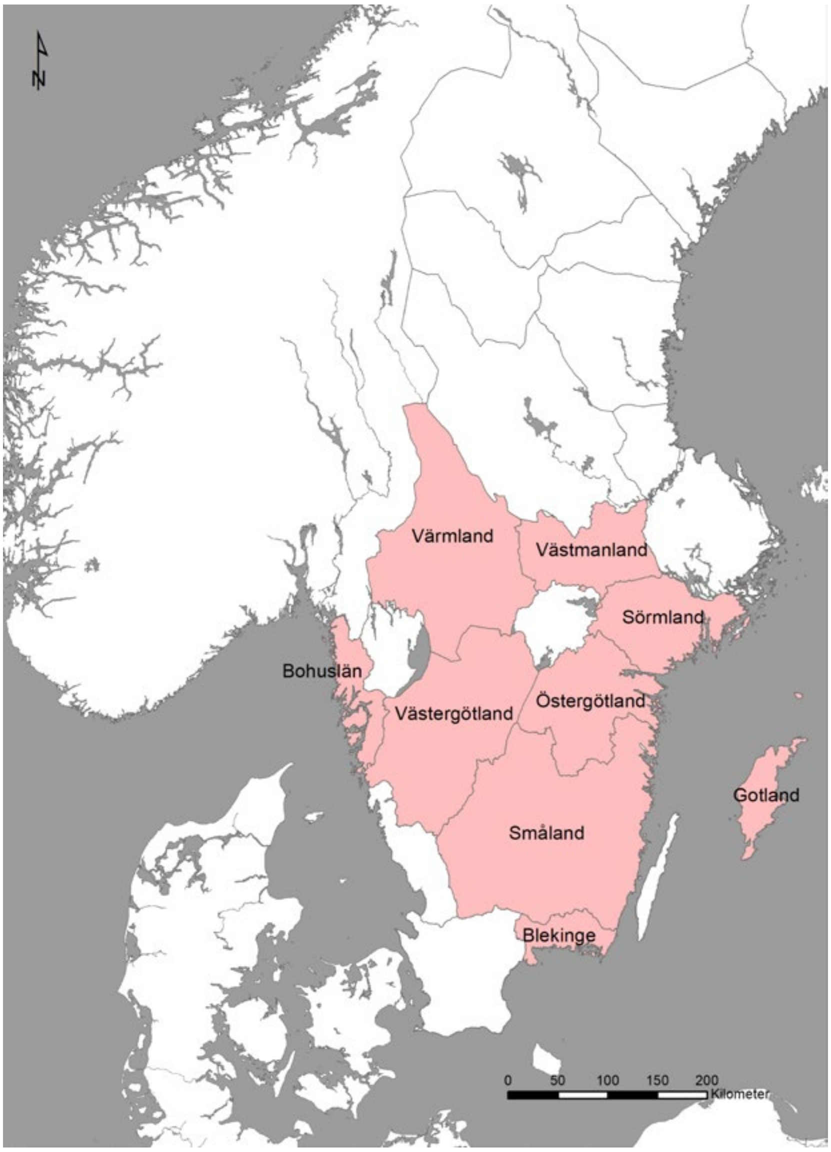


Figure 1 A map showing the nine provinces studied.

The survey, have these nine provinces in focus, nonetheless, the data is too limited to be used as statistical evidence.

Operational approach

This study is not restricted to the towns but aimed at simply finding evidence of timber-framing. Examples from nine provinces have been included: Småland, Västergötland, Värmland, Bohuslän, Östergötland, Sörmland, Västmanland, Blekinge and Gotland *Figure 1.*

A sample of archaeological reports that discusses timber-framing have been included.

Preserved or at least photographed buildings were searched for in those county museum databases with relevant material, which enabled a broadening of the scope.[1]

Historical sources that reference timber-framing have also been used in the study i.e. fire insurance records, probate inventories, contemporary images.

There is no attempt to cover all the evidence within the gamut of these sources, but rather to discover the potential these records have in the context of researching the Swedish timber-frame building stock and its relation to Swedish society.

Timber-framing construction

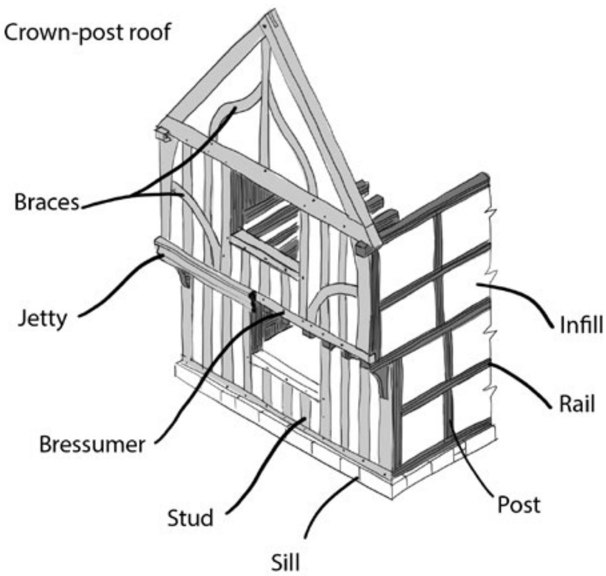


Figure 2 A sketch of the building principles of timber-framing i.e. construction parts from Pevsner's Architectural Glossary.[2]

Timber-framing is based on a load-bearing timber structure with a frame consisting of vertical, horizontal as well as oblique timbers. Between the timbers, an infill material is used, but the infill has no load-bearing function or structural significance. The construction can either be earthfast or non-earthfast (Volmer and Zimmermann 2012a: 130). That is, either the vertical parts or posts of the frame were stabilized by inserting them into the ground. Much in the same technique that was used in prehistoric Scandinavian long houses (Streiffert 2005). Alternatively, the horizontal beam or sill beam is rested on pad stones or directly on the ground, thus not inserted into the ground. The frames are placed in set intervals, which also includes roof and floor frames the transverse frame/cross frame creates a skeleton of a wall on both sides of the structure simultaneously. While the longitudinal frame creates one wall at the time (wall frame) and does not include roof frames (Volmer and Zimmermann 2012a: 148). The space between two transverse frames is called a bay and connects the frames with beams and roof trusses. The medieval and early modern Swedish timber-framing constructions are usually built on sill beams. The difference between timber-framing and post and plank construction is that the timber-frame has much closer studding, meaning the bays are narrower, than in post and plank construction. The posts also correspond with the roof and floor trusses in timber-framing. However, the most significant difference is the use of mortices that help to hold the timber-frame together without cracking the daub in the walls (Henriksson 1997: 24). It is more common to see the use of timber-framing in buildings of more than one storey, in contrast to post and plank buildings which are usually of a single storey.

Timber-framing in archaeological reports

In this section, I will examine the archaeological remains through archaeological reports. *See Appendix 5*

This micro study was proposed to be focused on the structural grammatical transformation of the layouts of timber-framed buildings (see Chapter 1) studied in the same way as the case studies of log timber buildings (see section 5.2). However, the archaeological evidence for timber-framed houses within this study have been too fragmented to use that method of investigation, therefore another approach was needed.

Thus, listing the construction parts suggested to have formed part of a timber-frame construction and discussing them have been the main methodological principle of this micro study. I have, as a rule, accepted the terms or denominations of building parts and the following interpretations used by the individual

[1] Kalmar Länsmuseum https://digitaltmuseum.se/owners/S-KA/info (viewed 2017-09-27), Gotlands museum http://samlingarna.gotlandsmuseum.se/ (viewed 2017-09-27).
[2] Yale's Pevsner Architectural Guides series 2016-05-31 https://twitter.com/yalepevsner/status/737604586274361347 (viewed 2020-06-03)

authors of the archaeological reports. If I have not been able to accept their conclusions, I have argued my case.

The measurements mentioned are all taken from the various archaeological projects thus the accuracy might differ between them due to preservation status or of other reasons i.e. 3m, 3.27m or 3.2m.

The archaeological record

Archaeological reports mentioning timber-framing have been included, from the provinces Småland, Västergötland, Östergötland, Sörmland and Blekinge.

Östergötland

1200s
Söderköping

- The oldest element of timber-framing in this study is dated to the 1200s, and consists of a timber-frame through tenon (see *Figure 3*) from Söderköping, dated through finds of pottery and glass from the archaeological deposits surrounding the building (Hörfors 2008).

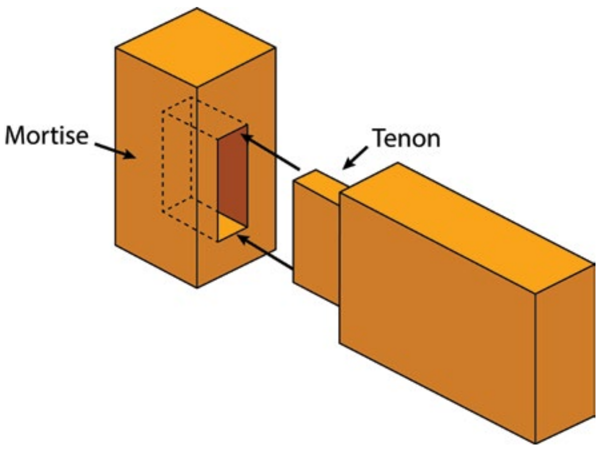


Figure 3 A depiction of a mortice and tenon joint by Jim Thomas in Wikimedia Commons.[3]

Småland

1300s
Kalmar

- A row of sill stones (339) measuring 0.18-0.25m have, because of their small size, been interpreted as having supported a light timber-framed wall. These were found during excavations in Kv. Valnötsträdet in Kalmar, and comprise Building C (Larsson and Stibéus 2017). There was also a hypocaust-system in the building. Four coins were recovered from the context, which dated the demolition of the building: F529 undetermined late medieval type, F530 a Kobbersterling minted 1422 and F531 a Witten minted 1340-1360. The fourth coin was from Gotland/Visby 1420-1440, or after 1422 (Larsson 2014: 86).
- In Kalmar castle there was a timber-framed building (house A, as it would appear to be in the report) up against and within the curtain wall, in the end of the 14th century according to excavations carried out in the 1940s by Martin Olsson (Stibéus 2015: 23, 29).[4]

Sörmland

Stockholm

- The second mention of timber-framing from the 1300s comes from Storkyrkobrinken in Stockholm, where a house (A 23 a-b, e-f) was excavated dating from 1370-1400. It had a brick floor and sill stones interpreted as possibly part of a timber-framed building. The construction was somewhat damaged by a later stone house but two courses of brick wall were still intact possibly indicating a western wall measuring 4 metres long. Another two courses of brick might indicate an internal wall separating two rooms. The eastern wall consisted of a wooden sill beam and remnants of a brick wall. The bricks had burn marks, possibly evidence of a fire (Söderlund 2012: 34).

Blekinge

1400s
Sölvesborg

- A timber-framed building was erected in Kv. Uttern 8 and 29 Västra Storgatan, in Sölvesborg towards the street (Flöög and Henriksson 2007: 29). The incomplete structure, named A8, had remains of a clay floor, a corner fireplace and two rows of pad stones preserved. A demolition layer of wattle and daub, burned clay and charcoal indicated that the house was probably constructed using a timber-framing technique (Söderberg 1992: 18). The building measured 4 × 4 metres and was interpreted as a smithy due to a large amount of slag and iron waste. An analysis of the ceramic data puts the erection of the building towards the end of the 15th century (Söderberg 1992: 22–23).

Sörmland

Stockholm

- In area 2 of Storkyrkobrinken Stockholm, period 6a (ca 1400-1450) the building A21 consisted of a cobbled stone floor, damaged by fire, with elements of brick. The floor was limited to the east by a north-south wall built using 0,4 m wide bricks (group 2:15 a) suggested to perhaps signify a timber-framed building (Söderlund 2012: 37). It is unclear how the two documented buildings (A21 and A23) from Storkyrkobrinken were

[3] 2005-11-23 21:30 Jomegat 554×444× (9184 bytes) Mortise and Tenon Joint, drawn by Jim Thomas using OpenOffice Draw. 23 Nov 2005 https://commons.wikimedia.org/wiki/File:Mortise_tenon.png (viewed 2020-06-03).

[4] Martin Olsson 1944a: Kalmar slott 1, tiden framtill 1300-talets mitt, Martin Olsson 1961: Kalmar slott 2A, Tiden från 1300-talets mitt till 1611.

dated. The report indicates that a number of dating methods had been used during the survey i.e. from dendrochronological dating and radiocarbon dating, through to the minting periods of coins as well as production dates of clay pipes. Other methods used include sampling of mortar and stratigraphy (Söderlund 2012: 264–82). Nevertheless, which methods were used to date these specific buildings remain unclear.

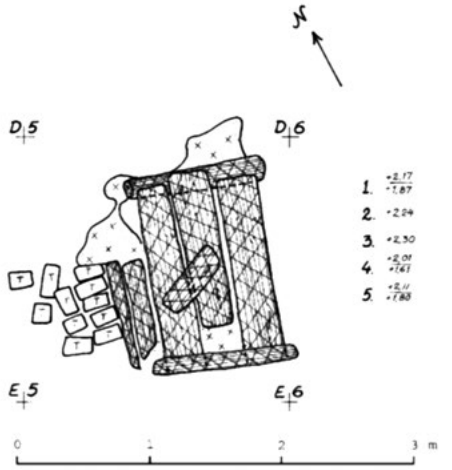


Figure 4 The layout of A20a in Mynttorget, Stockholm (Söderlund 2011: 197).

- The remains of a burnt down timber-framed wall/house, with a turf roof (A 20a) were excavated at Mynttorget, Stockholm (Söderlund 2011) *Figure 4*. Two wooden samples from the building remains were dated through dendrochronology, one dated to 1402, while the other remained undetermined. The investigated layout extended 2 × 2 m consisting of ash and sand as well as burnt timber (0.3 m wide and 1.4 m long planks). The construction was made up by planks attached to a 1 m long round timber log, 0.15 m in diameter. Two courses of unevenly laid bricks, some round timber and a possible post belonging to the wall structure were located next to the construction (Söderlund 2011).

Småland

Växjö

- A house, in Växjö, once belonging to a member of the cathedral staff, had a cellar 3.9 × 5.2 m, visible 0.5 m above ground. The foundation for an external staircase might indicate that there were two storeys above the cellar (Balic, Billström, and Alering 2015: 136, 213).[5] The timbered superstructure above the cellar might have been constructed in either timber-framing or in another timber construction technique according to the authors of the report, and was built at the beginning of the 15th century. The house bore a resemblance to Dekanhuset at Kulturen in Lund (Balic, Billström, and Alering 2015: 33).
- In Nya Lödöse a bakery/brewery (3:2:2) rested on sill stones, with a wooden floor and parts of a wall, floor joists and wooden sill beams. It was constructed in either timber-framing or post and plank technique. The floor was insulated and there was a fireplace in the north-east corner of the building and possibly remains of window glass. The house was dated to 1480s-1540s (Öbrink and Rosén 2017: 85, 220, 225). The construction technique was indicated from building materials such as crushed brick, daub and mortar (Rosén and Öbrink 2017: 88). The building was dated through dendrochronology and from stratigraphy.

Västergötland

Nya Lödöse

- In Nya Lödöse (1:2:1 a-g) where there was also a row of houses *Figure 5* partly constructed in timber-framing, dated to the 1480s-1540s, through stratigraphy and the finds assemblages (Rosén and Öbrink 2017: 130). There was a log timber dwelling with a layout including a porch, a small storage room, the main room (*stugan*)

[5] 10280, 10312, 10331, 10332, 10346 context relations of Household 7 (Balic, Billström, and Alering 2015: 136).

Figure 5. The orthophoto is showing the row of houses (1:2:1) with the two shops in timber-framing technique to the right. The stone threshold shows where the door was on the street front. Photo Projektet Staden Nya Lödöse 2013.

as well as two additional sheds or storage rooms. There were also two shops (1:2:1 a, b) both possibly constructed using timber-framing techniques, as part of the row of houses. Shop A had a wooden floor with a layer of insulation, later changed into a clay floor. The shop was set on sill stones and might have had glass windows. Shop B had a wooden floor with an insulation layer. There was evidence of probable plastered walls. A threshold led into the shop from the street, (Rosén and Öbrink 2017: 83).

Sörmland

1500s

Stockholm

- In S:t Laurentii gränd (St Lawrence's lane), in Kv. Mercurius, Stockholm remains of a timber-framed building from late 16th century or early 17th century was found Figure 6. Sill stones oriented in an east-west direction, some remains of a wall and a clay floor formed part of a building in the southern part of the investigated area. The sill was 0.25 m wide and c. 1.5 m long (Carlsson and Svensson 2015: 162). Inside, but largely south of S:t Laurentii gränd the construction continued with timbers and brick which were possibly part of a timber-framed building which had collapsed towards the north. A clay floor was found 'inside' the row of sill stones measuring 1.8 × 3 m. The extent of the building construction as well as the floor was truncated by service trenches and a building currently in use (Carlsson and Svensson 2015: 162). The main dating method in this survey was 14C analysis, since the timbers were in too bad condition for dendrochronological dating (Carlsson and Svensson 2015: 22)

Figure 6 Kv. Mercurius in Stockholm had remains of a possibly timber-framed building (Contextual group 27). Parts of a stone sill, a collapsed wall and a clay floor. Photo taken looking south (Carlsson and Svensson 2015,162).

- A timber-framed house, identified as K 73, was located in an alley between the properties *Argus 4* and *Argus 8* called *Kokhusgränd*/ (Cook House Alley), *Stockholm* Figure 7. One of the walls of the house was preserved to a height of 1.6 metres and 6 metres long. The wall construction contained seven posts although one was missing but still visible as an imprint in the stratigraphy. The vertical wall posts were inserted into a horizontal sill beam, which in turn rested on another wooden beam. Two further horizontal beams (girding beams) delimited the wall posts, the girding beams were inserted into the corner posts. Each of the wall posts were attached by means of dovetails and dowels. The wall posts made six bays 0.70-0.80 m wide, three of the bays had long braces. These were not attached with dovetails but were loosely positioned between the posts. The bays were filled with brick and mortar, lime plaster had been used on the outside of the bricks. One of the bays functioned as a doorway (Johansson 2000: 64). There was a cobbled floor (K74) in the room. Some collapsed bricks in the southwest corner of the house could be remains of an oven. Another residual wall was partly preserved on the northern side of the house – consisting of a sill beam, a course of bricks and the lower part of a wall post. The dendrochronology sets the construction of the building to wintertime 1592/1593 (Johansson 2000: 64).

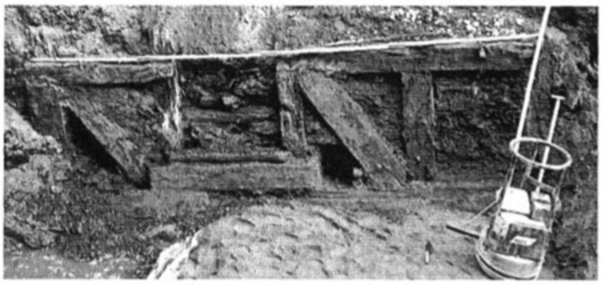


Figure 7 The timber-framed house (A73) in Kv. Argus, Stockholm. The image shows the eastern stratigraphy with the house wall in a north-south direction (Johansson 2000: 64) (Photo: Mikael Johansson (S96-0194/10).

Johansson (2000: 64) points out that the mode of construction at Skeppsbron in Stockholm is somewhat different than most timber-frame constructions i.e. the non-supporting girding beams, and the girding beams and the long braces are not inserted through the use of dovetails Figure 8. Johansson suggests that the house could have been a cook house, serving food for hungry seamen. The location near *Skeppsbron* would serve such a purpose well, due to restrictions on these types of facilities as fire hazards. The name of the alley and written records describing a cook house in the area are also strong arguments for such an interpretation (Johansson 2000: 65).[6]

[6] In Jonas Brolin's map from 1771, the cook house is marked (Johansson 2000, 11). Ahnlund, H. 1984: Johan Eberhard Carlberg, Stockholms stads arkitekt 1727-1773. Stockholm

Figure 8 The timber-framed house (A73) in Kv. Argus. The wall of the house is seen in an east-west direction. Parts of a wall post are visible in the centre of the (Johansson 2000: 65) Photo: Mikael Johansson (Photo S96-0243/l).

Småland

Växjö

- A timber-framed building was erected next to the residence belonging to the cathedral in Växjö, after the sacking of the city in 1570. There were three courses of roughly hewn sill stones fixed with mortar measuring 3.87m × 4 m. In the vicinity of the sill stones, a layer of yellow clay was found, which is possibly connected to the construction process of the building (Balic, Billström, and Alering 2015: 142). The bays within the timber-frame may have been filled with wattle and daub. The external staircase previously mentioned above was not rebuilt after the fire associated with the sacking. The house was only in use for a short time and was torn down by the end of the 16th century (Balic, Billström, and Alering 2015: 36). It is not entirely clear which dating method was used dating the building. The author of the report discusses dating methods in general terms indicating use of pottery, ^{14}C and stratigraphy but does not specify in any detail in reference to any given context.

Östergötland

Linköping

- After a water leak at Linköping castle in 2003, timber-framed inner walls were revealed behind the plaster Figure 9. The walls were dated to the reign of King Johan III, around 1570, by analysing the mortar-samples 51C and 51F (Modén 2003: 34). For a further, developed discussion concerning the methodology for mortar analysis see Ann-Charlott Feldt (2018). The inner walls partitioned a larger room into several smaller rooms. Some changes were made to the wall and panelling when a door was bricked with mortar 52A and moved 0.70 meters to the north in the late 18th century (Modén 2003: 34–36).

Figure 9 A timber-framed partition wall in Linköping Castle, with traces of a moved partition wall and a bricked-up door. (Modén 2003:36) Photo Eva Modén.

Sörmland

Stockholm

- Excavations at Gustav Adolf's Square in Stockholm situated near the royal castle and lake Mälaren, revealed remains of a building dated to the end of the 16th century or the beginning of the 17th century. There was a sill stone foundation with a single course of brick on top,[7] in the south-west corner of the square. This construction was interpreted as either a brick building or a timber-framed building. Regarding its function, it might have been a house belonging to a gun manufacturer with room for the workshop, which

[7] SR 328 - Archaeological registry at Stockholm City Museum

would explain the need for close access to water and water power (Århem 2004: 16).

1600s

Sörmland

Stockholm

- Close by on Fredsgatan, the remains of two buildings were investigated,[8] one of which had probably been constructed in brick or timber-framing technique on the south side of Sträckegatan (Århem 2004: 16).[9]

Västergötland

Nya Lödöse

- At Nya Lödöse, remains of a timber-framed building were found in burgage plot 2, phase 4, dated to c. 1610-1624 (Figure 10). A small house on the burgage plot (2:22:2) was interpreted as a potential timber-framed construction and had been used as an out-building. The house had been deliberately dismantled, most likely, in connection with the town moving from Gamlestaden to the current location of the city (Öbrink and Rosén 2017: 54). Either the building had a clay floor, or the clay could possibly have been used as insulation. The building was dated stratigraphically.

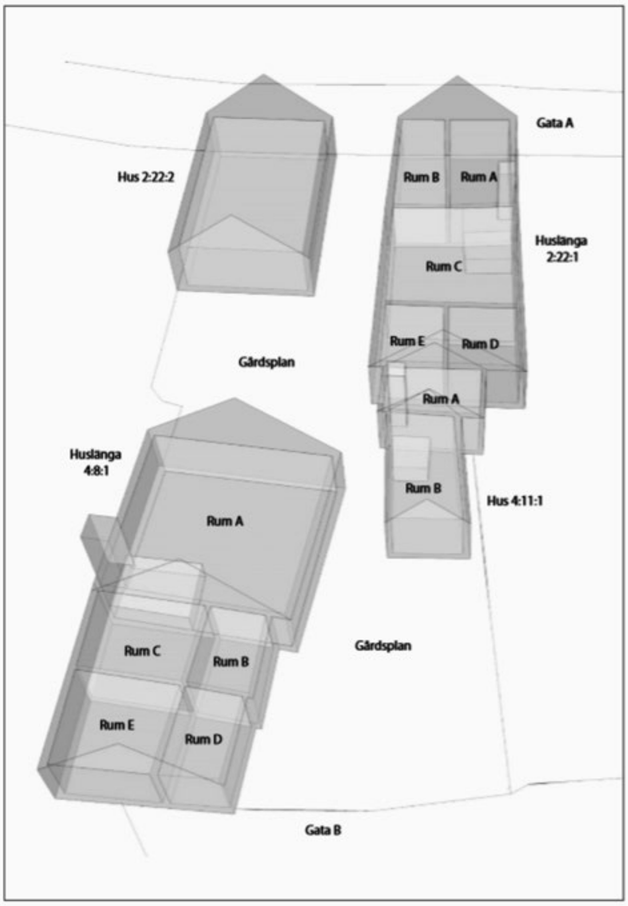


Figure 10 Nya Lödöse, house 2:22:2, burgage plot 2/4 phase 1 (Rosén and Öbrink 2017:56).

Gothenburg

- Around the time of the foundation of Gothenburg (1621-1645) a house (house 1, phase 2) in mixed technique was built in the block Kv Gamla Teatern (Figure 10). The main room and the chamber were constructed in log timber while the east room had been built using timber-framing techniques. The sill beam had two rectangular holes 1.5 metres apart possibly evidence of timber-framing. Along the western and northern sill beams, traces of horizontal panelling was found (Jeffrey 1984: 6). The gable-room towards the street was probably constructed in timber-framing (Jeffrey 1984: 24).
- In the same block, Kv. Gamla Teatern, Gothenburg, during phase 4, house 2, which was dated 1645-1669, another house would also appear to have had three rooms (layout pictured in section 5.2). The house was destroyed in the devastating fire of 1669 in the Västra Nordstaden district of the city. Remains of two of the three rooms could be studied. The western room measured 2.0 × 4.4 metres and the eastern room 3.8 × 4.4 metres, both of which were constructed using log timber techniques with horizontal panelling. East of, and close to the eastern sill beam there was a pile of stones and brick covered with clay 1.1 × 0.8 meters. Two of the stones were rectangular and were placed parallel with one another and with the sill beam. This led Jeffery to consider whether this house also once had a timber-framed part similar to house 1 in phase 2 (Jeffrey 1984: 16, 24).

Småland

Kalmar

- An inner-wall inside Kalmar castle divided a room supposedly intended for the guard, the timber-framed wall was constructed and mentioned on a map in 1650 and the wall remained in place until the 1920s (Stibéus 2015: 122, 140).

1700s

Sörmland

Stockholm

- Sill stones from the building K 53, in the block Kv. Västergötland 6, Stockholm, were part of a pulled-down outhouse (Figure 12). In section D, a part of the wall was visible 0.8 m wide and 0.7 m high of stone and mortar. The construction measured 4.80 × 2.10 m facing east-west. Parts of an inner wall were found, consisting of two courses of stone and evidence of a former wooden wall. The western wall had a brick construction (K52), probably remains of a fireplace; the house had had a wooden floor (K55) insulated with a layer of sand (Fennö 2006: 18). Fire insurance records from 1756 and 1761 describes several

[8] SR 320, 725 - Archaeological registry at Stockholm City Museum
[9] SR 320, SR 725 - Archaeological registry at Stockholm City Museum

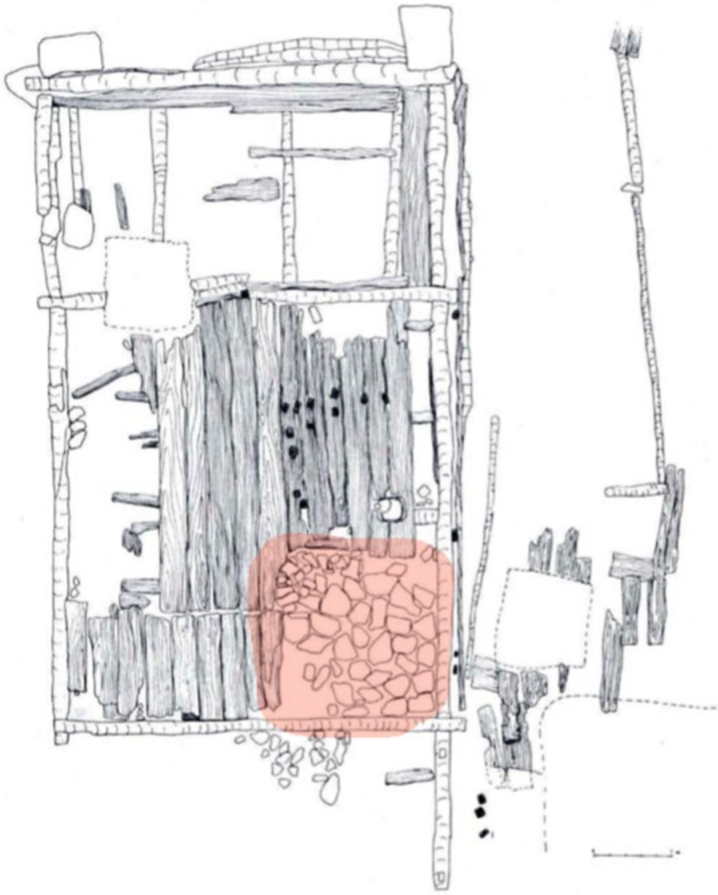


Figure 11. The traces of timber-framing in house 1, phase 2, in Kv. Gamla Teatern in Gothenburg with the corner fireplace coloured beige (Jeffrey 1984).

outhouses on the plot constructed using timber-framing techniques (Fennö 2006: 31).

Reflections on timber-framing as archaeological evidence

What can be said about archaeological remains of timber-framed buildings? The documentation is not clear and sometimes no certainty can be achieved from the evidence. Could it be that timber-frames decomposes more quickly than log-timber, and leaves less to work with for the archaeologists?

Archaeological reports often give little evidence to support timber-framing constructions, frequently as only fragments of the sill-beams remain. Sill-beams could on the other hand be part of either timber-framing, post and plank or log-timber construction techniques and are not in themselves enough for an identification of timber-framing.

Sill-beams with tap holes are another element often used for identifying remains of timber-framing; nonetheless these can also be part of a post and plank construction. However, the tap holes are then also paired with a groove. Traces of tap holes for double posts or mortices are good indicators for timber framing, these are not used in post and plank technique (see Chapter 5.4).

Another construction element of timber-framing is the infill i.e. bricks and mortar, wattle and daub, or logs and clay. Nevertheless, finding only the infill but not the timber-frame supporting them is not enough in itself to confirm the technique. For instance, bricks and mortar could have been part of a brick building, or a chimney or stove, or other similar construction.

Building techniques in general would benefit from being addressed in more detail. I would say, as a rule, that the greater the uncertainty, the longer the discussion, the more collection of evidence such as photographs, detailed drawings and measurements, are needed. Descriptions, on the presence or absence of key building parts/features i.e. wood, mortar, brick

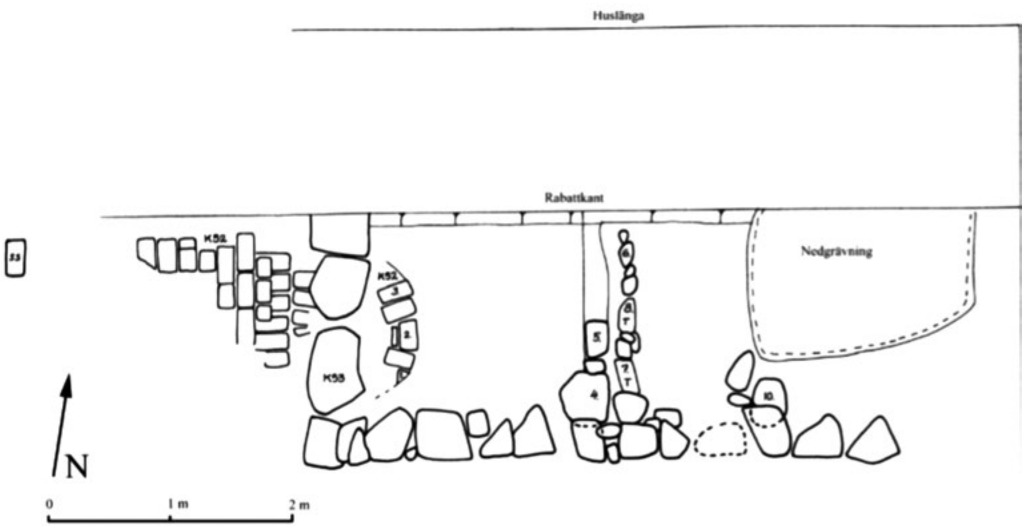


Figure 12 Kv. Västergötland 6. A plan over the sill stone foundation K 53 and the brick foundation K 52, in scale 1:40 (Fennö 2006: 19)

etc., or documentation on how the building parts lock into each other, are helpful indeed. Build a case and present it to the reader, even if there is little certainty. Maybe similar cases will be found later to develop the understanding further. Be vigilant for buildings in a mix of techniques.

Building techniques as represented in visual material - glossary and method

See Appendix 7

In this section I will study timber-framing in the visual material, mainly from photographs, but also using additional information on the buildings from conservation reports and sometimes appurtenant drawings. Glossaries of construction techniques are often highly regional, and it can be difficult to agree on a mutual language. Nor is there a straightforward British glossary since the difficulty with regional building languages (Harris 1989; 1993) applies just as much to Britain as it does to Sweden. It is also problematic since specific techniques and uses might differ between British and Scandinavian/Swedish circumstances and meanings. I have chosen to use the glossary by Volmer and Zimmermann (2012a), as before, because they have extensively researched Northern Europe's building languages and techniques to find or rather create a platform for a common language.

Operational approach

To be able to compare houses and timber-framing techniques over time and in space a few specific construction elements have been registered and studied regarding the photographed buildings, or from photos and drawings in building conservation reports. This part of the study will thus be a visual investigation of timber-framed buildings in photos, however, not all photos could be displayed in the text, partly because of space restraints and partly for copyright reasons. All photos have references, thus it is possible to find them in the original published sources. Some of the images had people in the frame, their identity have been protected through a black colour. The people could have been erased from the pictures through photo edit, but I have chosen to keep them in the frame to both provide a human scale to the buildings and a sense of social use and presence rather than presenting the buildings on their own at all times.

A range of construction elements are registered: jetty bressumers and girding beams (Volmer and Zimmermann 2012a: 162); short upward braces as well as up and down braces (Volmer and Zimmermann 2012a: 181); close studding (Volmer and Zimmermann 2012a: 194); jetties (Volmer and Zimmermann 2012a: 189); external stairs (Volmer and Zimmermann 2012a: 380) and balconies/open galleries (Volmer and Zimmermann 2012a: 66). For detailed explanations of these construction elements consult the glossary on page xiv.

Other building parts or elements, which have been studied, include fitted windows (that is windows specifically made to fit within the bays of the timber-frame), choice of infill, plaster or panelling as well as the use of mixed building techniques in the same building. Other important features are chimneys, they have been listed when they have been visible in the photos.

The photos have been found in the photographic databases in the relevant county museums: Kalmar Läns Museum, Smålands museum, Blekinge Läns museum, Sörmlands museum, Museum of Gothenburg and Gotlands museum, or from reports, usually conservation reports. Some of the buildings were photographed by the author.

The buildings have been sorted by province (to establish the spread geographically), by town or council (for a more precise location) and finally sorted by time to see constructional changes and use.

The dated buildings originate from either descriptions of the buildings in photographs from museum databases, The National Heritage Boards' buildings database or from historical sources connected to the buildings referred to in conservation reports or similar records. In some cases, the date can come from a buildings archaeology intervention. The source of the dates has rarely been clearly indicated in this data sample and therefore, the dates should be seen as approximations rather than certainties.

Småland

Kalmar

1500s

- Kalmar castle,[10] inner walls constructed in timber-framing technique came to light through an investigation of the brickwork in the baker's room. One of the inner walls of room 16, was studied, with a fireplace next to it. No up and down braces were used in the timber-frame, and the infill was brick. The wall was dated to the 1500s (Stibéus rapport 2015:54).

1700s

- Fränkelska gården in Kalmar,[11] is a two-storey, timber-framed house ((Figure 13)). The building has a plastered façade, with a jetty towards the inner courtyard. There appears to be a series of outhouses

[10] KLMF.Slottin004-67/ KLMF.Slottin004-70 from the photo database at the Kalmar Läns Museum

[11] KLMF.B00378/ from the photo database at the Kalmar Läns Museum

Figure 13. Fränkelska gården in Kalmar, a two-storey timber-framed house. Photo by Manne Hofrén 1928 in the Kalmar läns museums databas.

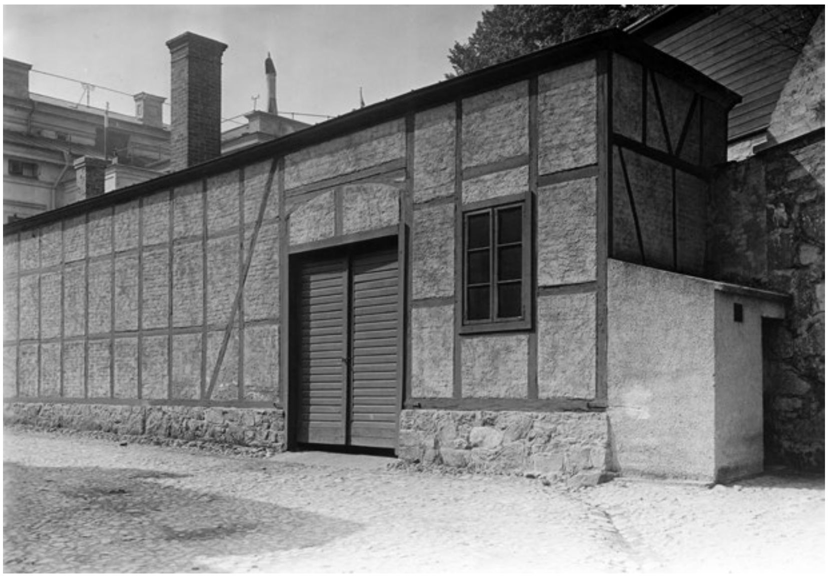


Figure 14 An outhouse close to the western gate, Västerport in Kalmar. Photographer unknown, Kalmar läns museum.

with separate entrances on the ground floor and a dwelling on the first floor. According to the Kalmar länsmuseum database the building was built at the end of the 18th century.

Unknown date

- Close to the western city gate, Västerport, Kalmar,[12] the building was used as an outhouse, it was built as a one-storey structure and had a large gate with one window facing onto the street (Figure 14). There was no use of upward braces; however, up and down braces were included in the frame. The window was adjusted to fit within the bay. The building had brick infill.
- On Proviantgatan, Kalmar,[13] there is a two-storey, timber-framed building, which has up and down braces forming large crosses, with brick infill (Figure 15). The two doors and windows are adjusted to the bays and several of the windows have shutters. The building has a substantial row of pad stones and three steps leads up to the entrance of the building. It has a hipped roof and a girding beam between the floors. The timber-frame seem rather irregular, and between some of the windows, there are double posts. One, possibly two chimneys can be seen on the photo.
- Tuna församlingshem, Kalmar is a gathering hall for the parish, built as a single storey (Figure 16).[14] There is a substantial row of pad stones, as well as the use of double posts and up and down braces, with brick infill in the construction. There are three windows visible on the photo, fitted to the bays. The entrance has a porch and three steps, and the building has one chimney. There is some wooden panelling in the top gables.

[12] KLMF.B00373 from the photo database at the Kalmar Läns Museum

[13] KLMF.OL01279 from the photo database at the Kalmar Läns Museum

[14] KLMF.HJ1-3725 from the photo database at the Kalmar Läns Museum

Figure 15 A dwelling on Proviantgatan in Kalmar. Photo by Ola Lejonborn 1986, Kalmar läns museum.

Figure 16 This gathering hall for the the parish in Tuna, Kalmar, was built in timber-framing. Photo Karl Ludvig Berner 1918. Kalmar läns museum.

Växjö

1800s

- Idun 5 in Växjö (Palmblad 2003). The house used to be situated in the countryside, but the town has since grown and the house is now incorporated within the town limits. The building was constructed in the 1870s. It used to have a plastered façade, but it has been removed and now the timber-frame is visible. The house is over one-and-a-half storeys, with brick infill. The timber-frame has been painted red, and there is a row of pad stones. The windows are adjusted to the bays and there are glass verandas on either side of the building. The upper part of the gables is covered with wooden panelling. One centrally placed chimney can be seen in the photo.

Unknown date

- Norra Järnvägsgatan 4,[15] in Växjö is a timber-framed warehouse. It is listed as Växjö's only timber-framed house in the museum database (Figure 17), nonetheless it is number two in this list. There is a girding beam running between the floors, up and down braces are used as well as fitted windows and doors to the bays. It is a two-storey house with six visible doors on the ground floor and six visible windows on the first floor. The house has brick infill and the timber-frame appears to be of regular structure. Pad stones seem not to be used.

[15] INWA0725 Inga Walde, Kulturparken Småland/ Smålands museum

Figure 17 Norra Järnvägsgatan 4, in Växjö. Photo Inga Walde 1976. Kulturparken Småland.

Värmland

Unknown date
Karlstad

- Tideholmsgården in the block Kv. Almen, in Karlstad, is a two-storey attached building, [16] which means two units are built wall to wall, thus attached and made to look as one house (Figure 18). One of the houses is built in timber-framing technique with brick infill and the other house is built in log construction technique. Two chimneys are visible in the photo. The building used to have wooden panelling therefore it appears to have been a surprise to find the timber-frame construction when the building was being demolished in 1961. The timber-framed part of the house had one door and one window on each floor level. Logically, there would have been an external staircase to give access to the first floor, nonetheless, there are no traces of a staircase in the photo. The windows are adjusted to the size of the bays, and the windows in the log-built part of the house have been adapted to look the same as the windows on the timber-framed side, which would have made for a uniform aesthetic of the building when the panelling hid the building techniques. It is not possible to make out whether the house had pad stones from the picture. No up and down braces are used in the construction but a girding beam is visible between the floor levels.

Västergötland

1700s

- The barn called *Oxladugården* from 1761, at *Läckökungsgård* (a property that historically belonged to the crown). The name of the building would indicate that oxen were kept in the barn.[17] It is a one-storey barn with a loft, there is a large entrance and door leading into the building. The house is plastered white with the timber-frame painted black. There is one window on each side of the gate. Up and down braces have been used.
- Rommele, Anstorp 1:2 in Trollhättan, is a building of one-and-a-half storeys. The ground floor is built using timber-framing techniques while the attic is built in the log technique. The dwelling was built in 1720. The building has six rooms, a kitchen, two hallways and a glazed porch; it has a substantial pad stone footing and a panelled façade.[18]

1800s
Gothenburg

- *Drottning Kristinas Jaktslott* (Queen Kristinas' hunting lodge), in Gothenburg is situated on the outcrop Otterhällan within the city's fortifications (Figure 19). It has been moved from another street within the city centre. The building is constructed in timber-framing technique, built in 1731. It was remodelled in 1806, after the fire in 1804. The ground floor was used as a pub from the 1770s to 1804. The name of the house suggests a connection to Queen Kristina, or that it had functioned as a hunting lodge. There is no merit to the name; the closest connection to the queen comes from the house being situated close to the city gate Christina Regia and being frequented by pub-going soldiers in the city watch in the 18th century. The house has been remodelled several times, but it is the only one of its kind within the city fortification. It has small windows

[16] KARLSTAD313 from the photo database at Värmlands Museum
[17] Statens fastighetsverk https://www.sfv.se/sv/fastigheter/sverige/vastra-gotalands-lan-o/lacko-kungsgard/, (viewed 2020-03-11), Helén Sjökvist, Lisa Skanser, Tobias Márud Stiftelsen kulturmiljövård vårdprogram Läckö Kungsgård https://www.kmmd.se/Kulturmiljovard/Vardprogram/ (viewed 2020-03-11)
[18] Älvsborgs läns museiförening, kulturhistorisk utredning 9, page 31. Älvsborgs läns byggnadsinventering 1975

Figure 18 Tideholmsgården in Karlstad was partly built in timber-framing. Photo Gösta von Schoultz, Värmlands museum.

Figure 19 Queen Kristina's hunting lodge in Gothenburg. Photo Otto Thulin, Public domain mark, Carlotta Gothenburg city museum.

and a hipped roof, and the house has plastered façade and rests on pad stones (those originates from the relocation of the building to its current location in 1972). The house is now one of its kind from before 1800, within the fortification (Lönnroth et al. 2003: 425).

Bohuslän

1800s

Grebbestad

- *Kaptensgården* in Grebbestad 7:2 is a two-and-a-half storey building, the name of which originates from a time of a sharp economic improvement in the county of Bohuslän, and in Grebbestad in particular, due to a boom in the herring industry.[19] Some fortunate merchants saw a rapid increase in wealth and started to build substantial buildings, Kaptensgården is one such example. The building had a ground floor in log building technique, built c. 1780 and a timber-framed first floor added on in 1856; there was also a balcony/gallery built on the first floor. It had a cellar built into a side slope. The façade was covered in wood panelling (Wingård and Rydbom 2008: 117).

- *Nerdrumskahuset*, Grebbestad 20:5 which was built in 1859 consists of two-and-a-half storeys (Figure 14). Part of the house is built in timber-framing with brick infill, and the façade is panelled. The house rests on pad stones (Wingård and Rydbom 2008: 46).

Östergötland

1700s
Vadstena

- Jöns Larssons house in Vadstena, was constructed in stone in the ground floor around 1580. The first floor had by the mid-18th century been added to the building, in timber-framing technique or roughcast log timber. The house has an upstairs gallery/balcony today, yet it is not clear if there had been one historically, (a photo from the 1920s shows no balcony). The façade has been painted in darker gold ochre in the ground floor and a light ochre in the first floor. The house rests on padstones.[20]

Unknown date

Skänninge

- Korpgatan in Skänninge has a two-storey timber-framed building with brick infill (Figure 21). The building has up and down braces, a girding beam and fitted windows to the bays. The back of the house has a log timbered wall on the ground floor. There is a substantial layer of padstones to support the building and one chimney is visible on the photo.

Sörmland

1600s
Stockholm

- Örby slott (Örby gård 2, Älvsjö), in Stockholm is a two-storey manor house, built in the 1670s in timber-framing technique (Figure 22). There is a similar house built (the owners of the houses were brothers) called Sandemar, in Haninge. Örby slott, is built in a Carolinian style (an architectural design named after the three kings Karl X, Karl XI, Karl XII in 1654-1718) with a manorial roof and plastered facades. There are two halls for entertainment, one on each floor. There is front gable with a balcony on the first floor (Stadsholmen 2013).

1700s

Figure 20 Nerdrumska huset, Grebbestad 20:5 (Wingård and Rydbom 2008: 46).

[19] Swedish National Heritage Board http://www.kringla.nu/kringla/objekt?referens=raa/bbr/21000001474580 (viewed 2020-03-12)

[20] Swedish National Heritage Board http://www.kringla.nu/kringla/objekt;jsessionid=A2C5B2B8B9E7ECBC024C1695BDB3AE25?referens=raa/bbrb/21420000014536 (viewed in 2020-03-12) Kulturhistorisk utredning, Mårten Ulfssons hus, Vadstena, Vadstena kommun, Östergötlands län, Östergötlands museum, Anita Löfgren Ek, 2011

Figure 21 The timber-framed building on Korpgatan in Skänninge. Photo A. Nilsen

- Bellmanhuset, in Stockholm (Figure 23) within the block Kv. Urvädersklippan Mindre 8, is a three-storey timber-framed building once inhabited by the famous 18th-century poet Carl Michael Bellman. The house was built in 1723 right after a big city fire in the Katarina parish, and an extension was added in 1764. There is no symmetry between the positions of the windows of the ground floor compared to the first floor, which could indicate that the timber-frame is not in alignment between the floors. The house is situated on a slope and the substantial stone foundation compensates for that. Two doors face the street.

Katrineholm

- The manor estate Claestorp in Katrineholm include a number of timber-framed buildings such as stables, barns and other outhouses. A description of the stable follows:[21] it was built in the 1720s, and is now plastered white and the timber-frame is painted red. The stable is one-and-a-half storeys high, with up and down braces on a pad stone foundation. Eight windows are visible in the photo, and the windows are perfectly fitted within the bays. There are also two entrances to the building.

1800s

[21] Swedish National Heritage Board http://www.kringla.nu/kringla/objekt;jsessionid=96064F671D51756A86BFE81CA60B2219?referens=raa/bbr/21300000012872 (viewed 2020-03-12).

Figure 22 Örby slott in Stockholm, a manor house built in timber-framing technique. Photo Pia Englund.

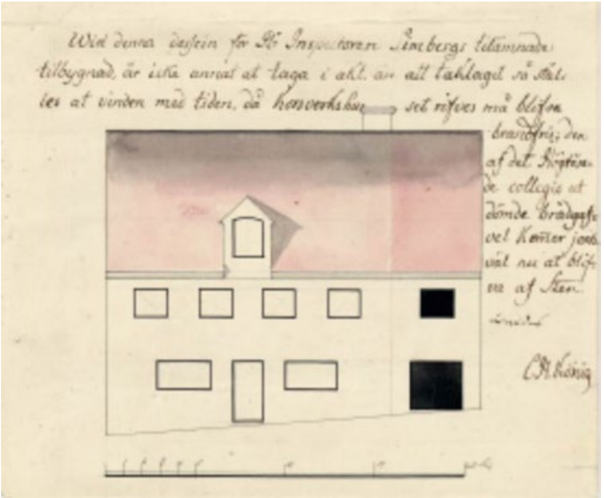


Figure 23 The design was created on 13th March in 1764, it shows the extension to the Bellman house in Stockholm. (Stockholms stadsarkiv /SE/SSA/NS37/ Stadsbyggnadskontorets kartor och ritningar/1764:11). Creative commons

Lagmansö

- Lagmansö has a timber-framed building built over one-and-a-half storeys, with six doors on the side that is visible in the photo, and a further ten small windows. The building is plastered white, yet it is possible to make out the contours of the timber-frame on the gable. The building was built in the second part of the 19th century and functions as a stable (Beckman-Thoor, Färjare, and Ulfhielm 2019: 180–81).

Trosa

- Kv. Baderskan 3, house 2, Trosa, was probably built in the years before 1880. The façade was roughcast, and the building rested on 1½ foot – c. 0.45 m - high pad stone plinth. The ground floor held a bakery, a brewery and four warehouses. The first floor had four rooms, two kitchens as well as a flat with two rooms and a kitchen in the attic. This was thus a multi-unit structure with many functions. The timber-frame had infill of unburnt brick-shaped blocks of clay and straw, with some burnt brick and logs. Insulation was used, in the form of moss between the clay blocks. The façade was clad with yellow wooden panelling, horizontally on the gable end and vertically on the long sides of the house. The house had two chimneys, up and down braces, double posts and girding beam between each floor level. The second floor had walls made of logs and clay (Taawo and Larsson 1997).

- Garvaregården, Trosa, which includes a tannery and a range of other buildings, dates to the 18th and 19th century. It is a good example of an artisanal environment. The family lived in the burgage plot alongside journeymen, maids and ploughmen in a nearly self-sufficient household. The plot contained a dwelling, the tannery, two warehouses, as well as a shed. House 3, the warehouse has been built in a mixed technique originally two buildings with a joint attic of one-and-a-half storeys. The ground floor has been constructed partly using log and partly timber-frame techniques; there are traces of first floor/attic balcony in the southern part of the building. The timber-frame has an infill consisting of logs and bricks. The attic is completely constructed in timber-framing with log infill dated to the 1870s. The façade has been plastered red making the exterior look uniform, some parts of the building have panels painted red. A tunnel entry has been converted into a room/shop (Rydergård and Larsson 2002: 15–18).

Björkvik

- Dammstugan, Björkvik, is constructed in a timber-frame with an infill of wood and clay.[22] It is a two-storey house from the 1800s, with a closed porch, it has one chimney and seems to rest on pad stones. The façade is roughcast, and thus the timber-framed construction is not visible on the photo.

Unknown date

Nyköping

- Vrena, Nyköping, offers a single small timber-framed building with a chimney (Figure 24). It has two windows fitted to the bays, and double posts in the construction. The house rests on pad stones.[23]

Västmanland

1700s

Västerås

- A timber-framed house along the stream Svartån in Västerås, is a very long two-and-a-half storey building, with an estimated date to 1740-1759. The timber-frame is regular and constructed with two girding beams, up and down braces and somewhat fitted windows. The frame on the ground floor aligns with the first floor in what can be assumed to be the original part of the building. The house appears to have been extended at some point in time with a different height to the ceiling on the ground floor, clearly indicated by the girding beams, which do not align with the rest of the building. Historically, the house has functioned as a warehouse, factory and workshop.

Blekinge

1600s

Karlshamn

- Asschierska huset, which is situated on the main square in Karlshamn, was built in 1682 as a town hall.[24]

[22] Elina Blom Westergren, Byggahus.se, 2019-07-04 https://www.byggahus.se/bygga/bygga-hus-ved-kubbhus (viewed 2020-03-12)

[23] SLM S78-80-14, Sörmlands museum, viewed March 12, 2020, https://sokisamlingar.sormlandsmuseum.se/items/show/391691.

[24] Länsstyrelsen Blekinge Län https://web.archive.org/web/20150622211949/http://www.lansstyrelsen.se/blekinge/Sv/

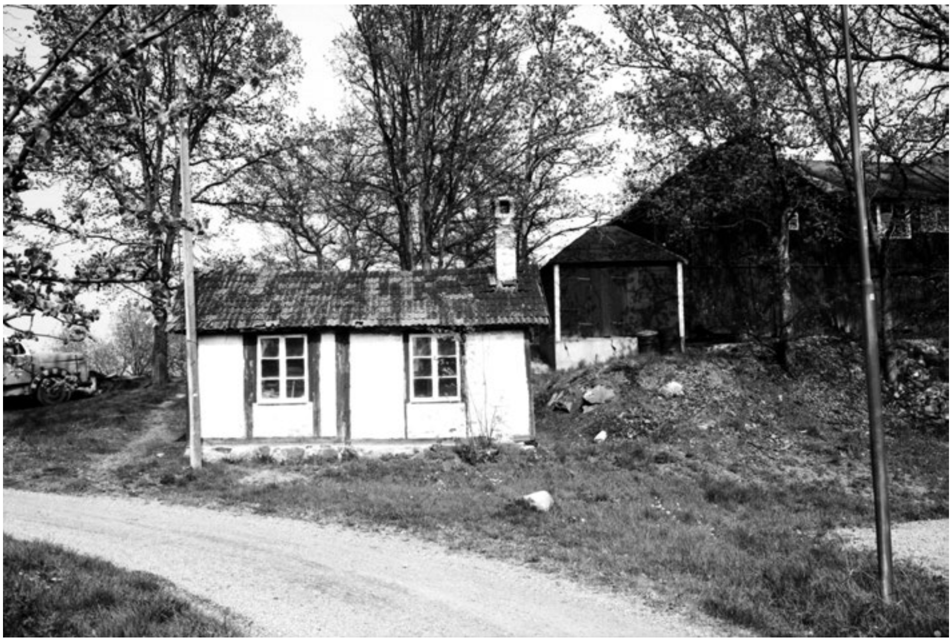


Figure 24 A small timber-framed building in Vrena, Nyköping. Photo Ulla Walukiewicz. Sörmlands museum.

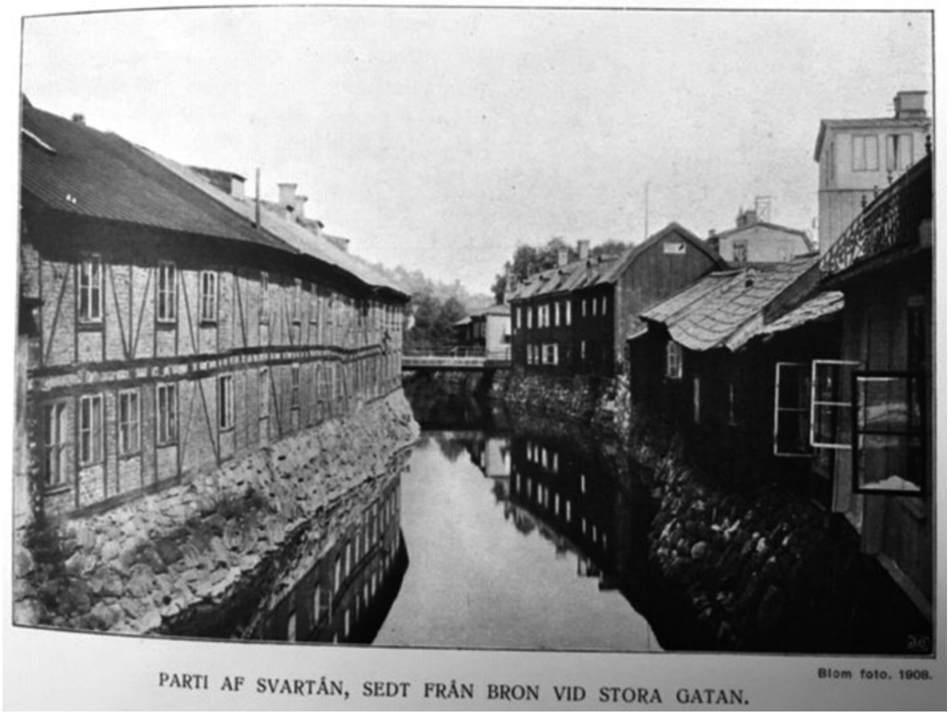


Figure 25 The timber-framed house next to Svartån in Västerås (Bäckström and Wallin 1911: 36)

The house has a timber-frame with brick infill, from a nearby brickyard. The regular timber-frame has a jetty bressumer, up and down braces and fitted windows to the bays as well as a chimney. There appears to be a cellar under the house. The building has been used as a church, a customs house, a scale house and warehouse. A custody and a city pub have also been located in the building and the roof had a clock tower to be used for warning of fires, as well as announcing council meetings and auctions.

1700s
Elleholm

- Elleholms kyrka, is a church with the porch and tower built in timber, while the nave and the sacristy were built in timber-framing technique in either 1705 or 1713. There is a regular timber-frame with brick infill and fitted windows and the church rests on pad stones.[25]

samhallsplanering-och-kulturmiljo/skyddad-bebyggelse/Pages/asschierska.aspx (viewed 2020-03-13)

[25] Blekinge museum BLM D 6658, BLM D 6659, BLM DB 2009 3895, BLM NYB 1257 http://blm.kulturhotell.se/search?query=elleholms+kyrka&submit_search=S%C3%B6k&query_type=exact_match&record_types%5B%5D=Item&record_types%5B%5D=File&record_types%5B%5D=Collection (viewed 2020-03-13)

Figure 26 Asschierska huset in Karlshamn is a 17th century building. Photo Ingemar Atterman 1958. Blekinge Museum.

Ronneby

- Göholms estate, Ronneby, has a timber-framed building on the property. A single storey house was built before 1789, which originally had functioned as a pub. It is constructed in timber-framing with brick infill. From the mid-1930s, the house functioned as a gate house and as residence for the gardener of the estate. Later it was used as a dwelling for numerous workers at Göholm (Persson and Jakobsson 2011: 122). A large cold frame protects the vine from cold weather along one side of the house. The timber-frame has regular bays, up and down braces and fitted windows. A chimney is visible on the photos and the house rests on a substantial cellar.

Unknown date

Figure 27 Elleholms church built in timber-framing technique.

Figure 28 The timber-framed building in block Ceres in Sölvesborg. Photo Ingemar Atterman, Karlskrona. Blekinge museum.

Sölvesborg

- Block Ceres 6-7, Sölvesborg, has yet another regular timber-framed construction of two-storeys. It has up and down braces and fitted windows and doors to the bays. The building rests on a cellar with several entry doors and a set of steps leading up to the main doorway to the house. A timber-framed outhouse with wooden panelling is attached to the gable, perhaps a cart shed of sorts.[26] It is not clear as to when the house was built.

Gotland

1500s

Visby

- Burmeisterska timber-framed house, in Visby (Figure 29), which is constructed in a mix of building techniques, was built in the 16th century. The house was moved to its current location in 1905, from the property *Städet 1*. The sidewall of the house, facing the street is built in timber-framing technique with a jetty bressumer, up and down braces and a regular timber-frame. The first floor is jettied and there are three small

[26] Blekinge museum BLM D 6648, BLM D 6649 https://blm.kulturhotell.se/search?query=ceres&submit_search=S%C3%B6k&query_type=exact_match&record_types%5B%5D=Item&record_types%5B%5D=File&record_types%5B%5D=Collection (viewed 2020-03-13)

Figure 29 Burmeisterska timber-framed house in Visby, Gotland. Photo A. Nilsen

windows, two on the long side and one on the gable end. The side of the house and the timber-framed part of the lower gable has been plastered but the wooden frame is visible. Half the gable is constructed in post and plank technique and the upper gable has a timber-frame construction with red brick infill. The frame has crossing timbers in an x-pattern. The roof is a steep gable roof, the house is placed directly on the ground with no traces of pad stones.[27]
1600s

- Burmeisterska house, in Visby, was built in 1654 (Figure 30). A two-storey log timber house with timber-framed upper gables. There is a centrally placed hatch in the gable, giving access to the attic supposedly for storage. The timber in the timber-frame is coloured red as the rest of the house and the infill is hid behind plaster. [28]

Figure 30 The Burmeisterska log timber house with a timber-framed gable in Visby, Gotland. Photo A. Nilsen

- Laboratorn 4, in Visby are essentially four attached two-storey buildings (Figure 31). In the 15th century the burgage plot consisted of three stone houses positioned in a U-shape with two warehouses and a dwelling. In the 17th century the fourth building was added, and some remodelling took place.[29] A jetty or verge, forming a passage over the pavement protrudes over the street on the first floor. The jetty is built with two adjusted windows to the bays, the upper gable has a timber-frame in a x-pattern. The lower gable has up and down braces and double posts. The timber is visible, and the infill is plastered white. The side of the jetty/building towards Klosterbrunnsgatan has a very tight timber-frame, bordering on close studding, up and down braces in the ground floor, a girding beam and fitted windows as well as the use of pad stones. The building Laboratorn 4, connects to the building on the opposite side of the street through a jetty on the first floor creating both an extra room above the street but also a tunnel passage for the people on the street.

- Gråbrodern 5, Visby, is a house in a mixed technique towards the street S:t Hansgatan, used as a dwelling (Figure 32). The ground floor is of medieval origin, built in stone. The first floor built in log timber technique and upper gables in timber-framing technique was allegedly built in the 17th century.[30] The gable has a timber-frame with up and down braces and two fitted windows built with a jetty bressumer. The timber is visible, and the infill is plastered white. The house has a chimney.

- Gråbrodern 7, Visby, which is situated on a corner plot, is one-and-a-half storeys high (Figure 33). The property includes five buildings forming a closed unit burgage plot. The residential house is built in roughcast timber-framing technique, most likely in the 17th century.[31] The timbers in the timber-frame are visible and painted black, the infill is plastered in a red tone, along the long side of the house towards Hamburgergränd. Up and down braces and two fitted windows and a girding beam have been used in the construction and three projecting windows in the furnished attic have been built. The gable towards S:t Hansgatan has been plastered thus not showing the timber-frame, yet the three windows on the ground floor are much larger than on the side wall. The entrance is placed on the gable and the house is now a shop. The upper part of the gable has a wood panel,

[27] The National Heritage Board, Bebyggelseregister, Burmeister 5, Ahlins försäljningslokaler. http://www.bebyggelseregistret.raa.se/bbr2/anlaggning/visaHistorik.raa?anlaggningId=21300000020032&page=historik (viewed 2020-03-13)

[28] The National Heritage Board, Bebyggelseregister, Burmeister 4, hus1, http://www.bebyggelseregistret.raa.se/bbr2/byggnad/visaHistorik.raa?byggnadId=21400000581586&page=historik&visaHistorik=true (viewed 2020-03-13)

[29] The National Heritage Board, Bebyggelseregister, Laboratorn 4, hus 9003, flerbostadshus (multi-unit structure) http://www.bebyggelseregistret.raa.se/bbr2/byggnad/visaHistorikText.raa?byggnadBeskrivningId=21707048481292&byggnadId=21400000704848&historikId=21000000363055 (viewed 2020-03-14)

[30] The National Heritage Board, Bebyggelseregister, Gråbrodern 5, hus 1, bostadshus/dwelling http://www.bebyggelseregistret.raa.se/bbr2/byggnad/visaHistorik.raa?byggnadId=21400000581095&page=historik&visaHistorik=true (viewed 2020-03-14)

[31] The National Heritage Board, Bebyggelseregister, Gråbrodern 7, hus 1b, http://www.bebyggelseregistret.raa.se/bbr2/byggnad/visaHistorik.raa?byggnadId=21400000703423&page=historik (viewed 2020-03-14)

Figure 31 Laboratorn 4 photographed from the front with the verge and of the sidewall with the jetty connected to the property on the other side of the street, in Visby, Gotland. Photos A. Nilsen

Figure 32 Gråbrodern 5 in Visby, Gotland. Photo A. Nilsen.

and the large windows of a different kind than those on the first floor.
1800s

Buttle

- Buttle, Stora Velinge, a house with a timber-frame with a wall called *pinnmur* in Swedish, a mixture of wood, stone and clay. The entrance is in the gable-end, the windows somewhat adjusted to the bays. The top gable has wooden panelling. The building dates to the 19th century.[32] Photographer Stefan Haase.

Roannarfve

- Roannarfve has a single storey hut with one gable constructed in stone, the side wall in post and plank technique as well as the other gable in a sort of timber-framing technique. There are two windows in the gable and a chimney is visible. The upper part of the timber-framed gable has wooden panelling. The building appears to rest on pad stones.[33] Photographer Lennart Björkquist
1900s

Visby

- Brucebo, Visby, is situated outside of town (Figure 34).[34] A family of artists, the Bruces from Canada, built several houses in 1900-1906, one of those was a timber-framed residence for the gardener. The houses were built in the national romantic style of the time (yet it is difficult to know which nation was intended). It is a two-and-a-half storey building, the first floor and attic slightly jettied with jettied bressumers. Up and down braces, small fitted windows and an external stair and balcony can be seen in the photo. The roof is built as a steep gable roof, and the house has a chimney. It looks like the building has one ground floor entrance and one, possibly two accesses leading onto the balcony.

[32] Gotlands museum, GFF905_118 http://samlingarna.gotlandsmuseum.se/index.php/Detail/objects/10925 (viewed 2020-03-13)
[33] Gotlands museum, GFF982_626 http://samlingarna.gotlandsmuseum.se/index.php/Detail/objects/50078 (viewed 2020-03-13)
[34] Gotlands museum, GFF978_409 http://samlingarna.gotlandsmuseum.se/index.php/Detail/objects/48505 (viewed 2020-03-14)

Figure 33 Gråbrodern 7 in Visby, Gotland. Photo A. Nilsen

Figure 34 Brucebo, Visby. The garderners lodge. Photo Raymond Hejdström. Gotlands museum.

Unknown date

Bunge

- Lundarhagestugan, at Bunge museum, is an example of a house built in a mixed technique (Figure 35). The body of the building is built in beautifully ornamented post and plank technique while the upper gables are constructed in timber-framing. The gable has up and down braces, a centrally placed window. The infill used appears to be in stone (it is however hard to make out on the photo).[35]

Lamskvie

- In Lamskvie, the smithy is constructed in a sort of timber-frame construction (Figure 36). Probably with a mix of stone and clay, locally called *gutmur*. It is a single-storey building, there is no chimney visible on the photo, which is strange since the building is called a smithy. There is a door and one large window on the long side of the house, the upper gable is clad with wooden panelling. No known date.[36]

Reflections on timber-framed buildings through photographed sources

Ten buildings were undated and twenty-eight were dated (Table 1). Three buildings/building parts were built in the 1500s i.e. Småland and one house in Gotland as well as one in Östergötland. Six buildings were

[35] Gotlands museum, GFF903_406 http://samlingarna.gotlandsmuseum.se/index.php/Detail/objects/10123 (viewed 2020-03-13)

[36] Gotlands museum, GFF942_376, GFF942_382 http://samlingarna.gotlandsmuseum.se/index.php/Detail/objects/21836 (viewed 2020-03-13)

Figure 35 Lundarhagestugan, at Bunge museum. Photo Åke Meyersson. Gotlands museum.

Figure 36 Lamskvie, a sort of timber-framed construction, locally called Gutmur. Photo Gunnar Jonsson. Gotlands museum.

erected in the 1600s, located to Sörmland, Småland and a single building in Gotland. In the 1700s, there was a larger spread with eight buildings in the provinces of Sörmland, Västmanland and Blekinge as well as in Västergötland and Bohuslän. Twelve buildings belonged to the 1800s, situated in Blekinge, Gotland, Småland, Bohuslän and Sörmland. Finally, one building from the 1900s is located in Gotland.

Table 1 Dated photographed timber-framed buildings sorted by province. The data is detailed in Appendix 7.

Dated photographed timber-framed buildings sorted by province						
Province	1500s	1600s	1700s	1800s	1900s	Undated
Småland	I		I	I		IIII
Gotland	I	IIII		II	I	II
Östergötland	I					I
Sörmland		I	II	IIII		I
Västmanland			I			
Blekinge		I	I	I		I
Västergötland			III			
Bohuslän			I	I		
Värmland						I

The mapping of these timber-framed buildings suggests that the technique could be found all over the investigated provinces and in any number of various functions. After a quick overview nine of the buildings are associated with elite surroundings, either as elite dwellings or as part of the building stock within their country estates. There was also a mention of a town hall, which is a little difficult to place in the social strata. Twenty buildings belong to a burgage plot context either as houses or as places for work or storage. Seven of the buildings belong to a lower stratum of society consisting of huts, and places of work. Thus, the sample data from the photographic evidence gives a cross section of the average user/builder of timber-framing constructions within Swedish society.

Another interesting feature of this sample is the high number of buildings in mixed techniques that have been preserved or at least photographed. There are apparently no rules when it comes to mixing building techniques in houses: anything goes. The result is a mixed bag when it comes to the aesthetics, apparently, there was not a purist attitude towards style. Yet, in respect of function it does not seem to have been be a problem, moreover it may even be an advantage using more than one building technique since each technique has different properties.

As listed, there are a number of materials that can be used as infill. Some of these techniques could be argued are more in resemblance to timber-framing rather than being the real deal. For instance sawn planks (sw. *plankkap*) can be used instead of bricks, with mortar in the same technique as conventional bricklaying (Sw. *knubbteknik*), which is a supporting structure (Östlund et al. 2008: 28–30). Another technique with a similar name (sw. *kubbteknik*) uses round or split wood across the wall, with mortar. This technique requires a timber-frame (yet, there are examples of supported structures in *kubbteknik*). This was a conventional technique that saved on wood, used foremost in the 19th century to build dwelling houses (Jerer and Westerberg 2004).[37] In Gotland, they used what they had in abundance; stone, to fill in the bays instead. Experimental building projects works with/studies both frame (Lassen 2014) and infill (Melin 2011) as seen in (Figure 42) as part of a eco-friendly building course *Handicraft and building preservation at Nääs.*

Historically documented timber-framed buildings and their dating

See Appendix 6

I will discuss a sample of historical records connected to the urban building stock in timber-framing technique. In order to display what kind of information this material can provide and how it can interlock with the archaeological data. These written records have not been used to their full potential concerning information about the built environment and its social connotations.

The aim of section 5.3 is to visualize the presence and spread of timber-framed houses and one method is to acquire evidence through various historical records, using fire insurance records, probate inventories and drawings. As stated earlier, the aim is not to consult every document on timber-framing, but to show the potential of this material. In some of the historical records, the functions and sometimes the layout are more precisely stated than in the archaeological material.

Sörmland

1600s

Stockholm

- In the block, Kv. Mercurius 5 Stockholm, Hans the baker owned a timber-framed house at the beginning of the 17th century. His neighbour Mattias Soop 'bought two timber-framed shops in Skolstugugränd' in 1628 (Bergman 2013: 5–8). No traces of the timber-framed house could be seen at the examination of the brickwork in 2013 (Bergman 2013: 20). The courtyard was archaeologically excavated in 2014 (Carlsson and Svensson 2015: 168).

1700s

37 file:///C:/Users/xnianz/Dropbox/Timberframing%20in%20central%20Sweden/rapporter/Bohuslän/Grebbestad/Knubbhus_Jerer_&_Westerberg.pdf (viewed 2020-03-14)

- At the Lock (*Sw. Slussen*) in Stockholm, fire insurance records in 1758 describe a slaughterhouse as a *'timber-framed building with brick infill built on piles' (Sw. 'tegelstens korsvirke uppå pålar')'* (Wändesjö 2016: 13).
- In the block, Kv. Iris in Old Town Stockholm, fire insurance records from 1751 state in accordance with a property evaluation from 1757 that the house had a relatively old character at the time. It concerned a stone house in four floors, with a roof of turf and birch bark. The partition walls were constructed in timber-framing technique (Bergman 2015: 8–10).
- In Södermalm, Stockholm, fire insurance records from 1822 give a view over the houses belonging to the manufacturer Dilhström at the corner of Glasbruksgatan and Tvärgränden. Apart from the residence, there were warehouses and workplaces as well as storage facilities. Though there was also a building constructed in timber-framing containing a cart shed and various other sheds (Sternegård and Ek 2016: 14)
- Returning to the block, Kv Västergötland 6, Stockholm, discussed above, fire insurance records from 1756 and 1761 states that in the spot, where house remnant K 53 was found, several sheds or outhouses had been located, and they were built sometime after the fire of 1723. '*Some of these outbuildings had been constructed in timber-framing technique; a stable- and cart shed constructed in timber-framing with stone/brick infill as well as a hen house and two privets made of a combination of timber-framing and timber ('stall- och vagnshus av stenkorsvirke, två avträden och ett hönshus av bräder och korsvirke')* (Fennö 2006: 31) (possibly interpreted as post and plank construction or a mixture of two building techniques).
- On Kungsholmen, Stockholm a glassworks was constructed in timber-framing in the 1750s along with a cook house for preparing potash, a warehouse for the glass products as well as a dwelling (Skoglund 2015: 94).
- The palace Engelska huset (The English House) in Stockholm, was built in 1667 and is situated in the block Nederland (Högbergsgatan-Folkungagatan) adjacent to the lake Fatburen. The fire insurance records from 1751 contain information about a number of timber-framed outhouses within the plot. Two of the sheds were located on the north side of the plot and three additional small timber-framed sheds within the palace yard (Sw. 'Det fanns också två korsvirkesbodar i norr, och tre små bodar av korsvirke och brädor på gården'). The house was named after one of the owners of the house, the English diplomat Robert Jackson who resided there 1711-1743. The palace was thereafter, bought by the Katarina parish to be used as a poor house during the 19th century (Stadsholmen 2013: 6).
- In the block Lappskon Större 8, in Stockholm, by the shores of lake Mälaren archaeological investigations took place revealing remnants of wood, brick and mortar, in test pit 8 and 10. Historical documentation such as Holms book of plots from 1679 and the *Mantalslängd* (the historic, population register maintained by the parish) mentions three possible or established timber-framed buildings within the plot. The first concerns a residential building referred to as a half-built stone house (Sw. '*ett halvbyggt stenhus*') possibly with a cellar and a substantial stone foundation but with a log timbered- or a timber-framed construction on top (Lorentzi and Lundgren 2004: 13). On the same plot, there were timber-framed sheds functioning as a dyehouse by the lake (Sw. '*ett antal bodar av korsvirke och bräder*') in the 1740s, a long structure of a single storey. Later on, in 1757 there was a timber-framed building (Sw. '*korsvirkesbyggnad*') functioning as a laundry for wool by the lake (Lorentzi and Lundgren 2004: 19–20).[38]

Västergötland

1700s

Gothenburg

- In the block Enigheten, plot 8.41., Gothenburg, the dyer Anders Törnsten, had a timber-framed building with brick infill (Sw. *'ett murat korsvirkeshus'*) and three rooms one of which served as a workshop, according to the probate inventory of 1795.[39]
- Stora Otterhällan plot 2.87, Gothenburg, belonged to Karin Bengtsson's estate from 1788, the probate inventory describes a stable and outhouse built with a timber-frame and planks (Sw. '*korsvirke och bräder*') with a tool-shed and a hayloft, also mentioned.[40]

Småland

1800s

Kalmar

- In the block Bryggaren 2, Kalmar, fire insurance records from 1828 describe a two-storeyed, timber-framed residential building with a cellar and an attic from the beginning of the century. The timber-frame of the house was constructed from fir with brick infill (Sw.' *korsvirke av furu med tegel däremellan'*). There were additional buildings on the property i.e. a brewery with a kitchen containing a fireplace and an oven for baking as well as a large outbuilding all timber-framed with brick infill. After a few years, a wooden outhouse containing a cart shed, a woodshed and a stable were torn down and the existing timber-framed house was given an addition with a timber-framed two-storey extension. There was room for two woodsheds, a storehouse for groceries and a warehouse. Apparently, the timber-framed building had been remodelled again by 1856 then to include *some* flats and storehouses. The building was demolished in 1987 (Stibéus, Konsmar, and Åkerhagen 2016: 12; Olofsson 2014: 13).

1800s

[38] The term says timber-framing with planks – it might indicate timber-framing with outside panelling, it could however also mean a form of post and plank construction.

[39] Östen Dahl www.gbgtomter.se Author Olga Dahl. Kv. Enigheten 8.41 (viewed 2020-03-06)

[40] Östen Dahl www.gbgtomter.se Author Olga Dahl. Utanför kvartersindelningen, Stora Otterhällan 2.87 (viewed 2020-03-06)

Gothenburg

- The block Enigheten, Gothenburg, the probate inventory of the snuff grinder (*Sw. snusmalaren*) Andreas Johansson in 1817 states that he owned a stone house in plot 8.39, and a one storey timber-framed house (Sw. '*korsvirkeshus*') in plot 9.38.[41]
- Also, in the block Enigheten, Gothenburg, Carl Berg, owned a small timber-framed house (Sw. *'ett litet korsvirkeshus*') with two rooms and a kitchen in the plot 9.32, in 1813.[42]
- In the block Vadman plot 9.39-40, Gothenburg, a fire insurance record from 1803 of Magnus Claesson's property, included one dwelling in brick with inner walls constructed in timber-framing (Sw. '*skiljomurarne af korswerke utmurade med tegel*') and brick on the first floor. The building contained one room, a porch and a kitchen with a fireplace and an oven. There was also a timber-framed outbuilding with panelling and paint (Sw. '*korswerksbyggnad klädd med bräder och struken med färg*'), containing one big cart shed, a byre, and two woodsheds.[43]
- Plot 93, in Otterhällan, Gothenburg, the probate inventory of the property of Sofia Maria Westergren from 1809 includes a small timber-framed house (Sw. *'ett litet korsvirkeshus*') with a plot, containing a room and a kitchen, an attic chamber and a cellar.[44] Anna Maria Bismarck died in 1824, her probate inventory states that she owned half of plot 93 (thus the same plot and building as Miss Westergren) and a small timber-framed building in Otterhällan, Gothenburg.[45]

Drawings – visual presentations in historical sources

In this section, I will discuss visual representations of timber-framed buildings from historical records. In the older historical source material, various types of depictions can be found. Here two different types of drawings are discussed; the first is a historic painting of Stockholm and the rest are construction drawings of houses from the 17th and 18th century, if they were ever built is not known but it is interesting to study the plans. Students/apprentices of architecture probably drew them as qualifying masterpieces. My purpose is to study how the building structure was drawn or depicted in contemporary sources. Finally, town clearance plans from the 20th century are discussed as a reflection on how timber-framing was targeted for demolition in line with the discussion in Chapter 2.

The city gate, Inre Norreport, in Stockholm, was depicted in the lithography '*Blodbadstavlan'* originating from the 1540s (Figure 38).[46] The artwork is a depiction of the Stockholm bloodbath, a historic atrocity that took place in the 7th-9th of November in 1520. The city gate was drawn as a quite high, square tower, the first floor was constructed in timber-framing technique and jettied. The roof was steep and had numerous chimneys (Söderlund et al. 2011: 10). During the last quarter of the 16th century, timber-framed houses are mentioned in the block adjacent the gate Norreport.[47] When looking closely at the image several of the city gates seem to have a similar construction, and there are several houses in the town that appears to be timber-framed. Nonetheless, there is not enough clear distinctions between the various building techniques made by the lithographer in this copperplate to know with any certainty of its accuracy. Nonetheless, the city gate will act as an example of timber-framing in the arts.

Drawings from the 17th and 18th century found in the attic of the city hall in Kalmar.

This two-and-a-half storey building (KLM 15851:1) is drawn with a ground floor in stone with only a single door (Figure 38). There are no windows on the ground floor indicating a possible function as a cellar. The first floor is connected to the cellar through a girding beam and constructed in timber-framing technique, thus an example of the use of a mixed building techniques. All five, illustrated, windows are fitted to the measurements of the bays. There is a hipped roof with two windows of the same size as the windows on the first floor, indicating that perhaps the attic had proper-sized rooms, aimed at being used as a dwelling perhaps. In addition, there are also two chimneys visible on the roof.

There is a layout of the first floor as well; a staircase is depicted, though it is hard to know if the stairs lead from the ground floor up, or from the first floor towards the attic. The stairs are situated in the central hallway. To the right there are two large rooms, one slightly smaller than the other. The larger room seems to have had a cast iron stove, possibly fired from the hallway. There are doors leading from each room into the hallway but also a door connecting the larger room with the smaller. On the left side of the hallway, there are three rooms in different sizes. The smaller room, with an entrance through the hallway, has a corner fireplace and have probably functioned as a kitchen. Next to the kitchen, there is another room with a door connecting it with the largest room on the left side of the building. The largest room also has what seems to

[41] Östen Dahl www.gbgtomter.se Kv. Enigheten 9.38, author Olga Dahl (viewed 2020-03-06)
[42] Östen Dahl www.gbgtomter.se Kv. Enigheten 9.32, author Olga Dahl (viewed 2020-03-06)
[43] Östen Dahl www.gbgtomter.se Kv Vadman 9.39-40, author Olga Dahl (viewed 2020-03-06)
[44] Östen Dahl www.gbgtomter.se Utanför kvartersindelningen, Otterhällan 2.93, author Olga Dahl (viewed 2020-03-06)
[45] Östen Dahl www.gbgtomter.se Utanför kvartersindelningen, Otterhällan 2.93, author Olga Dahl (viewed 2020-03-06)
[46] Blodbadstavlan / av Sten Karling Ingår i: Sankt Eriks årsbok. - Stockholm : Samfundet S:t Erik, 1964-. - ISSN 0348-2081. ; 1977, s. 25-50 : ill.
[47] Söderlund et al 2011:10 uses these source: Tänkeböcker 1474-1627, Sjb I, s 418 nr XXXI and Stb 1524-29, s 125, 156-57.

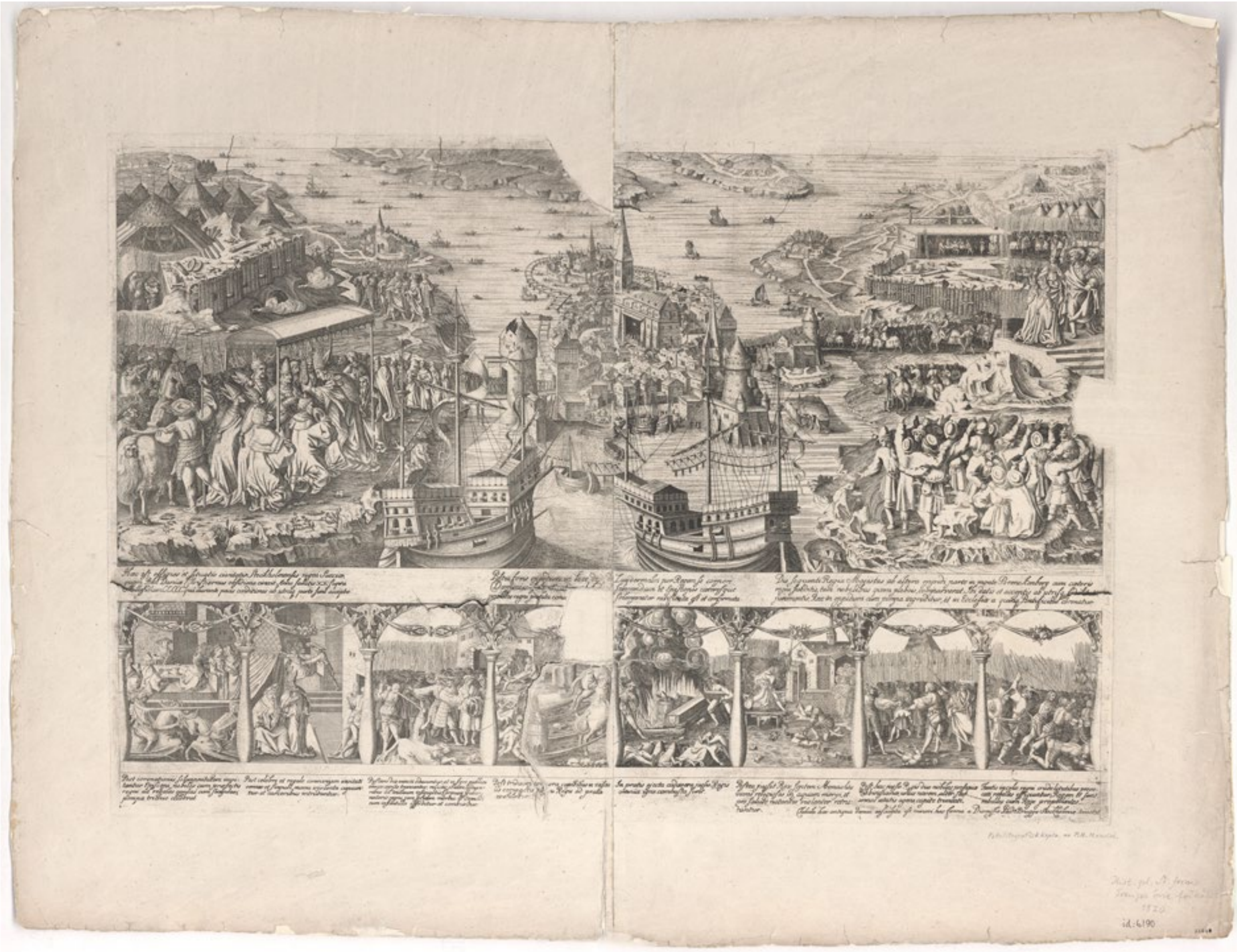


Figure 37 The timber-framed city gates at Inre Norreport in Stockholm. Blodbadstavlan 1540s. Public Domain Mark (No known copywrite). Database Alvin.

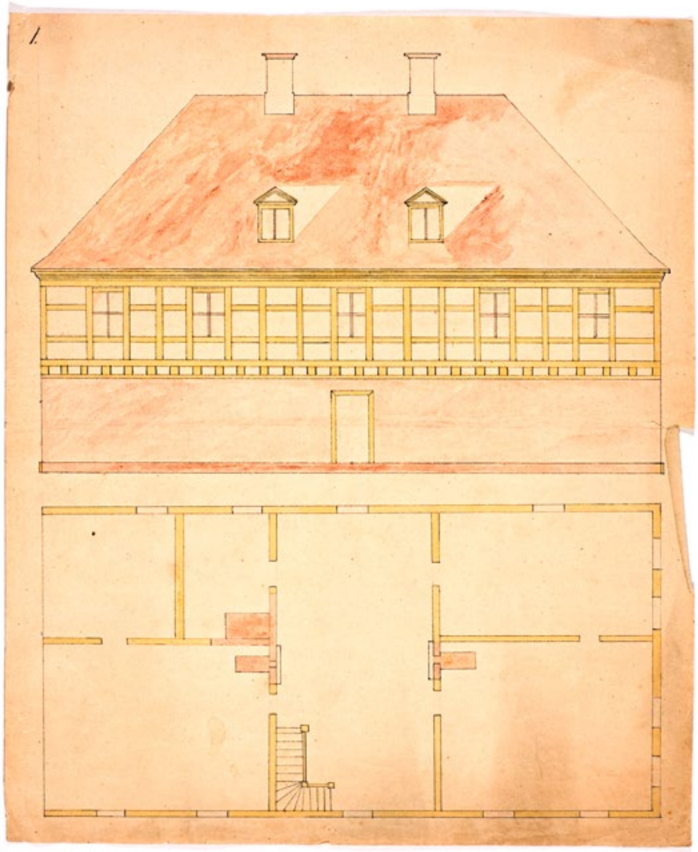


Figure 38 KLM 15851:1. Drawing. A construction drawing on paper. A plan and a façade of a two-storey timber-framed building with the ground floor in stone. Coloured in yellow and pink. Unsigned. Undated, probably from the start of the 18th century. Kalmar Läns Museum, digital archive. Photograher Pierre Rosberg, Kalmar läns museum.

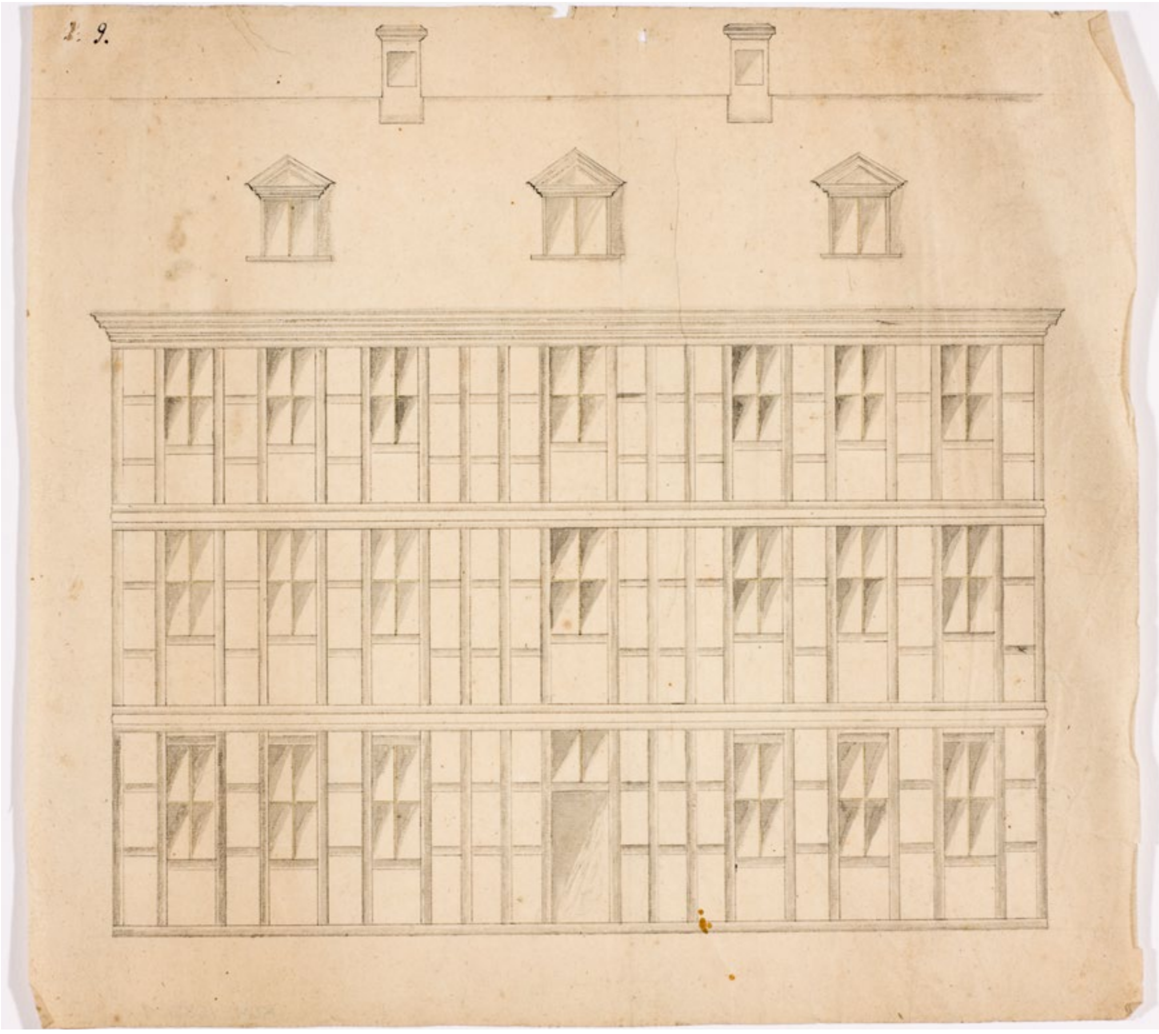


Figure 39 KLM 15851:9. Drawing. A construction drawing on paper. A facade of a three-storey building in timber-framing technique. Unsigned, undated. Kalmar Läns Museum, digital archive. Photograher Pierre Rosberg, Kalmar läns museum.

be a cast-iron stove, fired from the hallway. There is a door connecting it with the hallway as well.

The drawing was not dated or signed but is believed to originate from the beginning of the 18th century.

Here is a three-and-a-half storey timber-framed building (KLM 158551:9) with two chimneys (Figure 39). Close studding has been used in the frame construction on all floors. There are six fitted windows to the bays and a front door with two small windows to bring light into the entrance on the ground floor. The first floor is connected to the ground floor with a either a girding beam or a jetty bressumer it is difficult to be certain of the construction from the angle of the drawing. The first floor has seven fitted windows of the same size. The second floor is identical to the first floor and connected with a girding beam or a jetty bressumer. The top floor is an attic with three slightly smaller windows indicating rooms or apartments on that floor as well. The building seems intended as a dwelling. The drawing has no date or signature.

This drawing (KLM 15851:4) seem to depict a warehouse with three floors and two attics in addition (Figure 40). There are no windows on the long side of the house but there are windows or hatches on the gable-ends of the building, on all the floors except the ground floor, which has a blank wall instead. On the ground floor, there are two doors, one on the long side and another on the gable-end. Up and down braces have been used in the construction. The timber-frame is mostly regular, yet does not fully correspond everywhere between the floor levels. The floor levels are connected through a girding beam. The roof has four openings or hatches.

Another kind of record are the town clearance plans from the 1950s-1970s that most Swedish towns put in motion (Figure 41).[48] These plans reveal the existence of and, sometimes, the abundance of pre-demolition, urban, timber-framed buildings this is also a reminder

[48] *Norrköpings stadsarkiv. Norrköpings kommun.* Stadsplanekommittén Inventeringar. Saneringsutredningen: Kvarterskartor. 1947.

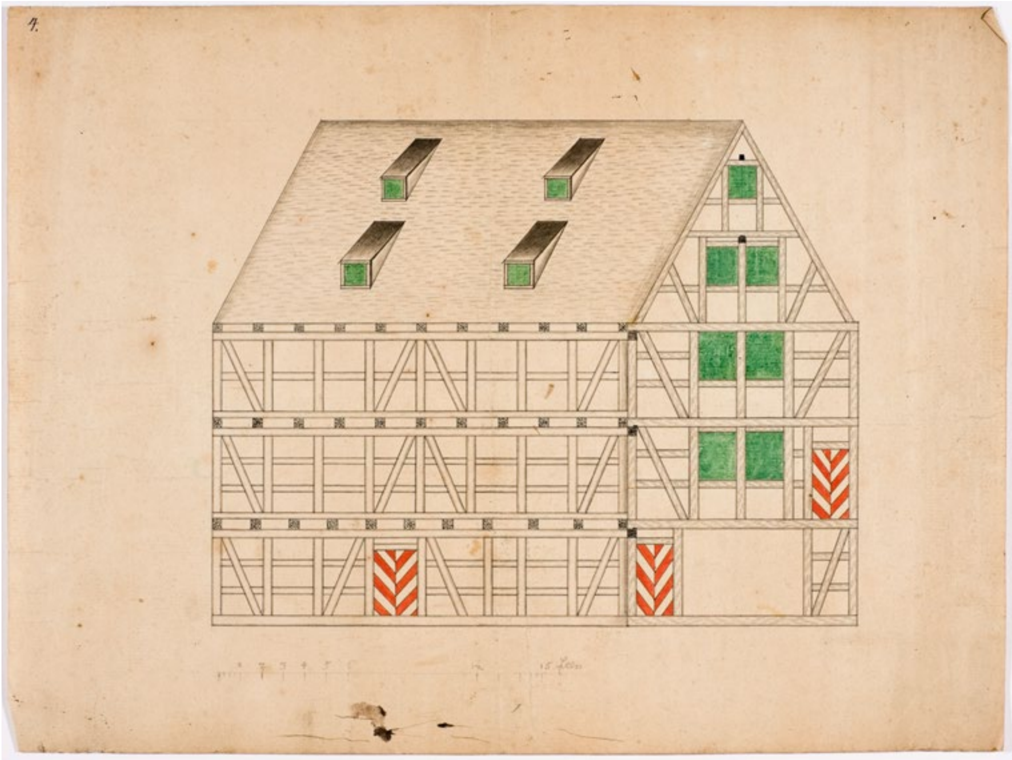


Figure 40 KLM 15851:4. Drawing. A construction drawing on paper. A facade of a three-storey building in timber-framing technique, with two attics. Unsigned, undated, probably 17th century.. Kalmar Läns Museum, digital archive. Photograher Pierre Rosberg, Kalmar läns museum.

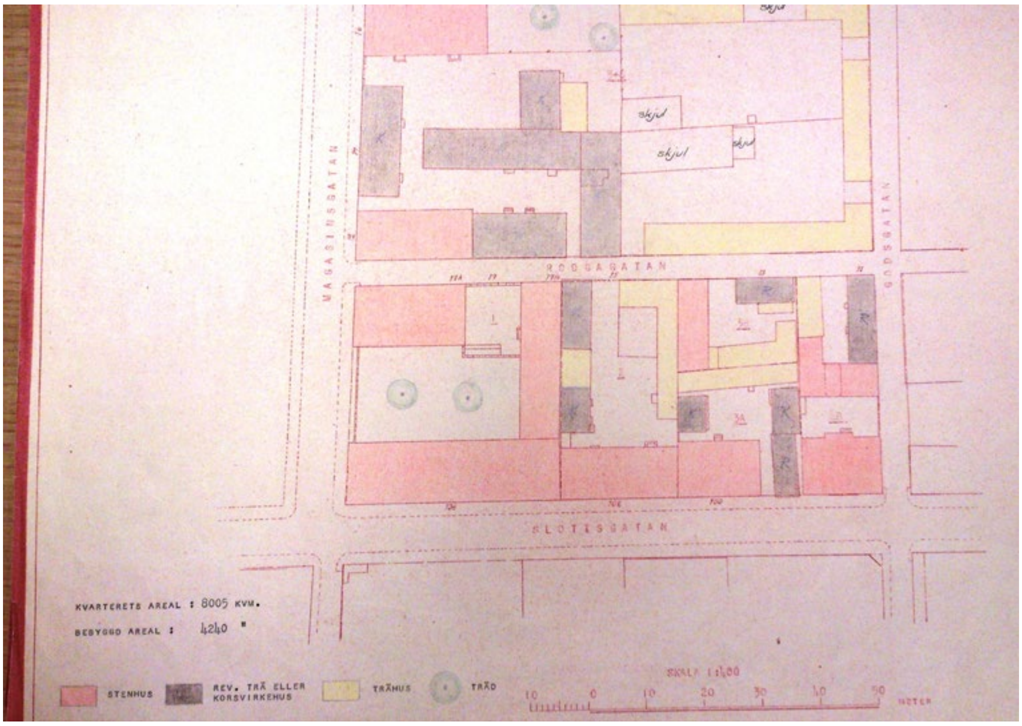


Figure 41 City planning committee/ Stadsplanekommittén, Norrköping. City clearance stocktacking/ Saneringsinventeringar i Kv. Ruddammen. Map from Kv Mässingen, Saltängen. Grey indicates timber-framed buildings

of why these buildings are relatively rare as preserved houses (for an in-depth discussion see Chapter 2).

Reflections on timber-framing in historic written and visual records.

A lot of information can be accessed through historic written and visual sources. Some of the information differs from the kind of information that can come from archaeological data. For instance, owners, users or inhabitants of buildings are sometimes named and identified. Functions, practices in and around the buildings are often specified. Descriptions in text or images of buildings can be very useful for understanding the built townscape. There are also frequently small details or titbits of information included within the records that can give life and meaning to research on living environments that otherwise can be a bit abstract.

An analysis of all sources of timber-framing

This micro study has been based on five different source materials: archaeological data, historical records, historical imagery and photos as well as plans of timber-framed buildings. These sources sometimes give answers regarding the same types of features, which provides a basis for comparison. While, other features only will come forward in some of the datasets, thus delivers additional information not available from the others. Therefore, the combination of the sources offers more pieces of the puzzle.

First of all, the objects of investigation had to be located. This study is not restricted to the towns but simply finding evidence of timber-framing. Nine counties have been investigated, each a micro study of its own: Småland, Västergötland, Bohuslän, Östergötland, Sörmland, Västmanland, Blekinge, Värmland and Gotland. When all the provinces are co-analysed they form a macro region. 21 archaeological reports were found, some with compelling evidence of timber-framing and some with weaker evidence. In some reports, timber-framing in the area in question, had been documented in historical records but had not been located archaeologically. Reports on timber-framed archaeological remains were not found from all provinces.

Photos of preserved timber-framed buildings were in the county museum databases.[49] The databases contained historical photographs with relevant material. There were many photos from the time before the demolition frenzy in the 1950s-1970s (see Chapter 2). Some of the houses still stand but many do not. Forty photographed buildings were included in the study. The varying angles from which the photographs were taken have had implications for interpretation, in the sense that it was not always possible to see and account for all building elements that were asked for in the survey.

References to timber-framing in historical sources have also been used in the study i.e. fire insurance records, probate inventories, contemporary images etc.

The reports and the buildings are listed in *Appendices* 5-7.

[49] Kalmar Länsmuseum https://digitaltmuseum.se/owners/S-KA/info (viewed 2017-09-27), Gotlands museum http://samlingarna.gotlandsmuseum.se/ (viewed 2017-09-27) Kulturparken/ Smålands museum https://kulturparkensmaland.se/kunskapsbank/samlingar-och-arkiv/fotosamlingen/ (viewed 2020-06-03). Blekinge museum http://www.blekingemuseum.se/pages/259 (viewed 2020-06-03), Värmlands museum https://digitaltmuseum.se/owners/S-VLM (viewed 2020-06-04)

Table 2 Evidence of Swedish timber-framing.

Swedish Timber-framing			
Province	Archaeology	Photos	Historical and visual
Småland	IIIII	IIIII II	IIIII II
Värmland		I	
Västergötland	IIIII I	III	IIIII III
Bohuslän		II	
Östergötland	II	II	
Sörmland	IIIII IIII	IIIII IIII	IIIII IIIII IIIII
Västmanland		I	
Blekinge	I	IIII	
Gotland		IIIII IIIII I	

This initial mapping of timber-framed buildings within the study concluded that timber-framing was in fact widespread in the whole region (Table 2). The examples that have been found so far are only the ones that could be pinpointed within the scope of this small scale survey there is no claim to cover all historical documentation, preserved buildings or archaeological reports regarding timber-framing in the region.

Construction parts

Archaeological remains of timber-framing are clearly a difficult material to work with, in terms of straightforward answers. These examples have shown that the base of discussion often rests on rather frail empirical evidence. Either as single building parts like the through tenon from Söderköping, or simply from more slender sill stones thus theoretically supporting a 'lighter' building, as discussed in the case of the block Valnötsträdet in Kalmar. Sometimes more building components have been identified i.e. sill stones combined with wattle and daub and burned clay as found in the block Uttern in Sölvesborg. In Nya Lödöse a construction built with wood, brick, daub and mortar was found. In the block Kv. Gamla Teatern, Gothenburg, the sill beam with tap holes was preserved as well as remnants of brick. The best example is from the block Kv. Argus in Stockholm where the wall was largely intact showing all the building components in situ. It is argued that the construction of the building does not conform easily to the usual methods: perhaps this is what Roede (2001) refers to as a creole method of building (more on this later in this chapter).

Partition walls have come up in elite environments e.g. the castles of Linköping and Kalmar, in the archaeological sample.

Building elements of timber-framing

Of the 38 photographed buildings 17 had a visible *jetty bressumer* (Figure 29) or if the house was not jettied, a girding beam (Figure 18). *Upward braces* Figure 9 were only used in 8 of the houses (from Kalmar, Trosa, Karlshamn and Gotland). *Up and down braces* are evenly spread over the area and commonly used with evidence from 19 buildings (Figure 25).

Measurements

Measurements have been hard to come by in this study (Table 3). Archaeological data does however provide some measurements on preserved building remains. These are often not complete or exact but can give an indication of the buildings size. The photographic evidence usually gives a view of the house and its external façade, which can be measured against other buildings or features in the picture. It is possible to see the number of floors, its height and length in a way that archaeological remains will not provide. Yet, exact measurements are hard to get simply through a picture. Historical sources such as fire insurance records are a good source of information regarding exact measurements, however the data was not obtainable in the historical records used in this study. Architectural drawings and plans of layouts can give both measurements and a spatial view of the building.

Table 3 Measurements of archaeological remains of timber-framed structures.

Measurements	Width	Length	Square meters
Smithy	4m	4m	16m²
Cellar/dwelling	3.9m	5.2m	20.28m²
Kitchen	(1.6m)	6m	-
Shed	2.10m	4.8m	10m²
Dwelling/shed	3.87m	4m	15.48m²
Bakery/brewery	3m	4.5m	13.5m²

Only six of the building remains could be measured for size. The width seems to hold to c. 3-5 metres, and the length to 4-6 metres. Building size is closely connected to function and use.

Floors and insulation

Table 4 Floor types in archaeological remains of timber-framed structures.

Clay floor	Wooden floor	Cobbled floor	Wooden/ clay floor	Cobbled/ brick floor
II (I)	III	I	I	I

Information about floor types and particularly insulation was only possible to attain from the archaeological data in this micro study (Table 4). It was not possible to determine all floor types, due to preservation quality. However, nine buildings had distinguishable floors: two (possibly three) clay floors, three wooden floors, one metalled surface, one wooden/clay floor, and one cobbled/brick floor.

Many of these floors seem to be strong floors ready for activities that would cause a deal of wear and tear functioning, perhaps, as places of work. There were wooden floors in shops and sheds, although clay floors were used in dwellings, sheds and workshops.

Four buildings had insulation under the floors, and possibly another three in addition. One issue here is whether insulation was a factor of observation during the survey.

Location of the fireplace and the use of chimneys

Evidence for fireplaces and chimneys can be found in all the investigated material in the archaeological data; on the other hand, in historical records or in layouts and plans, the presence of chimneys in drawings is another way forward.

Three of the archaeological building remains had traces of a fireplace i.e. the smithy, the kitchen and the bakery/ brewery, which all had corner fireplaces. These were all one-room buildings. While some other houses had fireplaces, those houses were built in a mixed technique and the fireplaces were not situated in the part of the building constructed with timber-framing.

According to the photographic data there were ten houses with one chimney, six houses with two chimneys and one (possibly two) house with three chimneys. In addition, there were 16 buildings that either did not have a chimney or it was not possible to see the roof properly in the photograph. The inner wall in Kalmar castle stood next to a fireplace.

Some of the buildings might not have had chimneys depending on the function intended for the place.

Windows

Glass from windows was only found in connection with two buildings in the archaeological record, both from Nya Lödöse, dating from the 1480s to the 1540s.

The number of windows a building has can be difficult to establish – in the archaeological record it is usually presented in the form of glass sherds or lead fittings; in historical accounts such as fire insurance records meticulous counting of windows and close descriptions can be found. Yet, in drawings and photos, it is not always possible to see all angles of the building.

One clever way of making the construction appear regular and aesthetic is to fit the width between each bay perfectly with the windows and in aligning the bays within the timber-frame on all floor levels. In this survey of photographed evidence, 20 houses had *fitted windows* fixed to the timber-frame. These types of windows were often specially made for timber-framed houses. Thus, serving a specific purpose, fitting perfectly in height and width with the bays of the timber-frame construction. Still it was common to use windows designed for other building techniques, which could function just as well, however lacking somewhat aesthetically.

Timber-framing and dating

One important question is how long this building tradition has been practiced in the region (Table 5). The buildings from the archaeological reports were dated through either dendrochronology or ^{14}C, or else from stratigraphy and finds analysis. The oldest building part is the through tenon from Söderköping, dated from stratigraphy and finds analysis to the 13th century. The dating method is strong, but the building part lacks a connection to an actual building, which is more problematic for the discussion.

Table 5 Dating of timber-framed structures with data from archaeological reports, photos of preserved buildings and historical records and images.

Dating of timber-framed buildings			
	Archaeological	Photos	Historical and images
1200s	I		
1300s	II		
1400s	III		
1500s	IIII	III	I
1600s	IIII	IIIII I	III
1700s	IIIII III	IIIII IIII	IIIII IIIII II
1800s	II	IIIII IIII	IIIII IIIII
1900s		I	
Undated		IIIII IIII	IIII

There is some early evidence of timber-framing within the archaeological data. The evidence gets stronger from the 1400s with good, supported data from Nya Lödöse. Timber-framed buildings from the 1500s are also visible in the photographic evidence and the historic records, as well as from contemporary artwork. There are ample examples of timber-framed buildings all over the investigated region from the 1500s to the 1800s. The 1900s seem to be the end of timber-framing as a generic construction method in the investigated area. There are also ten undated buildings in the photographic evidence most of which almost certainly belongs to the 1800s and 1900s.

The photographed houses have had dates attached to them in the museum photographic databases or in the conservation reports. Exactly how the dating has been achieved is not always entirely clear. Nonetheless, the type/style of the buildings seem to roughly support the dating.

The 1700s and 1800s have given the most examples of timber-framing within the historical record in this micro study, yet some older instances have been recorded from the 1500s and 1600s. Four objects of study remain undated. The dates have largely come from probate inventories and fire insurance records as well as books of plot records. These records are detailed from straightforward, at the time, contemporary existing physical objects, in this case buildings, thus the data should be relatively trustworthy.

Five objects concerned drawings. Medieval images of Swedish towns are quite rare. The other drawings were probably architect's masterpiece drawings from the 17th and 18th century.

A variation of infill

It is important to consider what kind of infill that was used (Figure 44).

The most common infill registered in this survey is brick (Table 6). The oldest example coming from the block Kv. Valnötsträdet in Kalmar dated to 1360-1420. Nonetheless, wattle and daub was also in use in the 1400s, 1500s and the 1600s. Stone was used in one example from 1723, Stockholm.

Table 6 Different methods of infill within the timber-frame with data from archaeological reports, photos of preserved buildings and historical records and images.

Infill in timber-framed buildings			
	Archaeology	Photos	Historical and images
Brick	IIIII IIIII III	IIIII IIIII IIIII III	IIIII I
Stone	I		
Logs and clay		II	
Wattle and daub	III	I	
Limestone		IIII	
Bricks, logs and clay		I	
Stone, logs and clay		I	
Stone and brick			I
Unknown		IIIII IIIII III	

Conversely, photographic evidence and archaeological evidence also points to the use of wattle and daub, perhaps as a cheaper alternative to brick. It was probably a common feature in the older material since brick, in Sweden, outside of Skåne and southern Halland, was hard to come by and required complex modes of production during the middle ages (Ihr 2014), and the early modern period. The photographic evidence also points to the use of alternative infill materials such as combinations of logs, rubble and mortar. This mixture of materials might be harder to spot as archaeological evidence, or maybe the archaeologist is yet to be aware

Figure 42 The infill used in timber-framing can come from an array of sources i.e. brick, wattle and daub, logs, rubble and mortar or limestone. Slöjd and byggnadsvård, Nääs Slott. Västarvet, Västergötland. Photo A. Nilsen.

of and trained to see it. Limestone has been used as infill foremost in Gotland. There are also mentions of wood planks and timber-framing in the historic records. It sounds as they might be talking about post and plank construction rather than timber-framing. On the other hand, it might be in reference to a mixed construction with part of the house in timber-framing and part of the house in a post and plank construction or simply timber-framing with a panelled exterior.

Another construction method not included in the survey is the use of clay and sawdust sundried in the shape of bricks used as infill in timber-framing, apparently a good insulation method. Many of these methods of infill are effective, in terms of building elements and/ or as insulation, yet were, perhaps, not so pretty to look at, and were thus hidden behind plaster and paint or panelling (Table 6). Of the photographic evidence, twelve houses had a plastered surface, and twelve had panelling. In the archaeological record, two houses were plastered and another two might have had plaster, they were all from the 16th century. Two buildings had panelling (both from the 17th century). In the historical records analysed, three houses had panelling, one of which was painted, in addition to which, one building was plastered. There are probably many timber-framed buildings hidden behind these kinds of surfaces making them hard to identify externally.

Function

One way of getting an idea of how widespread timber-framing construction was in the early modern society is to find out more about the function of the buildings. Was it rare or was this type of building connected to specific production sites, places, families or functions? Was it a commonplace technique used for any number of different purposes and circumstances?

Table 7 Functions in the timber-frame building stock with data from archaeological reports, photos of preserved buildings and historical records and images.

Function			
	Archaeology	Photos	Historical and drawings
Dwellings	IIIII IIII	IIIII IIIII IIIII III	IIIII IIII
Smithy	I		
Kitchen	I		
Shed	II		IIIII
Shop	II	II	
Innerwall	II	I	II
Shed/ cartshed	I		I
Dwelling/shed	I	I	
Bakery/brewery	I		
Parish		I	
Warehouse		III	I
Barn		I	
Stable		I	
Town hall		I	
Church		I	
Tannery		I	
Dwelling/castle		I	
Dwelling/ warehouse		I	I
Dwelling/ shop		I	
Dwelling/pub		I	
Brewery			I
City gate			I
Slaughterhouse			I
Woodshed/ warehouse			I
Privet			I
Glassworks			I
Dyehouse			I
Laundry for wool			I
Henhouse			I
Stable/ toolshed / hay mo			I
Cartshed/ byre / woodshed			I

As demonstrated in Table 7 dwellings are the most common. Dwellings could signify specific buildings and institutions as well e.g. the poor house or a castle. Warehouses are likewise many, especially in the photographic evidence. Two warehouses in combination with a dwelling and a woodshed, comes through in the historical records as well. Why the warehouses are missing from the archaeological records is difficult to say, are they perhaps hard to identify? Some storage facilities have probably been placed on the upper floor levels as well.

There are a number of institutional buildings listed i.e. the parish and the church, the town hall and the city gate. The government sometimes required stone, brick or timber-framing construction in these types of buildings as opposed to log timber construction, due to fire safety and for aesthetic reasons (Bæckström 1923: 50; Forsberg 2001: 161). There are also a number of workplaces listed, smithies, slaughterhouses, a brewery as well as glassworks and the laundry for wool and shops indicating the wide functionality of the buildings. They also reflect on a variety of geographical locations. You would find fire hazards like smithies on the outskirts of town, the same goes for the slaughterhouse for hygienic reasons, while the dyehouse, the laundry for wool and the tannery demands access to water.

Some buildings belong in the yard of the burgage plot or in the countryside i.e. the barn, all sorts of sheds; cart shed, woodsheds, tool-shed and the privet or the kitchen (which of course could be a substantial building) built as a separate house in the courtyard. Evidence of the presence of animals in the burgage plots such as stables, byres and a henhouse were found and show that animals as well as people lived in timber-framed buildings. Workshops of various kinds were also common within the living environment.

Sheds represent a wide concept in archaeological and historical sources. Are they interpreted as sheds because of a small or ramshackle appearance or is it a generic term for an outhouse of unknown function regardless of the quality of the construction? Sheds were ubiquitous, which is evident in the archaeological, historical and photographic data. The multifunctional attribution in historical sources to the buildings suggest rows of houses, discussed in Chapter 5.2. Another important construction element of timber-framing is often found in internal walls; here the wall comes from a derelict barn in the countryside in Gotland and from a probate inventory concerning a small house in the city centre in Gothenburg. The other internal walls were found within the royal castles in Kalmar and Linköping. The use of the technique in such walls is most likely widespread and a reflection of the extensive use of timber-framing in all social classes as well as functions from the simplest shed to the royal household.

Though it is hard to put the finger of precision on, in general discussion, function gives some indication towards use (Table 7). Nevertheless, the manor house was used in quite different ways by the residing lord and their following compared to the servants' use of the building. Other functions that might indicate use are dwellings, privies, shops, warehouses, workshops etc. Of course, there might be a divide between how different social classes or different age groups/ genders use the same premises. It is also important to consider that some houses have a very long duration of use and thus can change in function over time. Looking at the various functions listed, clearly it would have been possible and probably quite commonplace to have a whole burgage plot with appurtenant buildings constructed completely in timber-framing technique.

What evidence are there of mixed building techniques?

Mixing building techniques have according to this survey been common over time and all over the investigated region. The archaeological data had four examples of mixed technique, the photo documentation had the most overwhelming results with 19 buildings, and in the historical/imagery records there were four, with two more that possibly had been constructed in mixed technique. This has taken many forms; sometimes the ground floor have been constructed in stone and the first floor in log timber while the gables were built in timber-framing technique, as in Gråbrodern 5, Visby (Figure 32).

At other times, the main room/ parlour was constructed in log-timber technique while the vestibule had been built in timber-framing, as in the block Kv. Gamla Teatern, Gothenburg (Figure 11). Another such example of a log-timber building with timber-framed gable-ends is Burmeisterska huset, Visby (Figure 30).

The ground floor could be constructed as a timber-frame while the top gables were panelled (Gråbrodern 7, Visby (Figure 33)). Alternatively, a stone castle could have internal walls in timber-framing (Kalmar and Linköping castles).

There are four examples of the use of mixed techniques, and two that might have. In the artwork '*Blodbadstavlan*' the city gate in Stockholm (Figure 38) is a tower with a bricked ground floor/tower and a jettied timber-framed first floor. In the block Kv. Västergötland, Stockholm, two privies and a henhouse was constructed in a combination of timber-framing and timber. One of the buildings depicted on drawings found in the Kalmar town hall (Figure 39) had a ground floor constructed in stone and a first floor in timber-framing.

Karin Bengtsson's outhouses in Gothenburg were timber-framed with planking. It is hard to know exactly what that means. The outhouses belonging to the *Engelska huset* in Stockholm are described in the same way '*timber-framing with planks*'.

It is clear that house construction is something to be played with, and there have been plenty of room for personal choices and tastes. It could mean that the building was added to over time, but that is clearly not the case in many of these examples. It also indicates that 'house types' that have been so popular in architectural and ethnographical studies, do not apply to this material.

Number of floors

The number of floors a building once had can be a difficult question to answer from a field archaeologist's viewpoint. Further discussion on this issue will follow in Chapter 6.1. This survey can reveal some idea of the number of floors through photographic and historical evidence (Table 8). The correct way to count floor levels can be debated but I have chosen to count levels with full headroom as one level and attics with windows as a half level.

Table 8 Number of floors of timber-framed houses, from archaeological, historical records and photographic evidence.

Number of floors in timber-framed buildings			
	Archaeology	Photos	Historical and drawings
1 storey	IIIII IIIII IIIII I	IIIII IIIII	IIIII IIII
1,5 storeys		IIIII III	II
2 storeys	(I)	IIIII IIIII III	IIIII
2,5 storeys		IIIII	II
3 storeys		II	
3,5 storeys			II
unknown	IIIII I		IIIII IIIII

The two-storey buildings are the most common within this study; nonetheless one floor, one-and-a-half floors and two-and-a-half floors are within the 'normal' span. While three floors and three-and-a-half floors are less common, at the same time they are not unheard of. This is a sample from a wide geographical area as well as from different periods, and should not be interpreted as statistical evidence.

The archaeological record shows almost exclusively one-storey buildings. That should not be taken as evidence for the prevalence of bungalows. It should be interpreted as what can be said within the limits of the investigative method. Historical descriptions, images and photos give more hard evidence to go on in terms of the storeyed house.

It is however hard to simply compare one house to another without some comment. There are examples within the survey of simple urban buildings of c. 60 m^2 furnished with between a single and two-and-a-half floors, such as Burmeisterska korsvirkeshuset, Visby

(Figure 29). But there are other buildings like Örby manor (Figure 22), in Stockholm, for instance that also have two-and-a-half floors but which are of significantly larger size. There is the very long two-and-a-half floor building in Västerås (Sundinska korsvirkeshuset) (Figure 25) probably an old warehouse.

Sidén (2008a: 14) suggest that the increase in timber-framed buildings in Stockholm during the 15th century might have something to do with the magistrates' decision in 1475 to limit the height of wooden buildings. Dahlbäck (1985) also refers to legislation during the reign of King Johan III, when log timber buildings could only have two storeys, if more floors were needed they had to be built in stone. Timber-framed buildings were exempt from that restriction and had no limit in height.

Timber-framing within this material offers a great variation in use, size and aesthetics. These examples give an idea of the urban townscape in terms of the height of buildings. Several of the buildings investigated also had cellars, however they have not been in focus of this study since they were rarely built in wood.

Jetties

When discussing storeyed buildings, jetties and balconies/ open galleries have some relevance. There was a jettied gatehouse depicted in the historical picture of Stockholm, and a drawing of a balcony in one of the images from Kalmar. However, none of the historical records mentioned jetties or balconies. Tunnel entries with covered passageways into a yard to the rear are another feature that often indicate a storeyed building. Only Magnus Claesson's building in Gothenburg had such an entrance to the courtyard. These forms of passageways could sometimes have a room above the gate, usually making use of the space between two buildings. Nonetheless, Laboratorn 4, Visby (Figure 31), had an adjacent building that was connected through a jetty over a street, thus forming both a roof and a tunnel for pedestrians.

Nine houses in the survey had a jetty. The jetties deepen the first floor both externally as well as internally. Internal jetties created larger chambers on the first floor compared with the ground level and were mostly used in rooms open to the roof/rafters (with big staircases or in older style open halls). No internal jetty has been found in this data.

External jetties, of course, did the same thing but were directed outwards overlooking the street. Domestic activities could be transferred to the first floor where the rooms were better lit than on the ground floor in a crowded, dark and narrow urban street. The earliest jettied/Wealden buildings found in England so far, date from 1339/40 in Winchester (Giles 2014: 21–24). It seems therefore that this type of building perhaps originates in urban areas rather than rural as earlier thought (at least in England). Urban buildings also varied from the rural, by being used in more diverse ways. Shops and workshops were often accommodated in several rooms in the lower or upper ends of the hall (Giles 2014: 21–24). The English example is submitted because; jettied buildings have not been extensively discussed within Swedish research. Of the nine jetties found within the photographed data, one was built in the 16th century, four in the 17th century, two in the 18th, and one in the 20th century (albeit built in a romanticizing historic style). Jetties thus seem to reflect a way of building that has prevailed for at least 300 years in Sweden. Roede (2001) has studied the practice of jetties from a Norwegian perspective, which I address in Chapter 6.1.

Only two buildings had a visible balcony within the survey. Another building had fragments of a former balcony or open gallery (further discussed in Chapter 6.1). External stairs were visible in seven houses, which were geographically evenly spread. Nevertheless, some of the stairs seemed relatively modern and cannot be confirmed as being of historic origin. Consider also that the need for the external stairs might indicate a lack of stairs indoors, which might point to a continuation of the use of external stairs. Three of the buildings had *tunnel entries* to the courtyard.

Reference cases abroad

Lars Roede (2001) writes in the introduction to his thesis that timber-framing was a foreign building technique introduced to Norway in the 17th century. Timber-framing has been described as a building technique that was foremost used in Christiania (1624-1814) (today Oslo) and the surrounding suburbs. However, timber-framing could be found as far south as Mandal, for example, in southern Norway both as full buildings and also as inner walls during the 18th century (Eliassen 1995: 1:493, 500, 510). Timber-framing was also often used in early industrial works (Roede 2001: 219) such as in a preserved glassworks within the *Blaafarveværket* compound in Buskerud. Timber-framing was common in military settings such as within the fortification at Fredrikstad. Stavanger likewise had a large number of timber-framed buildings *(No. sjøhus)* connected to the shipping industry. Specific parts of the building, such as the kitchen or the ground floor, were timber-framed while the first floor was built in log technique (Eliassen 2014: 313; Roede 2001: 219). Roede mentions timber-framing being used for house constructions, as a part of buildings (mixed technique), such as the gables of buildings and inner-walls. The use of the technique extends from private residences to industrial, ecclesiastical as well as military contexts; it seems as though the technique might be more relevant

Figure 43 A timber-framed house from Christiania in Norsk Folkemuseum (The Norwegian Museum of Cultural History) in Oslo. Photo: A. Nilsen

and ubiquitous in its use than previously thought, much in the same way as demonstrated for the Swedish building stock.

Sidén (2008a: 13) wants to connect the introduction of timber-framing to Sweden with the German immigration in the 13th century. It is still worth mentioning that timber-framing with wattle and daub as infill is an ancient form of building which can be found in Scandinavia from the Iron Age onwards (Rosberg 2009). However, the use of brick in the construction (bricks were introduced into Scandinavian society in the mid-13th century) made the houses warmer and more comfortable than wattle and daub. Perhaps this increased the popularity and usefulness of the construction.

Roede (2001) describes the Norwegian timber-framing culture (Figure 43)in the following terms:

> *'Structures in these regions (Denmark and Northern Germany) form three-dimensional systems, adding equidistant and identical cross-frames defining bays. All systems are rigidly bound, in that posts, roof beams and rafters always correspond. Christiania framing, in contrast, was completely free, with members only incidentally collocated, and not divided into bays. It appears as a flat, two-dimensional wall construction' (Roede 2001:4).*

Roede's theory is that this adaptation or combination of foreign and domestic building techniques can be seen as a form of creolization (Figure 43) (Andersen 1983; Fox 1983).

> *'...that local framing may be viewed as a case of creolisation, analogous to the emergence of creole languages during encounters between ethnic groups with mutually incomprehensible languages. Carpenters of the first generation realised mental models of log houses in timber-framing, as loan translations, creating a 'pidgin'. After 1700, a fully developed 'creole' crystallised and was assimilated into the vernacular of the city and its surroundings'* (Roede 2001: 4).

Swedish buildings in the timber-frame technique, conversely, seem to on the one hand follow similar codes of construction as those in Denmark, Germany and other places on the continent. On the other hand, there are also many examples of a similar creole building style to that found in Oslo in the Swedish material – highlighted through a mention of irregular timber-framing in this study. Not least, the many

Figure 44 Images of the gatehouse at Tjolöholm in Sweden with an example of close studding.
Photo: A. Nilsen.

examples of mixed technique show a liberal relation to construction and how many of the 'laws' of timber-framing were ignored.

There are a few British types of timber-framed houses in Sweden i.e. the gate house at Tjolöholm Manor House in the province of Halland[50]. The gate house (Figure 44) is built in a mixed technique of close studding and large square panels with bay windows and a thatched roof. The house has two floors. It is one of several timber-framed buildings within the property. Similar examples of close studding can be found in York, England.

Timber-framing and society

A popular theory in the past (Augustsson 1992: 55; Henriksson 1997: 24) connects timber-framing to areas with big plains, intensely used for farming and problems with shortages of timber i.e. the provinces of Skåne and Halland. These areas in the south-west contain a belt of deciduous forests, of mainly beech and oak woods, yielding timber that is well adapted to timber-frame construction.

My hypothesis, on the other hand, relates to the mixed forests including the southern coniferous forests (Södra lövskogsregionen) (Figure 45), that before the large-scale planting of spruce, as well as an overwhelming presence of pine, also contained a large stock of beech, ash and elm woods (Lundmark 1986). This study has shown that the distribution of timber-framed buildings includes a much wider geographical area, which so far includes ten provinces rather than just Skåne and Halland. Geographically, these two regions with their vegetation of deciduous and coniferous forests (Södra barrskogsregionen Ek and Bok) compare well with the distribution of timber-framed buildings within this survey *Figure 1*. Sidén (2008b: 13) floats the same idea regarding the influence of the coniferous forests on the presence of timber-framed buildings in relation to timber-framed houses in Sigtuna and Söderköping.

Certainly, a shortage in timber supplies can be one of the reasons for using the technique but other aims could be aesthetics or practicality rather than ethnographic as has previously been argued. The outcome of the construction probably had something to do with access to building materials and experienced carpenters but

[50] Built by the Scottish family Dickson (Keith) originally from Kelso, who settled in Gothenburg, Sweden in 1802. They became one of the richest and most successful merchant families in Gothenburg trading in wood, iron and colonial goods i.e. sugar and coffee.

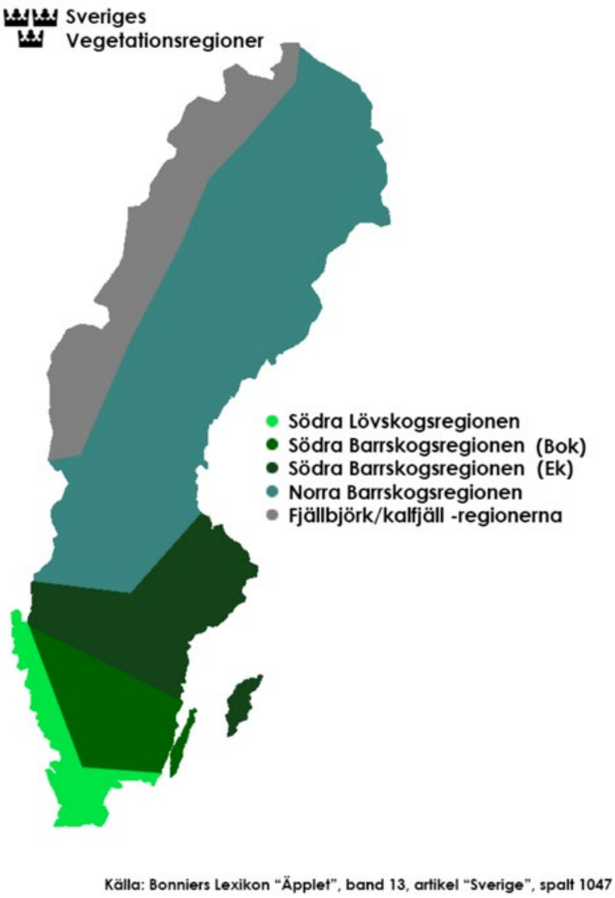


Figure 45 Swedish regions of vegetation. (Bonniers encyclopaedia 'Äpplet', issue 13, article 'Sweden', column 1047). Wikimedia commons.

just as important was the builders' set of references regarding what timber-framing is and should look like, and the aim or use intended for the building.

The government saw timber-framed buildings as slightly more fireproof than log-timber buildings and encouraged people to choose timber-framing in urban environments (Bæckström 1923: 85–87, 50,; Forsberg 2001: 161). In Gothenburg a decree followed after the city fire of 1721 demanding that all houses should be built in timber-framing or stone thereafter (Kjellin 1959). Yet, after 1636 wooden buildings and timber-framed buildings were banned from central Stockholm because people were injured when falling bricks from timber-framed buildings caused havoc during the big fire (Forsberg 2001: 165–66). At the end of the 1720s, Copenhagen issued restrictions on timber-framing arguing it was not fire-proof after the devastating fire in 1728 (then repeated in 1795), advocating for exclusively building stone houses instead (Kayser 1985: 9–11).

The memory of the wider Swedish timber-framing tradition has been wiped out through urban fires and several waves of building following demolition of urban townscapes combined with timber-framed buildings hidden behind plaster or panelling. The missing manifestation of the built environment (after various episodes of demolition) has had an impact on our memory, identity and understanding thereof.

If the through tenon from Söderköping is to be taken as proof of timber-framing, the introduction of the technique into the Swedish building culture comes relatively early after it started to spread across the north-western part of Europe sometime in the 12th-13th centuries. In Sweden, it thus perhaps appears during the course of the 13th century, admittedly from rather scant archaeological evidence. Nonetheless, by the 16th century, there is supporting evidence from both preserved buildings and historical records and has been in continuous use and practice until the 20th century. The examples given in this case study implies that the technique has been widely spread both geographically, socially and functionally within Swedish society. There is a link to the traditional (even prehistoric) wattle and daub timber-framing technique, that had a similar wood structure but lacking the brick infill, known throughout Europe, including Sweden.

Sidén (2008b) calls timber-framing, post and plank construction and brick-building German building techniques (North Germany) in a sense interpreting cultural contacts as one-sided making one part active and the other passive, also understood as a form of trans-culturalization (Streiffert Eikeland 2006: 73). Sidén wanted to investigate if German immigration had influenced urban development foremost in Stockholm from around the 1270s onwards. Yet, he concludes that the German influence on the Swedish building stock was limited. However, calling the building techniques German to begin with is problematic. Post and plank, wattle and daub houses and timber-framing are related construction techniques through the use of frames. While the two former techniques have prehistoric origins (Christophersen and Nordeide 1994; Cinthio and Carlsson 1982; Crozier et al. 2001; Rosberg 2009; Schia 1987), timber-framing developed in the medieval period in many parts of the European continent. It came into wide use in the last decades of the 13th century in the Netherlands for example (Tussenbroek van 2017: 44), approximately in the same time as the first evidence of the technique might have been emerging in Sweden. Dutch timber-framing lacks jetties and bracings, and due to problems accessing sufficient oak the Dutch started to import pine from Scandinavia in the 16th century to feed the timber-framing market (Tussenbroek van 2017). The oldest preserved cruck house in England for example is dated to the 14th century (Cook and Neave 2018; Giles 2014).[51]

[51] A cruck frame has a roof supported by transverse frames of pairs of oblique timbers. The curved form of the members is a recognizable feature although some are straight. The cruck goes from either the

There are early examples of English 'type' timber-framing in France from the 14th century (Alcock 2018). French timber-framing seem to develop during the 13th century (Epaud 2013; Hoffsummer et al. 2011), while Denmark saw a change in the building technique towards timber-framing in the 15th century (Thaastrup-Leth 2014). In Belgium, the technique was spreading slowly from the 15th century onwards (Houbrechts 2013). Therefore, it could be argued that the technique developed and quickly won ground during the late 13th century and by the early 15th century, the technique had spread over large parts of western, central and northern Europe.

Bedal's (1995: 19) concepts of reference levels in buildings archaeology: room/spatial level, building constructional level, social structure and the functional level have been observed through the following questions or features.

The room/spatial level has left few traces in the archaeological record within the context of this survey. Therefore, this discussion has been largely left out apart from counting the number of storeys.

The structure of buildings has been argued in greater depth in the sense that certain building elements have been explained and compared to help establish technical patterns. On the other hand, the structures and their construction have not been discussed in as much detail as perhaps an architect or a carpenter might have done.

The functional structure of the buildings has shown a wide variation including dwellings, manor houses, inner walls, functioning as workplaces, housing for animals, places of worship for a parish and so forth. The social structure has to do with how different social groups have used the buildings.

To highlight with one final example; according to a tax register on houses from 1582 there were 711 houses in Stockholm and 92 of them were built in timber-framing technique (Vetenskapligt program, Stockholm 2004).[52]

Conclusions

It is evident that timber-framing existed in Sweden can be encountered in a number of different geographical, ethnical or social contexts both in towns and in the countryside. The wide set of functions that have been connected to timber-framing is remarkably interesting and support the idea of a general reception and usage in society, i.e. an accepted and 'normal' building technique. A further factor not much discussed in this study is the adaptation of the timber-framing technique to fit with new 'modern' notions of building there were certainly differences between the 14th century timber-framed house compared to the 18th century timber-framed building. Perhaps, again stating the obvious but a reason as good as any for explaining the durability of the technique in our society. Finally, it is interesting to find that the introduction of Swedish timber-framing comes within the timeframe of the spread of the technique within large parts of Europe. The technique with wattle and daub as infill had been in use since prehistory, so the concept of timber-framing was well known, but the medieval form of timber-framing was something new, which was also to some degree connected with brick manufacturing. Another important factor is the widespread use of mixed building techniques in one building, which is a fun and challenging way of seeing and interpreting the building stock within the archaeological dataset.

To conclude, much more research is needed into this building technique and hopefully archaeology can help in this development. I would like to encourage archaeologists out there, writing reports on building remains suspected or confirmed as timber-framing, to advance research by articulating thoughts and hypotheses and developing the arguments why the building remains might be evidence of timber-framing; and just as important what is doubtful. Show photos to make the case, draw plans of particular building parts and, if possible, discuss the floor plan. Timber-framing seems to survive poorly as an archaeological material so I recognize the difficulty but if no one discusses the building parts at hand, archaeologists will never improve the corpus of knowledge of Sweden's early timber-framing culture. To sum up, the data collection needs to increase to create a firmer basis for discussion. Hopefully, historians will join in the endeavour to research the building stock and its social connotations through the multitude of historical sources available. I am sure there are many undiscovered sources to this end that will help develop the discussion in the future.

ground or the side all the way up to the apex, or very near there, where it is connected to the tie beams or collars. Rafters, purlins or the roof covering are supported by the cruck frame (Volmer and Zimmermann 2012a: 142). Cruck constructions are otherwise unusual within the Swedish timber-frame building stock.

[52] Husskattelängden taxation on buildings was used as source in Vetenskapligt program, Stockholm 2004.

5.4 Elusive traces of urban post and plank construction

The third microstudy concerning building techniques in wood regards post and plank construction, sometimes referred to as bole houses. From circa 1050 to the 1250s post and plank construction was probably among the most common urban building techniques in Sweden. Yet, slowly the log-timbered technique, timber-framing and brick building won ground and started to change the urban townscape (Nilsen 2011). Still, post and plank construction was never abandoned, it was certainly relevant during the early modern period both in urban as well as rural contexts.

Operational approach

The study of post and plank construction will include material from archaeological reports, preserved buildings and historical records – mainly fire insurance records.

The archaeological case studies come from surveys in the five towns in focus Stockholm, Gothenburg, Nya Lödöse, Jönköping and Falun. The buildings have been dated through a number of methods e.g. dendrochronology, ^{14}C, stratigraphy etc. It is worth keeping in mind that the dating method can be robust, while the interpretation of the date can be difficult.

The six preserved buildings discussed are situated in Visby, Gotland. It has been difficult to obtain dates for the buildings. The dates rely on mentions in museum databases or reports from building conservationists. The original source of the dates has rarely been mentioned but probably comes from various historical sources. Another, less certain method is through analysis on the basis of building style or design.

The historical records, that is the fire insurance records, come from the suburb Majorna outside Gothenburg. The dates 1804-1805 relate to the origin of the fire insurance records registration. Thus, the houses are all older than the records.

By investigating all these historical sources, the construction method is captured both in the ground and above as well as in historical accounts describing use, physical appearance and location.

The background of post and plank construction

Houses constructed in post and plank technique are mostly rectangular buildings with gable roofs. For this type of construction both oak and pine are relevant, but oak is particularly suitable. The wood infill in the walls does not make use of the whole height of a tree, which makes oak preferable to use from a material economic perspective. Its growth lends itself well to relatively short planks to fit within the bays. Pine has a long straight trunk; thus a lot of the wood risks being wasted when it is used for post and plank technique. Thus, the technique is well suited to make use of waste planks and short timbers, which constitutes a good and economic reason to choose post and plank technique for construction. Nonetheless, oak was not permitted for house construction from 1539 onwards, due to legislation introduced by King Gustav I, turning all oak in the country into property of the crown, aimed at shipbuilding (Henriksson 1997: 24, 30; Rosberg 2009: 19), although there might have been some local exceptions from that rule. Västergötand have several examples of profane building constructions built in oak from the 17th and 18th centuries e.g. *fornstugan* in Skölvene. While the nobility could always do as they pleased on their estates (Stridsberg and Mattsson 1980: 42). There was also a common called Gryten (Erik Larsson 1999: 14, 42), which most likely had a stock of oak exempt from the Crown. Thus, there are empirical examples of oak builds from the period in question but further investigation is needed into historical records to get a fuller picture of the circumstances.

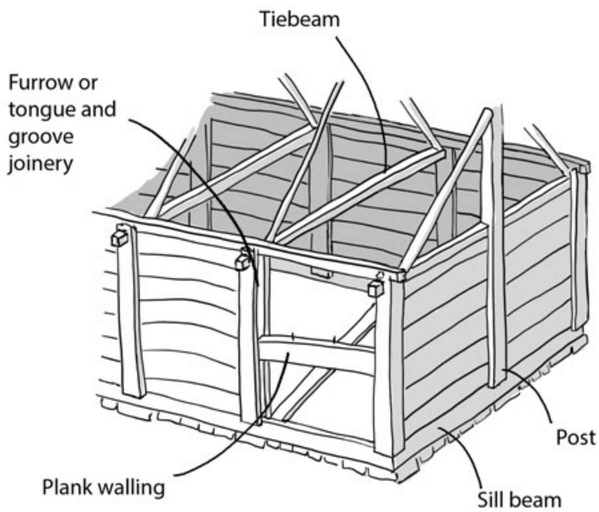


Figure 1 Building in post and plank. Drawn by Roland Andersson originally.[1]

Post and plank is a technique that creates a good and sturdy construction, which protects from wind and precipitation, yet does not always insulate well (Table 1). There is a shrinking factor, when fresh wood slowly dries and leaves gaps in the construction, which can create a relatively cold indoor climate (Rosberg 2009: 18). Conversely, the shrinking factor could be monitored and dealt with through a grooved wall-plate (in Skåne) and through folding the transom and wall-plate at the gables (in Gotland) (Henriksson 1997: 45). The

[1] 2007-11-06 Ekologism – att leva på naturens villkor https://ekologism.wordpress.com/2007/11/06/skiftesverkshus-och-korsvirkeshus-vad-ar-skillnaden/ viewed 2020-06-07

technique has been identified (although not referred to in much detail) in a number of prehistoric graves from the Iron Age (Lamm 1973).

This framing technique is also related to prehistoric buildings such as the traditional longhouse through its roof bearing vertical posts and horizontal beams connecting the posts (Rosberg 2009: 19). However, in post and plank construction it is the wall construction that holds up the roof and not free-standing inner posts as it was in the longhouse, although similar structures with crown posts can sometimes still be found as byres on the countryside (Henriksson 1997: 30). The posts/walls are always high enough for a person to stand upright and there is no limit to how long the building can be, but buildings are usually about 4-5 metres in width. There is a similarity to log timber construction as both techniques can be built on horizontal sill beams. Post and plank buildings do not have to be built that way, but the building benefits from it (Rosberg 2009: 22–23). It is also possible to build post and plank constructions with earth-fast posts (Volmer and Zimmermann 2012: 147). The framing technique can have wattle and daub as infill but when post and plank technique is discussed there is a plank/wooden infill. The wattle and daub buildings with central fireplaces are closer connected to the Viking age and the early Scandinavian middle ages 900s-1100s and are less common during the early modern period (Ambrosiani 1996; Arbman 1926: 178–83; K. Carlsson 1998; Schietzel 1981). In this study, the reference to central fireplaces means a fireplace with a chimney placed centrally in the building where the same chimney stack can be used/accessed from multiple rooms. The use of sill stones seems to have started around the 10th century of which the settlement Sanda, in Upplands Väsby, is an example. Some of the small post and plank buildings on site have been suggested as possible slave quarters[2] (Åqvist 2006).

The focus on this survey concerns a frame construction with horizontal planks (Sw. *skiftesverk*), though it is also possible to use vertical planks (Sw. *stavverk*), which has even less effective insulating properties. The weight of horizontally laid planks help compress the walls and reduce draughts, however, post and plank is rarely a draught free construction but it can function in dwellings. Vertical planks i.e. *stavverk* lack the compression element of post and plank technique and is even draughtier therefore preferred in unheated and uninsulated parts of buildings such as balconies and porches. The technique with vertical planks was virtually abandoned during the course of the medieval period (Henriksson 1997: 23).

Stave churches have loadbearing inner-posts holding up the roof and often (not always) walls of vertical planks in a frame construction fitted into grooves, thus not with load-bearing properties (Christie 1974). The differences between the frame in post and plank construction and timber-framing are as mentioned in Chapter 5.3: the space between the studs/posts, which is longer in the post and plank technique; there is also no use of diagonal braces; and, finally, the infill is wooden planks (Henriksson 1997: 24).

There are plenty of examples of post and plank constructions being adapted into intermediate forms with modes of assembly more in line with log-timber technique often with a sill beam with corner-joint sections or with timber-framing details such as posts in the shape of tenons, in stout square-hewn fir timber (Henriksson 1997: 38). It is important to say that post and plank constructions can be built as two-storey structures. When it comes to dwellings the floor plans were to some degree similar to the most common and traditional plans for log-timber buildings, those often referred to as the single-roomed cottage and the double-roomed cottage (Henriksson 1997: 44; Linscott and Nilsen 2018), such buildings could be found both in the countryside as well as in towns. When pine planks were introduced into the building technique the intermediate post could be dispensed with and thus only securing the planks at the outer ends of the building and fitted, through the use of tongue-and-groove at the ends. Half-dovetails (Figure 2) were used to secure the walls, the same method was used to fit the intermediate floor of a two-storey building (Henriksson 1997: 47).

This is a construction method that lends itself well to prefabrication and there is no need for nails (instead wedges and bolts can be used), which makes assembling and disassembling the building relatively straightforward. However, construction methods can alter over time i.e. in the 18th century iron nails were rarely used in wooden house constructions, while it was much more common in the 19th century after standardizations made mass-production possible.[3] Thus, a building was easily moved, and dilapidated building bits could be changed (most commonly the sill beam, which is closest to the damp ground), recycling old building parts into new buildings was a matter of routine. The post and plank bole house could be found all over southern Sweden and hits its northern boundary around the great lakes, Vänern

[2] Also discussed by Neil Price at the joint conference EAA/SAA in Curaçao in 2015: Connecting Continents: Archaeological Perspectives on Slavery, Trade, and Colonialism on the topic *Slavery and the Vikings: Archaeological Perspectives.*

[3] 2019-10-02 Tekniska Museet in Stockholm, https://www.tekniskamuseet.se/lar-dig-mer/100-innovationer/spiken-och-skruven/ viewed in 2020-05-23

and Vättern. Thus, this building technique is most prominent in the provinces of Skåne, Blekinge, Småland, Öland, Gotland and Västergötland, (Henriksson 1997: 53;

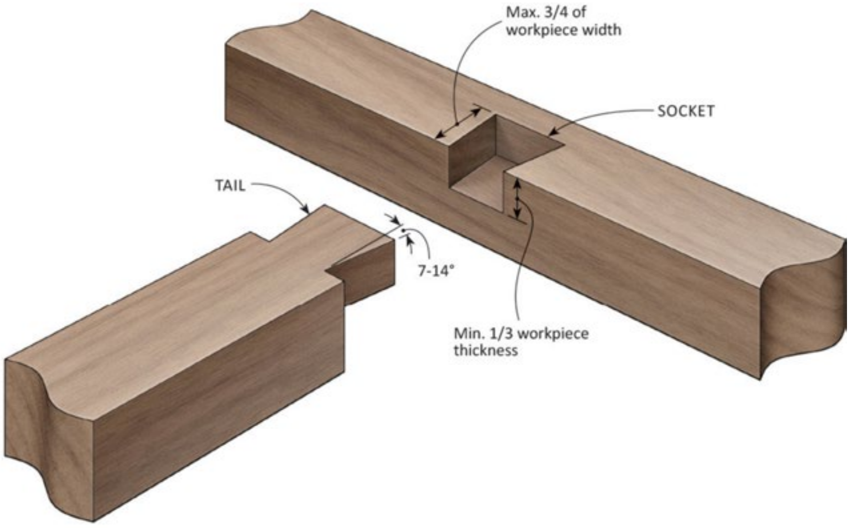


Figure 2 Half-dovetails or dovetail lap joint (Hiller 2015).[4]

Erixon 1982) although this corresponds foremost with the countryside. Nonetheless, ample evidence of urban post and plank buildings have now been excavated in medieval Enköping (Ellinor Larsson et al. 2019) and Stockholm, which would include the provinces of Uppland and Sörmland on the list. Visby on Gotland has many preserved urban post and plank buildings from the early modern period. Thus, when including the urban examples, a much wider distribution of this construction technique emerges.

The early modern urban post and plank construction from archaeological examples

The focus of this microstudy concerns what post and plank constructions looked like, were used for and any changes over time, if such can be found from the early modern period (1470-1800). Examples are given from Stockholm, Gothenburg, Nya Lödöse, Jönköping and Falun. All examples of post and plank constructions that have been found have been included in the study, but there is no claim to cover all. To be able to expand the discussion past the limited archaeological data sample, preserved buildings, historic documents, and visual records have been added.

The quality of the archaeological dataset

Remains of buildings discussed in archaeological reports are sometimes elusive. This is especially true when it comes to buildings interpreted as built in timber-framing or post and plank technique. Sometimes the authors of the reports are very unclear on what the claim is based on, further there is not always a developed discussion or detailed description of the building parts. Occasionally the claim seems not to be based on wooden remains on site, which are often absent, but rather a row of sill stones. At other times, the claim is based on grooves or mortice and tenon joints, conversely those are not always fully displayed i.e. in photos or detailed drawings. Especially when there is some uncertainty on whether it is a question of post and plank or timber-framing technique, those photos or detailed drawings would help the reader to evaluate and understand the material and to make comparisons with other similar building remains.

The measurements mentioned comes from the various archaeological projects thus the accuracy might differ between them due to preservation status or of other reasons connected to the individual project i.e. 3m, 3.27m or 3.2m. *The cases are presented per century.*

1400s
Stockholm

- Within the block, Kv. Mercurius in Stockholm (M. Carlsson and Svensson 2015: 112) several buildings, which were interpreted as constructed in post and plank, are discussed, even one that supposedly could have been a storeyed house. However, the report is lacking in specifics regarding what these assumptions were based on. It would have been useful with a closer description and documentation of the building parts that led to the interpretation, supposedly regarding eventual traces of grooves or mortice and tenon parts. After communication with one of the authors of the report, I have been informed that the interpretation is based on the recovery of the remains and the

[4] Jessica Loyer 2015-10-23 Woodcraft Magazine https://www.woodcraft.com/blog_entries/dovetail-lap-joint viewed 2020-06-07

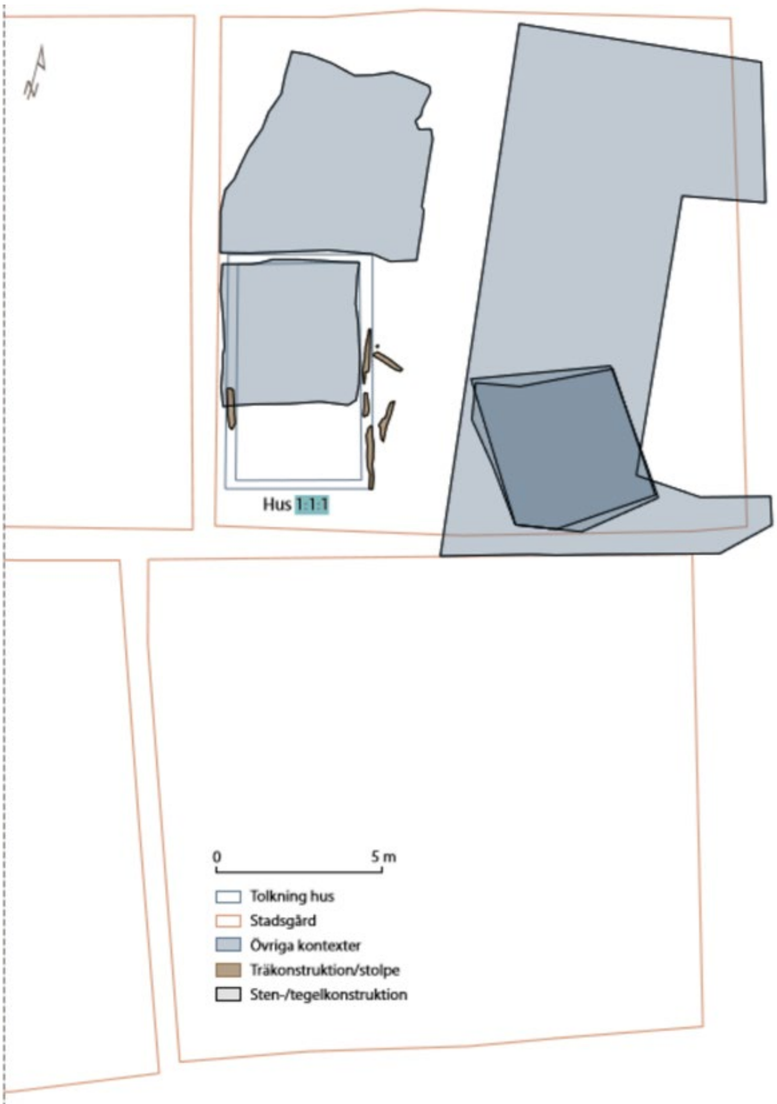


Figure 3 Building remains of a post and plank construction from 1:1:1 in Nya Lödöse (Öbrink and Rosén 2017:125).

knowledge (I would assume from historical records) about contemporary urban settings and building stock.

Nya Lödöse

- Building 1:1:1 room A, in Nya Lödöse, dated to 1473, which would indicate that this was one of the first buildings on site within the new town formation (Table 3). The building was not completely delimited to the north and south, but measured c. 4.3 × 7m. There was no trace of a floor construction, yet, the archaeobotanical sampling reveals traces of moss, plant parts and manure so this might indicate that the building had been used as a byre (Öbrink and Rosén 2017: 124). There might have been holes for inserted posts in the sill beam. There is no additional information in the report on what the interpretation of post and plank technique rests on.[5] The construction material was oak according to the dendrochronological report (Öbrink and Rosén 2017: 33).
- Building 3.2:2, room A, in Nya Lödöse, dated to earliest 1476. A lot of building parts were conserved such as wood sills, parts of the walls and floor joists (Table 4). The outer measurements of the building were 4.5 × 3m. The room was c. 4 × 2.5m in size. The building had a fireplace and a wooden floor. Residue of burnt grain was found and the house was interpreted as either a bakery or a brewing house. The house was destroyed by fire around the early 1500s (Öbrink and Rosén 2017: 49, 51, 57). There was plenty of debris partly from the fire and partly due to the site outside the building being used as a dump. Finds of fish bones, and bones from cows, swine and goat/sheep were found along with sherds of pottery and other kinds of kitchen ware i.e. soapstone bowls (Öbrink and Rosén 2017: 230, 239). There is a mention (Öbrink and Rosén 2017: 85) about not having determined whether the building technique was timber-framing or post and plank. Unfortunately, the construction parts are not detailed in the report.

1500s

Stockholm

- At Slussen/Södermalmstorg,[6] several buildings constructed in some kind of framing technique have been excavated, the most prominent was the warehouse 5.5 × 10m, yielding a surface area of $55m^2$. The building was constructed in pine and the possible remains of a staircase, just inside the entrance, which might indicate a first floor. The floor, in spite of only being in use for about 20 years, was constructed from a large number of recycled pieces of wood from boats, byres and elsewhere. The report from this investigation had not yet been published when this was written.

1600s

Falun

- The block Kv. Garvaren 2, 7 and 8, in Falun. The building A6, phase II, was dated to the second half of the 17th century (Table 5). The building remains consisted

[5] After discussing 1:1:1 with the project leader, I find out that the interpretation of that building is uncertain.

[6] 2015-04-16, A burgage plot from the 1520s on Södermalmstorg in Stockholm. Arkeologikonsult, Blogg Slussen. http://www.slussenportalen.se/index.php/pagaende-projekt/soedermalmstorg/item/61-en-stadsgard-fran-1520-talet-vaxer-fram-pa-sodermalmstorg (viewed 2020-02-15)

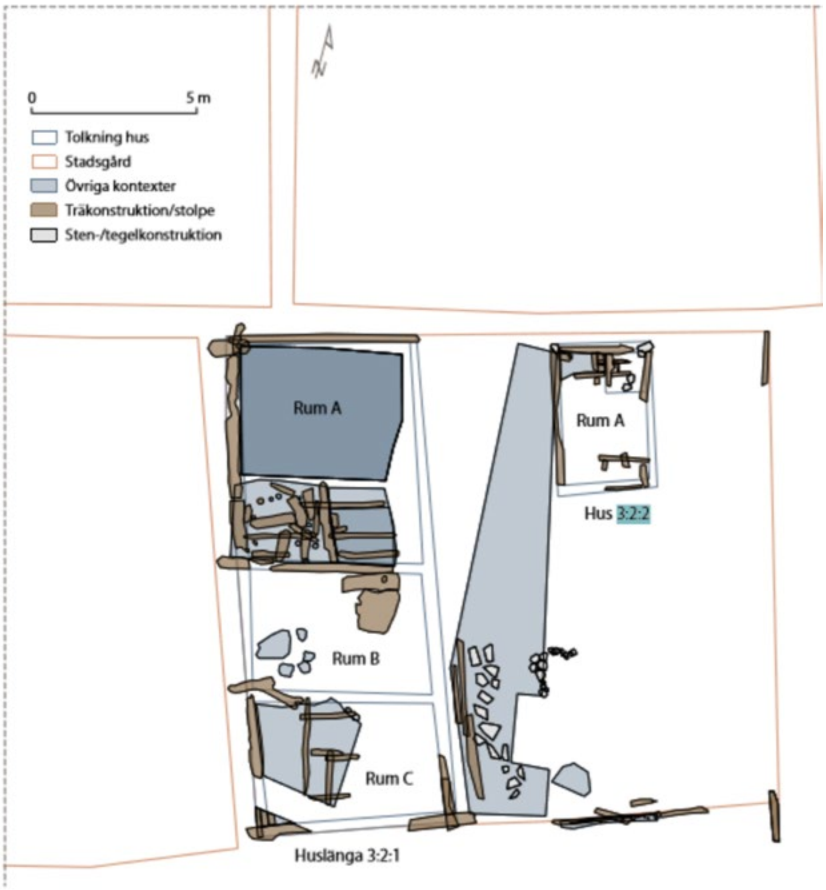


Figure 4 Building remains and layout from 3:2:2 in Nya Lödöse (Öbrink and Rosén 2017:222).

of three posts, four timbers and a row of sill stones as well as five planks and some remains of standing planks. The timber to the south was inserted into posts at both ends. The post was hewn and had three grooves for vertical planks. The southern timber was also attached to the western timber by a corner-joint; the western timber rested on sill stones and was attached to another post to the west. Thus, the remaining structure had a rectangular shape with one side missing. Close by were remains of five wall planks that most likely used to be part of the construction. In addition, there were three planks, 1.2m long, and a 4m long piece of timber that were lying within the building. The filling consisted of a black anthropogenic deposit of soil on top of a dump of slag sourced from the mine (Berghold and Grälls 1989: 2–3). This building was interpreted as a privy due to lots of examples of different kinds of berries and the residue from a latrine. The result from the archaeobotanical samples also revealed a large quantity of meadow grasses, which might suggest that the house was used for storing fodder and hay for animals as well (Berghold and Grälls 1989: 6).

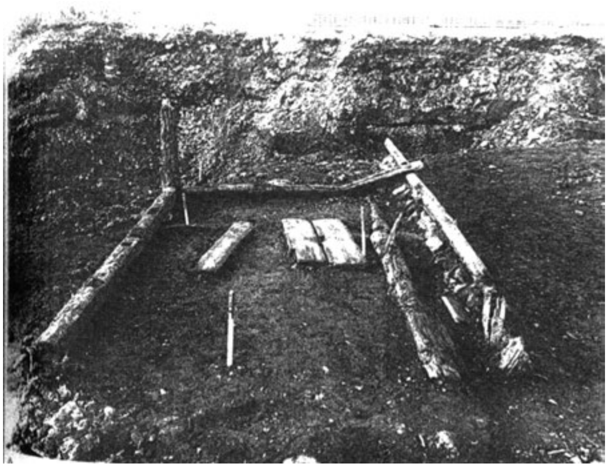


Figure 5 Kv. Garvaren, phase II, A6 from northeast, in Falun. Unr 1360:12 (Berghold and Grälls 1989).

This documentation of a post and plank construction is exemplary, which of course was helped by good preservation conditions.

Figure 5 shows the building remains with the key technical attributes to post and plank construction. The corner post and the mortices for the studs.

The isometric drawing of A6 (Table 6) highlights the construction parts making certain technical building bits clearer to the viewer such as how the sill beam is attached to a groove in the corner post.

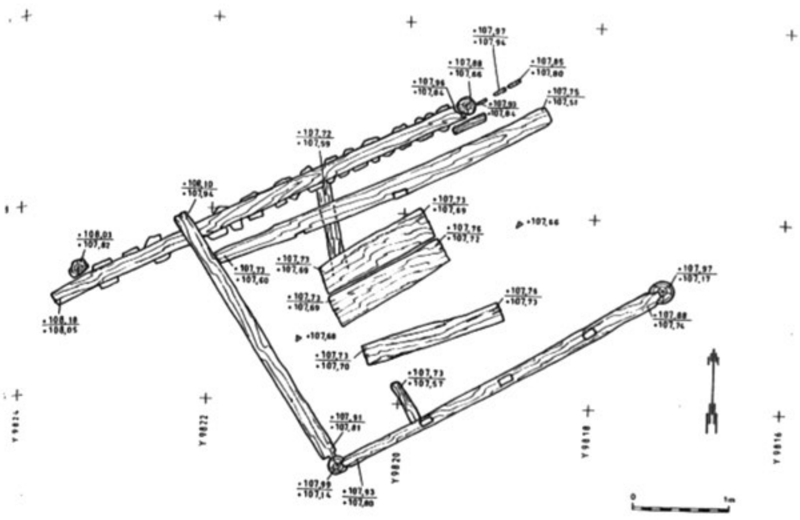


Figure 6 Kv. Garvaren, phase II, A6, in Falun. Layout (Berghold and Grälls 1989).

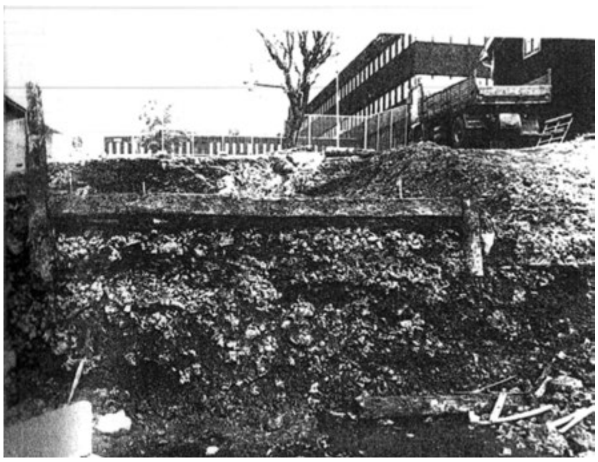


Figure 7 Profile, from the south, Kv. Garvaren phase II, A6, in Falun. Unr 1360:15 (Berghold and Grälls 1989).

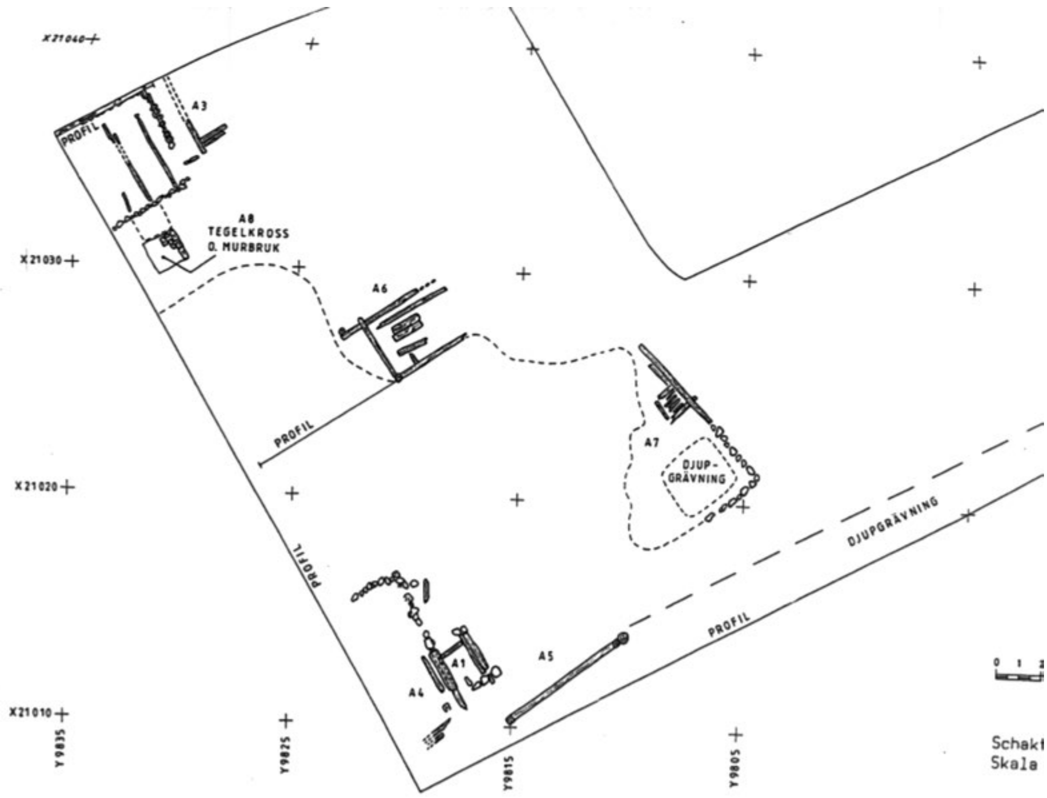


Figure 8 The plan with A6 at its centre. Kv. Garvaren, Falun (Berghold and Grälls 1989).

Figure 9 Photo of house 368 on plot 218 in Kv. Diplomaten in Jönköping. (Nordman and Pettersson 2009).

Figure 10 Partitions for animals in house 368 on plot 218 in Block Diplomaten in Jönköping. (Nordman and Pettersson 2009).

Figure 7 clearly shows how the corner posts have been inserted into the ground, so called planted posts, forming the frame of the post and plank building.

A6 is contextually located on the site (Figure 8).

Jönköping

- In Kv. Diplomaten, in Jönköping, specifically on plot 218, house 368 was a small building interpreted as being built in post and plank technique with planted posts (Figure 9). It was 7 × 4.8 metres in size. There were three posts on either side of the building with remains of horizontal planks in between. Some of the planks had fallen out. The posts measured 0.2-0.4 metres in diameter, they were very decomposed and flattened, some only a few centimetres high. There were traces of the room having been divided into booths for animals with planks and posts in a North-South direction. The archaeobotanical sampling revealed a large quantity of moss and dung, which supports the idea of the building having been used as a byre. There was a 5-10cm thick layer of wood chips partly affected by fire on the floor. The building technique was not definitely confirmed but considered very likely.[7] The house was interpreted as a storage facility/byre erected somewhere around 1640-1650 (Nordman and Pettersson 2009: 77–78).

The photo (Figure 10) gives an overview of the building remains, and it is possible to see the partitions for the animal stalls. It shows the proximity to the neighbouring building and it shows the posts and some residual planks. However, it does not give the viewer much information on how the construction elements lock into each other. I recognize that this particular building was heavily decomposed, which made both documenting and interpreting difficult.

[7] Additional data (a closer description, photographs and a plan) was given to me by the author of the report.

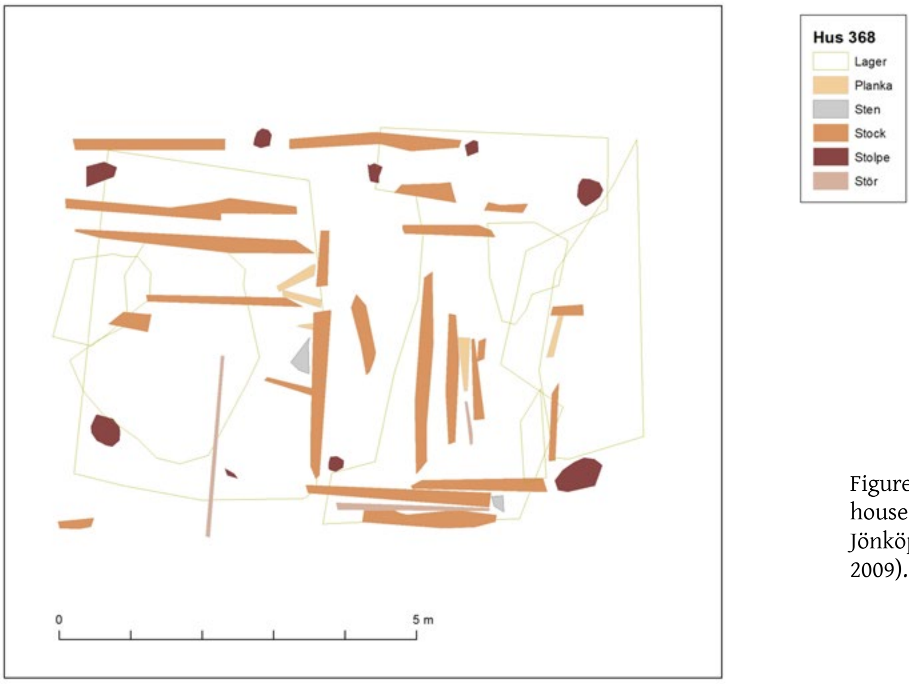


Figure 11 Documented building parts, house 368 on plot 218, Kv. Diplomaten, Jönköping (Nordman and Pettersson 2009).

This is a contemporary approach to documenting the extant building parts on an archaeological site (Figure 11). All the individual planks, stones, layers, posts and timbers are accounted for. Yet, the interpretation of the building parts and how they are attached to each other is much less evident than in the drawings that was previously standard procedure; see the layout from the block, Kv. Garvaren, Falun as an example. The photos are a great help but sometimes details get lost and features can look different than in real life, thus there is still something to be said about documenting through, touch, measuring, seeing, interpreting and drawing, an important tool for understanding the material in much the same way architects and buildings archaeologists (Sw. *byggnadsantikvarie*) work.
1700s

Falun

- In the block Kv. Dalpilen, Falun, a dwelling was excavated, measuring 5 × 5 m; it was built in post and plank technique and dated to the 18th century (phase 6) (Berghold 1996: 14–15). No further information was given in the report, and no drawing of the plan of the building was submitted unfortunately, other than a mention of fragmented residue of pad stones, a cellar and constructions (supposedly the one in post and plank?) (Berghold 1996: 32).

Stockholm

- A drystone retaining wall was excavated at the block Kv. Västergötland 24 in Stockholm. It was situated at 0,50m depth, parallel with the inner wall of the current house on Repslagaregatan. The drystone retaining wall measured 0.8-1m in diameter and 2m+ in depth (it was not excavated to its full depth). There were no finds to date the drystone retaining wall archaeologically (Fennö 2004: 8). The wall was interpreted as having been part of a cellar to a timber-framed building found in fire insurance records from 1858 but the cellar could be older than 1723 (after a building burnt in the Katarina fire)[8] or at least older than 1748 when three timber framed sheds/ outhouses were built.

This is therefore not the archaeological remains of the woodwork of a post and plank building but the remains of a cellar under a previously existing timber-framed building. There were, however, several post and plank buildings on this burgage plot. The reason this is included is partly due to the lack of archaeological wooden remains but also to show the potential in using fire insurance records to understand this elusive building technique in an urban setting.

Two woodsheds and a privy (no. 4) were erected before 1828 in post and plank construction. In 1857 there was a five seated privy (no. 5) in post and plank, and another privy (no. 15) with six seats (Fennö 2004: 14) (Figure 12).[9] This example from 1828 gives a glimpse of the future one could say, from the point of the early modern period, the focus of this work. However, it is not irrelevant to see that the building technique was in continued use in the 19th century. Here primarily represented as the preferred building technique in privy constructions.

[8] The Katarina fire refers to a fire in Stockholm on May 1st in 1723. The fire devastated ca 500 houses, most of them built in wood. The tower of the Katarina church was also hit, thus naming the fire for posterity.

[9] From two sketches from 1858 and 1865, in Wannberg E. 1983: Västergötland 12. Historic buildings or buildings conservation report (Sw. *Byggnadsinventering*) the Stockholm City Museum.

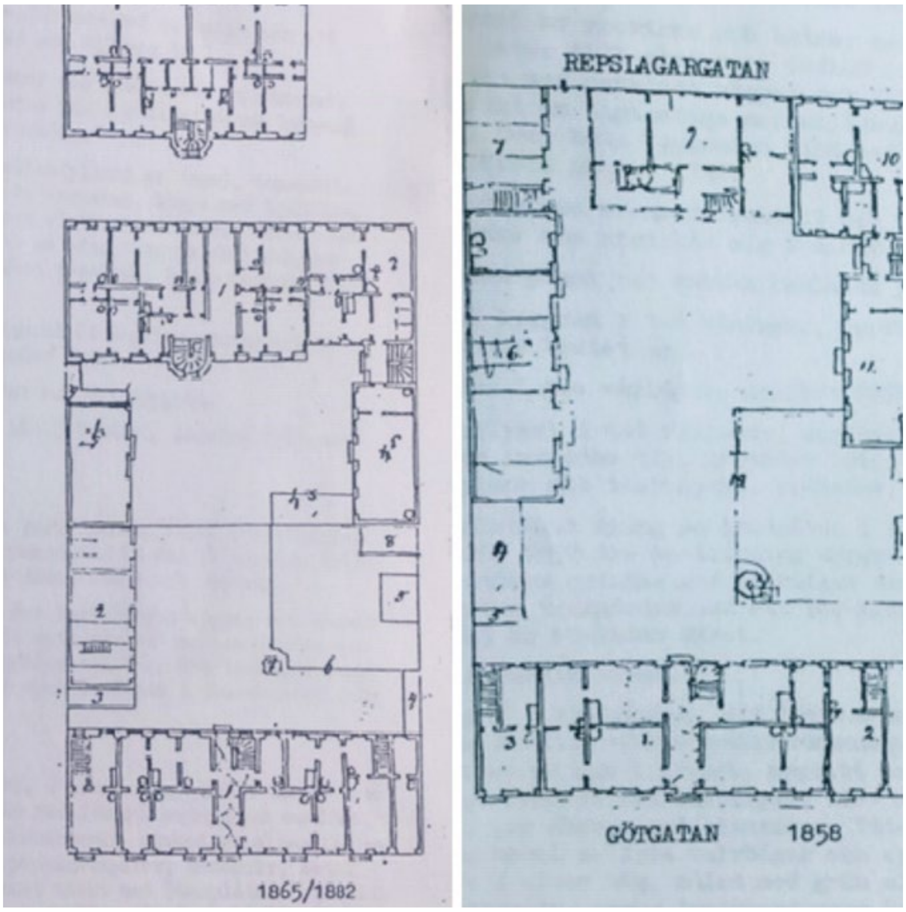


Figure 12 Two sketches from 1858 and 1865, extracted from Wannberg 1983 and Fennö 2004.

No archaeological remains of post and plank constructions of buildings have been found in the Gothenburg material.

Reflections on urban post and plank buildings within the archaeological data

The post and plank construction in the block Kv. Garvaren in Falun was remarkably well preserved, which helped produce a robust record and a strong set of data. There was nothing out of the ordinary about that particular way of documenting building remains, just that it is rarely practiced with post and plank or timber-framed structures. It would significantly improve the quality of knowledge and the data recovery of these kinds of structures if more attention were given to explain, demonstrate and back up claims; and if there is uncertainty to be clear about that, and to be candid about what is a preliminary hypothesis. This is a case where it is also important to disclose what material as well as construction parts etc. are missing, which perhaps makes interpretations difficult and problematic.

To sum up the archaeological remains of post and plank buildings in reports, some information is lacking in substance but there is still information to be had from this rather fragmented material. There seem to be post and plank constructions present during the whole period investigated but the evidence is somewhat scanty. In general, there is unfortunately an occasional lack of description regarding construction details, floor plans, building size, and the type of wood. However, the geographical location of the archaeological building remains can tell something of the mapping of this technique.

Unfortunately, this is only a very short list of examples of the urban form of this building technique from archaeological reports (Table 1). It has proven difficult to find good descriptions of post and plank houses in the archaeological record. Yet, the function of these buildings is wide ranging and includes storage, working, living, and housing animals. This limited dataset still covers the entire early modern period, which to some very small extent also reflects the prevalence of this building technique. The size of the buildings seems comparable to log-timber buildings from similar contexts and time.

There was no window glass from any of the buildings in this survey. The floor types are not discussed in any detail except for one wooden floor and two insulated floors at Nya Lödöse. There was no mention of the number of rooms in any of the buildings, which makes it

Table 1 Post and plank constructions in archaeological reports from Gothenburg, Jönköping and Falun. See also Appendix no. 9.

Department	Location	Report no.	Object	Dated	Function	Length	Width
Arkeologerna (SHMM), Bohusläns museum och Rio Göteborg Natur- och kulturkooperativ	Västergötland, Nya Lödöse	2017:1	1:1:1	1470s	Byre?	7m	4.3m
Arkeologerna (SHMM), Bohusläns museum och Rio Göteborg Natur- och kulturkooperativ	Västergötland, Nya Lödöse	2017:1	3:2:2	1480-first part of the 16th century	Baking house/ brewery	4.5m	3m
UV Stockholm	Dalarna, Falun, Kv. Dalpilen	1996:109	A1	1700s	Dwelling	5m	5m
Riksantikvarieämbetet, byrån för Arkeologiska Undersökningar	Dalarna, Falun, Kv. Garvaren	1989	A6	1650-1700	Privy/ storage	6m	4m
Jönköpings läns museum	Småland, Jönköping, Kv. Diplomaten	2009:40	Plot 2018/ house 368	1640-1650	Storage	7m	4.8m

impossible to discuss floor plans in general. Four of the buildings were probably one-storey but one could have had a first floor, in addition to another unconfirmed example from Stockholm, which was not included in the list due to a lack of specifics. There is evidence for the use of planted posts but also of constructing the whole building on sill stones and a wooden sill. There has been no evidence of the use of a mix of techniques in any of the buildings within this data. Furthermore, there is also no evidence for the use of plaster or panelling on the external façade. One house, the brewery or baker's building, had a fireplace.

Preserved buildings, photographic evidence and drawings – examples from Visby, Gotland

Visby, on the island of Gotland, is the town that has one of the largest stocks of preserved post and plank buildings in a Swedish urban setting. A number of buildings from Visby will be included in the discussion to demonstrate what the post and plank buildings could look like, *see Appendix 10*. The following six houses will be studied through observations in photos and plans, thus, using a descriptive method.

- The house, Torsmanska huset,[10] was erected 1700-1745 by the bailiff Johan Gustaf Camitz or his father Johan Niclas Camitz (Figure 13). The façade of the building is a striking volute-shaped or Dutch gable, of three storeys that brings Amsterdam to mind, and slightly higher than the building itself (Figure 14). The body of the building is built in log-timber technique in one storey with two attic floors. There are also extensions built in post and plank technique; one extension with a layout of a closed porch, a main room, which also contains a larder and a staircase.

The other extension is a small dwelling of one room with a fireplace and a ceramic stove and closed porch. The roof is irregular but mainly built as a gable roof. The house was originally a bailiff's quarter but during the 19th century, it was turned into a tavern.[11]

- The building, on Mellangatan 35, of two-and-a-half storeys, has a structure in post and plank placed over a presumably medieval first floor in stone (Figure 15).

The layout from 1924 (Kjellberg 1924: 8:68) suggests that the house was/is divided into three flats (it is unclear if the layout is retained in its historic form) (Figure 16).

The ground floor, measures 14 × 7m in size. The layout shows an entrance to a central vestibule, to the left of the entrance there were two rooms and a kitchen. Only one of the rooms appears to be heated, in this case through a ceramic stove. The kitchen had a corner fireplace. On the right, entering the vestibule, there was another big room and a kitchen. Hence, two flats existed on the ground floor. A staircase in the vestibule lead up to the first floor. The layout on the first floor, constructed in

[10] Torsmanska huset, Skeppsbron 22, 20, Visby, Gotland, Sweden.

[11] Riksantikvarieämbetet, bebyggelseregistret (*historic buildings list*) Creative Commons Zero. www.bebyggelseregistret.raa.se 2019-03-28

Figure 13 Two views of Torsmanska huset, Visby, Gotland, Sweden. Photo A. Nilsen.

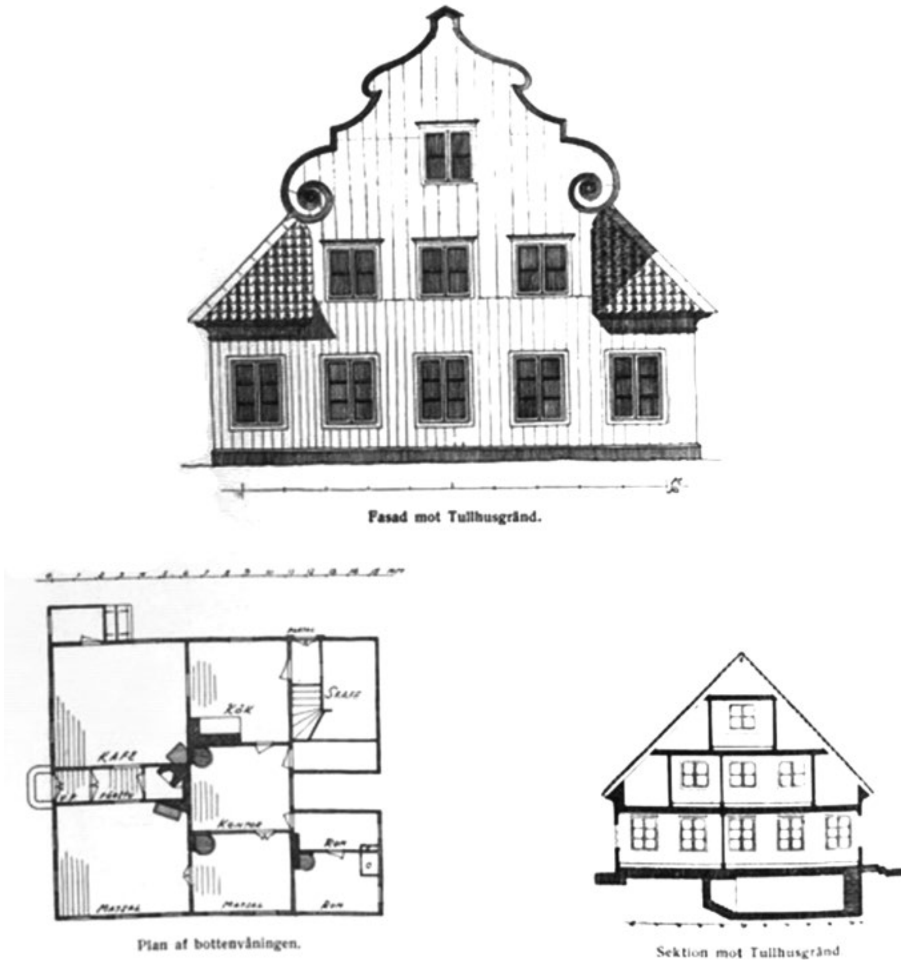


Figure 14 Façade of Torsmanska huset, Visby (Kjellberg 1924:70).

Figure 15 Post and plank building at Mellangatan 35, Visby, Gotland, Sweden. Photo A. Nilsen.

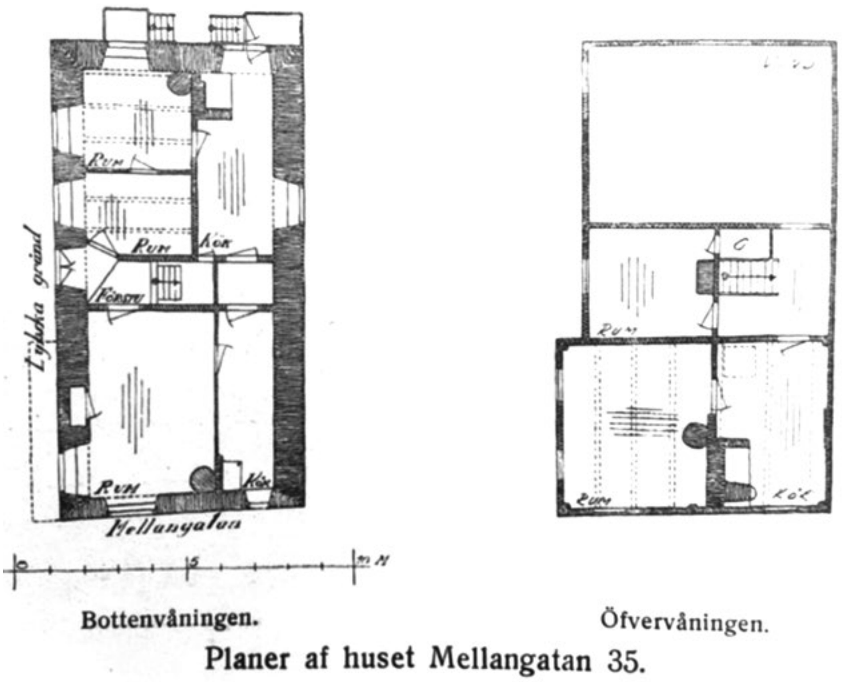


Figure 16 The layout for Mellangatan 35 in Visby (Kjellberg 1924: 68).

the post and plank, measured 8 × 5m, which is the part that protrudes beyond the ground floor. It contained a large room with a ceramic stove and a kitchen with a fireplace. In addition, there was the staircase/vestibule and a second room with a ceramic stove, measuring 7 × 3.5m. These two rooms and the kitchen thus made up the third flat. The attic measured 7 × 5m (Figure 16).

- Another example, of a one-and-a-half storey post and plank building, exists on Mellangatan 4, in central Visby (Figure 17). It is a one room building as seen from the layout, with a corner fireplace and a cellar underneath (Figure 18). The bole house construction in post and plank is built in oak.

The house is coated in black tar now, as it was in 1924. The gable rafters are protruding slightly from the walls and built in timber-framing technique with a wooden roof. The gable has three windows facing the street and another three windows on the long side of the building where the entrance can be found (Kjellberg 1924: 8:65). There are big openings in the timber-framed gables in door-like shapes, perhaps for accessing the attic for storage?

- This was a byre for horse, cow and pig with a storage loft for fodder (Figure 19). The building had one window hatch and one front entrance. The byre measured 5 × 4 metres in size. The building had a roof made of wood

Figure 17 Post and plank building in Mellangatan 4, Visby, Gotland, Sweden. Photo A. Nilsen.

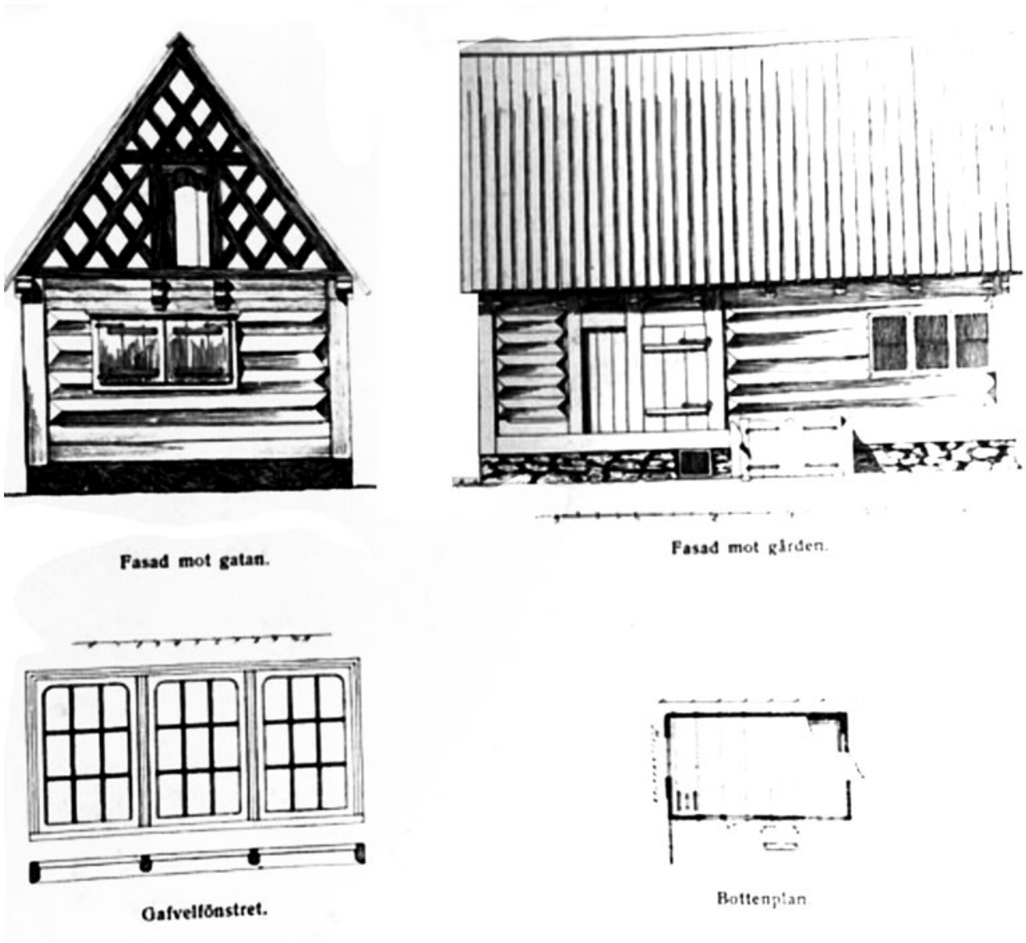


Figure 18 Layout of Mellangatan 4, Visby (Kjellberg 1924:66).

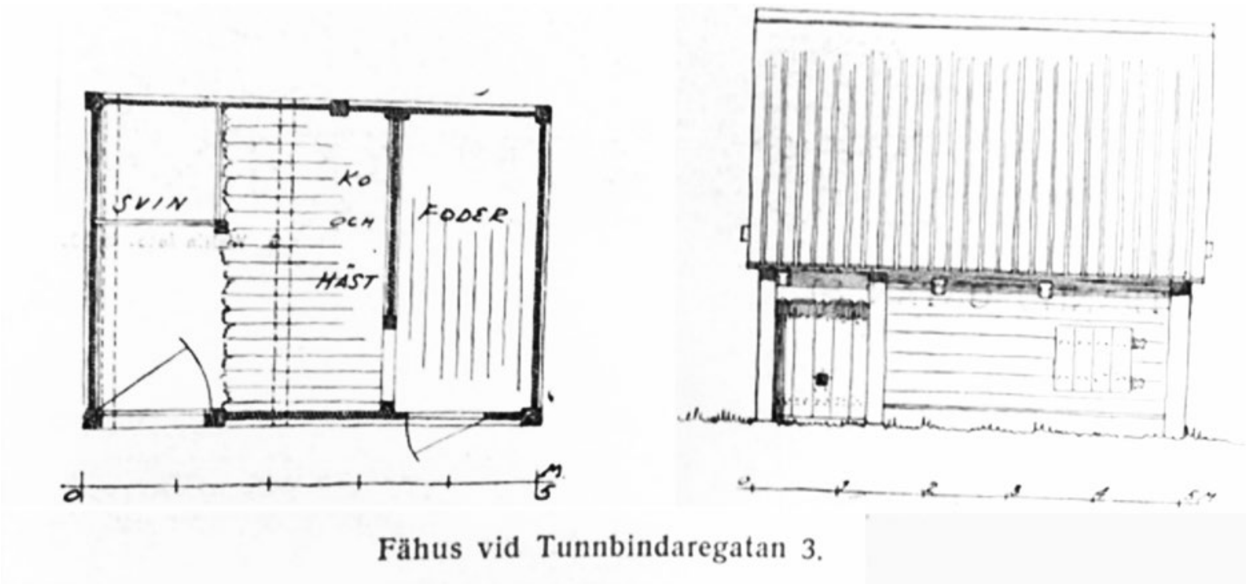


Figure 19 A byre on Tunnbindaregatan 3, Visby (Kjellberg 1924:64).

in 1924 (Kjellberg 1924: 8:63). The house does not appear to be preserved today, although it has possibly been turned into a garage, having looked at the building on that address now.

Figure 20 Post and plank building in Visby, Gotland, Sweden. Photo A. Nilsen.

- This warehouse close to the city wall and the square Södertorg represents a building function for post and plank constructions in urban settings (Figure 20). It is a tall building of one-and-a-half storeys with five closed 'windows' or openings on the gable end and additional ones on the long side.
- According to Kjellberg (1924: 8:56–58) the house on Biskopsgatan 3 (number 1 according to current address system) Figure 21within the city walls, was built in the 18th century in one-and-a-half storeys. It has some architectural features that warrant further consideration. The house has a symmetrical façade with a rococo portal and a further two set on each corner of the building. There are four sets of windows facing the street, one on the gable and two windows to the back in the drawing from 1924 (Figure 21), on the photo there is another window on the first floor, perhaps added later, the drawing does not include a layout of the first floor. Kjellberg describes the building according to Sigurd Erixon's ideas as a *parstuga*, which is what I would refer to as two base modules (for a closer description and discussion see Chapter 5.2) usually with a joint central vestibule. The layout had originally two equally-sized rooms with a central vestibule. One room was used in its entirety; the other side of the building was divided into two rooms, one slightly bigger than the other. The focus of the layout is the central fireplace and the chimneystack, which heats three of the rooms. The vestibule, thus, was cut off by the chimney and a space behind it creates a room, which functioned as a kitchen with a door to

Figure 21 Biskopsgatan 1, Visby. Photo A. Nilsen.

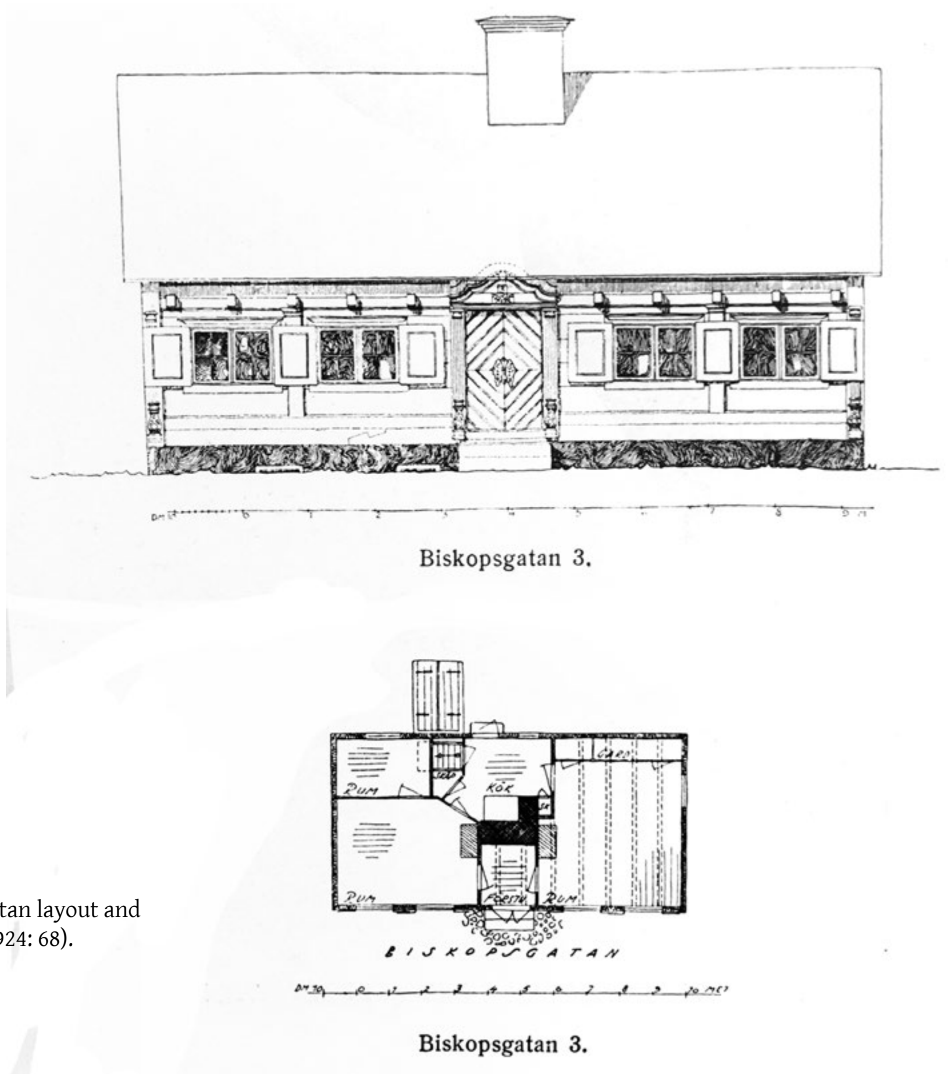


Figure 22 Biskopsgatan layout and facade. (Kjellberg 1924: 68).

the backyard. The two bigger rooms had ceramic stoves connected to the central chimneystack. According to the layout there was also a cellar under the building with an entrance from the courtyard (Kjellberg 1924: 8:57, 68).

Reflections on preserved post and plank buildings

These examples from Visby, demonstrate what the buildings looked like. It also tells us something about mixed-techniques with examples of; post and plank/ log-timber, post and plank/timber-framing, post and plank/stone constructions. To the modern eye, some of these buildings look small. Nevertheless, the size should be comparable with both regular timber-framing and log-timber buildings in urban settings. All the preserved buildings in this sample have been detached buildings, thus not part of a row of houses. Another aspect is the ornamentation to the façade on some of the buildings, which recognizes the possibilities of consciously making the explicit wooden architecture aesthetic. Pad stones had been used in four of the cases. Plaster was not used, but panelling was found on one building. Four buildings had windows and two buildings had hatches.

This material includes some drawings of layouts. Torsmanska huset, had two extensions in post and plank technique each built as one main room with a porch. One extension had heating and the other did not. Mellangatan 4, was a one-and-a-half storey building containing one room with a corner fireplace; the attic seems to have been used for storage and there was a cellar beneath the house. Mellangatan 35, was possibly a multi-storey unit with two flats on the ground floor constructed in stone and one flat on the first floor constructed in post and plank technique. The flat upstairs had two rooms and a kitchen; all the rooms had heating. There was also a landing. The rest of the upper floor level was used as an attic. The byre on Tunnbindaregatan had room for a cow, a horse and pigs, as well as a hayloft. Biskopsgatan 3, essentially has a double base unit floor plan connected through a central hallway or vestibule. The kitchen is located behind the vestibule in the centre of the house, with one room on the right-hand side and two rooms on the left-hand side, all with heating. There is external as well as internal access to the cellar. These examples tell a little about layouts used in post and plank buildings. The floor plans correspond well with similar buildings in log timber technique.

The buildings from Visby, can to some degree be part of a larger general knowledge on post and plank construction regarding construction method, perhaps regarding the size of the buildings, use and appearance. Nevertheless, these handful of buildings must also be observed as local representatives, it is difficult to know how these houses compares to urban post and plank buildings on the mainland until more research is conducted. Thus, this is a micro study and these case studies are a good reflection on the local urban building stock, but consideration must be observed not to draw too wide conclusions based on statistics.

Archival sources of post and plank buildings – examples from Majorna

To compensate for the scarce evidence of post and plank constructions from archaeological sources, ten fire insurance records from Majorna were examined to shed some light on the technique in the Gothenburg area (for more information on Majorna see Chapter 6.2). The fire insurance records describe houses (Figure 23) that could be of post and plank construction from 1804-1805. Several buildings are defined as built in timber-framing technique with planks, clad with planks (panelling) and covered with roof tiles.

Rd – Riksdaler	A historic Swedish currency
1,684 Swedish ell (historical unit of measurement)	1 metre

Figure 23 Glossary.

- Jonas Jonsson owned an outbuilding in the crofter's place Kullen, which had 3 doors, leading into a cartshed, a woodshed and a privy (Sw. *korsvirke och bräder*). Built on a stone sill, 2ells high, measuring 16¼ells in length, 8ells wide and 3½ells high. It was valued at 83,16 rd.[12]
- Magnus Roempke owned the crofter's plot Enhörningen, where there were two buildings built in timber-framing and planks (Sw. *korsvirke och bräder*). A woodshed with an oblique roof, 18ells long, 4½ells wide and 6 ells high on one side, and 4ells high on the other, with two doors and a wooden floor. It was valued at 58,16 rd. The second building was a privy on the short side of the byre. It had a tiled roof, a small window and two doors. Measuring 4 × 4ells, and worth 20 rd.[13]
- Göran Jägerfeldt, owned property in the old admiralty wharf, which included a building with timber-frame and planks (Sw. *korsvirke och bräder*) measuring 28ells long, 10ells wide and 14ells high; It was clad with planks and covered with tiles on a stone sill 1½ells high. The building was painted, and contained a stable, a chamber, a woodshed and two small rooms, worth 500 rd.
- An additional building on the same property was 8ells long, 6ells wide and 7ells high, clad with planks

[12] Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Torpstället Kullen nr 124. Jonas Jonsson, Victualiehandlanden. Insurance number: 05533

[13] Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Torpstället Enhörningen, Magnus Roempke, Viccar. Insurance number 05522.

Table 2 Post and plank buildings from fire insurance records from Majorna (Gothenburg) 1804-1805. Also in Appendix 8.

Insurance number	Length	Width	Height	Pad stone row	Floor Type	Function	Worth	Panelling	Doors	Painted
5522	18ell/ 10.69m	4 ½ell 2.6m	6ell/ 4ell/ 3.5m/ 2.3m		wood	Wood shed	58,16 rd		2	
5522	4ell/ 2.3m	4ell/ 2.3m				Privy	20 rd		2	
5533	16 ¼ell/ 9.9m	8ell/ 4.7m	3 ½ell/ 2m	2ell/ 1.1m		Woodshed/ cartshed/ privy	83,16 rd	Yes	3	
5769	28ell/ 16.6m	10ell/ 5.9m	14ell/ 8.3m	1 1/2ell/ 0.8m		stable/ chamber/ barn/ woodshed/ 2 small rooms	500 rd	Yes	Yes	Yes
5769	8ell/ 4.7m	6ell/ 3.5m	7ell/ 4.1m			Byre	31,32 rd	Yes	Yes	Yes
5678	9ell/ 5.3m	6ell/ 3.5m	3 ½ell/ 2m		Wood	Shed	33,16 rd	Yes	2	Red
5120	11 ½ell/ 6.8m	6ell/ 3.5m	8ell/ 4.7m			Mangle shed/ privy	75 rd	No	3	
5299	7¾ell/ 4.6m	7 ½ell/ 4.4m	3 ¾ell/ 2.2m			Cellar with superstructure	50 rd	Yes	1	
5299	7ell/ 4.1m	6 ½ell/ 3.8 m	6ell/ 3.5m			Byre/ hay loft	58,16 rd		?	

(Sw. *korsvirke och bräder*) and covered with tiles, and used to shelter small animals. Valued at 31,32 rd.[14]

- Anders Engström, sailmaker, owned a building in Kungsladugård, described as being built in timber-framing and planks *(Sw. korsvirke och bräder)* painted red, with planks (panelling) and roof tiles measured 9ells long, 6ells wide and 3½ells high. It was used as shed/ storage, with two doors and a wooden floor on joists, worth 33,16 rd.[15]
- Harder Stare owned the property Stjernan, containing a building constructed in timber-framing and planks *(Sw. korsvirke och bräder)*, covered with tiles. 11½ells long, 6ells wide and 8ells high in size. The house was used as mangle shed, privy with three doors, valued at 75 rd.[16]
- The final example is Petter Eriksson's stone cellar with a timber-frame superstructure *(Sw. Resvirke samt täckt med bräder)* covered with planks in the crofter's plot Lund. Measuring 7¾ells long, 7½ells wide and 3¾ells high, with one door. Valued at 50rd. The second house on the same property was a byre *(Sw. korsvirke och bräder till väggar)* with a hay loft containing two stalls measuring 7ells long, 6½ells wide and 6ells high, worth 58,16 rd[17].

The additional data from fire insurance records can perhaps help shed a little more light on our knowledge of post and plank construction in Gothenburg (Table 2). Compared with the buildings presented in the archaeological data some of the houses are a lot longer but about the same in width or, even, slightly narrower. The fire insurance also includes the height of the buildings, which is interesting from an archaeological perspective. Judging from the measurements it seems to comprise seven one-storey buildings and two with two-storeys.

There is only data on two houses regarding the height of, or how substantial the row of pad stones were under the building. One house was 2 m high and had a 1.1m high row of pad stones, while the other house was 8.3m high but only with 0.8m high pad stones. This is of course only two examples, but it does highlight the problem

14 Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Nr 234 på nr 28 Gamla Am:ts Warfet. Göran Jägerfeldt, Översten Riddaren. Insurance number 05769

15 Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Nr 160 på Elfsborgs kongs ladugårds ägor. Anders Engström, segelmakare. Insurance number 05678.

16 Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Ägendomen nr 224 Stjernan. Harder Stare, Coopverdie captain. Insurance number 05120.

17 Fire Insurance Record 1805, Göteborgs och Bohus Län, Örgryte Socken, Ort Fredrikshamn. Torpstället Nr 222 Lund. Petter Ericsson. Arbetskarlen. Insurance number 05299

with judging a house height by looking at the pad stone or wall plate. Sometimes the construction or use of pad stones came from building on a slope, thus adapting to the terrain.

Five buildings had external panelling and three were painted, of which one was red. Only one building had a window mentioned, a privy. These are mainly outhouses and to some extent the doors can signify the number of functions the building had. Two houses had wooden flooring mentioned. These houses have functioned as places for working and storing goods: three woodsheds, one cart shed, one mangle shed, one shed, one barn as well as one cellar superstructure and a hayloft. They also functioned as shelter for animals: two byres and a single stable. Finally, there is one chamber as well as two small rooms that points to occupation along with three privies. These uses and functions do not alter much from what was found in the archaeological data. The estimated worth of the buildings reflect their quality and size perhaps, ranging from trivial sums to quite substantial.

Visual presentations in historical sources

Frans Hogenberg made this copperplate in the 1580s picturing Stockholm from Brunkebergsåsen on Norrmalm, facing the royal castle on Stadsholmen (Figure 24). I would like an attempt at following Martin Olssons' (1968) critical evaluation of historical images. On the eastern shore of Norrmalm there are a multitude of wooden houses one to two-and-a-half storeys high. They are pictured rather generically generating an unclear sense a construction of vertical planks and prominent wall-plates. That sort of construction does not make much sense and is probably to a large extent the artist's way of saying that the houses were constructed in wood in more than one storey and densely situated on the shoreline.

Why then does the construction not make sense? Outer panelling was not yet prevalent in the 1580s so that does not explain the upright planks. It could be post and plank construction with vertical planks, but that technique was largely abandoned for dwellings in the mid-1200s probably because it does not provide for a draught free indoor environment (Nilsen 2011). The girding beam, visible between every floor could suggest post and plank technique but then the planks should be horizontal. The construction could possibly be interpreted as close studded timber-framing (for a closer description see Chapter 5.3) but the houses give a more wood like character. However, the buildings are depicted as 'modern' for the time,

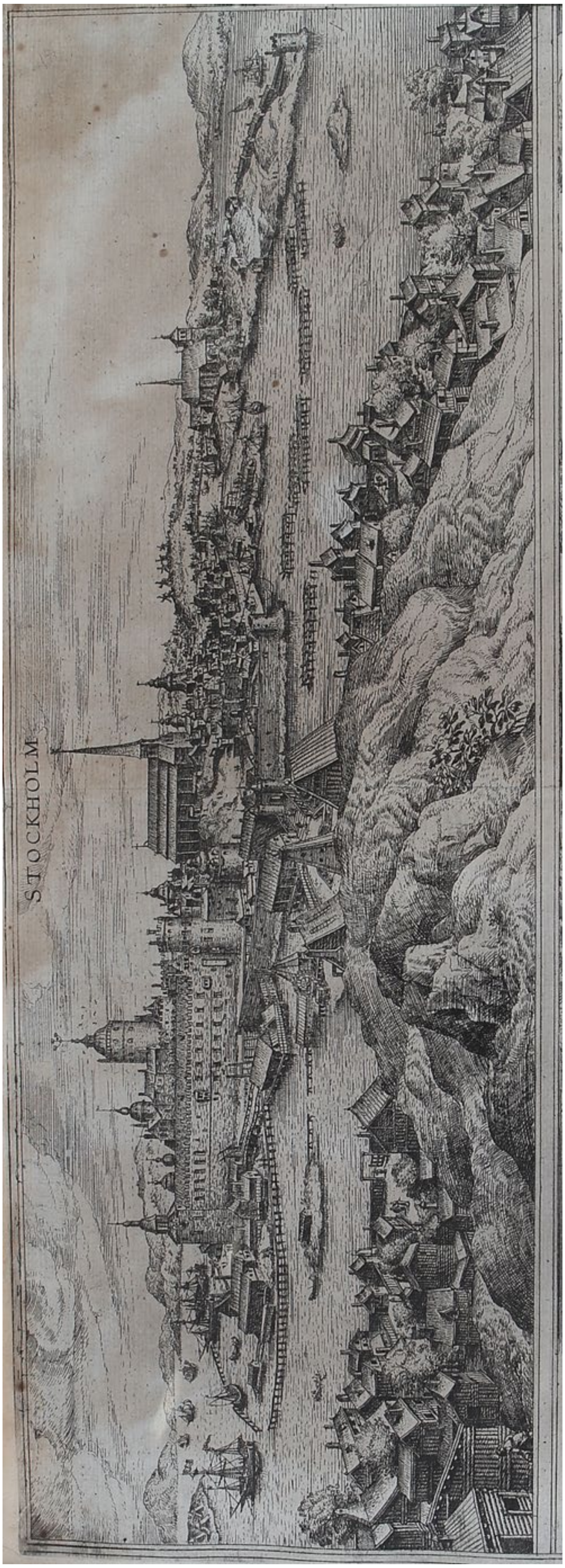


Figure 24 Copperplate by Frans Hogenberg, Stockholm in the 1580s.

with chimneys and quite large glass windows and with several floors, which gives an urban feel.

Post and plank construction in the rest of the world

Post and plank construction is a technique used in many parts of the world and has been popular for a very long time in Denmark and Sweden since the late Iron Age and onwards. These houses can be seen in many shapes and forms in large parts of Asia and in Central and South-eastern Europe as well as in the Northwest of the US (Henriksson 1997: 25).

Elusive but still prevalent – the contradictory traces of post and plank constructions

This section is aimed at understanding the early modern urban post and plank construction and its place in society, in the urban landscape and its functions within the building stock.

Table 3 Dating of post and plank buildings with data from archaeological reports, preserved buildings and historical records.

Dating of post and plank buildings			
	Archaeological remains (7)	Preserved buildings (6)	Historical sources (9)
1400s	II		
1500s	I		
1600s	II		
1700s	I	II	
1800s			IIIII IIII
1900s			
Unknown	I	IIII	

The archaeological examples are spread from the 1400s to the 1700s, with one construction left undated (Table 3). The building remains are also collected from different locations geographically following the towns that are the focus in this work i.e. Nya Lödöse, Jönköping, Falun and Stockholm. However, no archaeological evidence was found from Gothenburg.

The preserved buildings all come from the same geographical location, Visby in Gotland. Most of the buildings have not been dated (or rather I have not been able to find information on the dates). Two buildings originate in the 1700s, probably dated through historical records.

The historical records have been taken from fire insurance records from one specific place, Majorna, immediately outside the moat surrounding Gothenburg, to the south-west. The records have all been written in 1804-1805.

It is interesting to note the discrepancy between the archaeological sources and the historical records regarding Gothenburg/Majorna. Why have post and plank buildings not been found within the city limits of Gothenburg, while they are well represented immediately outside the city walls? Is there a difference in building culture between the two areas or have the post and plank buildings within the city gone undetected?

When looking at all the dates combined, bearing in mind this is a micro study with only a small sample, the building technique can be confirmed as being in use from the 1400s to the 1800s, with a 'possible' decline in the 1900s. Nonetheless, the starting point in the 1400s is only a reflection of this sample data, it is a well-established fact that post and plank has prehistoric origins in Sweden (Rosberg 2009).

Table 4 Measurements of post and plank buildings with data from archaeological reports, preserved buildings and historical records.

Measurements of post and plank buildings			
	Length	Width	Square
Archaeological remains (5)	7m	4.3m	30.1m^2
	4.5m	3m	13.5m^2
	10m	5.5m	55m^2
	7m	4.8m	33.6m^2
	5m	5m	25m^2
Preserved buildings (2)	8 + 7m	5+3.5m	40 + 24.5m^2
	5m	4m	20m^2
Historical sources (9)	10.6m	2.6m	27.5m^2
	2.6m	2.6m	6.7m^2
	9.6m	4.7m	45.1m^2
	16.6m	8.3m	97.9m^2
	4.7m	3.5m	16.4m^2
	5.3m	3.5m	18.5m^2
	6.8m	4.7m	23.8m^2
	4.6m	4.6m	21.1m^2
	4.1m	3.5m	15.5m^2

When combining the various historical sources, and considering the measurements of the buildings, it is possible to see the range of house sizes (Table 4). The length of buildings has been registered between 2.6 metres and 16.6 metres. The width has ranged from 3 metres to 8.3 metres. Finally, looking at the square meterage, the space available for activities ranges from 6.7 m2 to 97.9 m2. These house-sizes need to be put into context, and one way to do that is to reflect on function.

The collected sample shows a number of different functions connected to the post and plank building stock (Table 5). For instance, the preserved buildings include several dwellings. Whether that is specific to Visby and Gotland or whether post and plank dwellings are likely to appear in the data from the mainland needs further research. Yet, two rooms and a chamber should be included in the discussion on dwellings. They were situated in an outhouse facility, registered in the historic records from Majorna, possibly accommodation for members of the workforce. Two warehouses have been found, one in the archaeological record and, the other, a preserved building. Four privies have also been recorded. Then there are a number of sheds of various kind e.g. woodshed, cart shed, mangle shed or sheds of indeterminate function. Some functions are related to animal husbandry i.e. the stable, the four byres, the barn, and the hay loft. The bailiff/tavern was mainly built in log timber construction but with two post and plank extensions to the back of the house, comprising a larder and a flat. Whether it was intended for staff or guests is impossible to know. Finally, there was a cellar with a superstructure in post and plank technique.

Table 5 Functions of post and plank buildings with data from archaeological reports, preserved buildings and historical records.

Function in post and plank buildings			
	Archaeological remains (7)	Preserved buildings (6)	Historic records
Dwelling		III	
Warehouse	I	I	
Privy	I		III
Byre	I	I	II
Bailiff/tavern		I	
Woodshed			III
Cartshed			I
Stable			I
Chamber/rooms			III
Barn			I
Shed			I
Mangle shed			I
Cellar with superstructure			I
Hayloft			I
Unknown	II		

To sum up, the technique, while it has been used for residences, its use, however, in outhouses of various kinds stands out as more common. Many of these functions were placed in specific buildings side by side in a row of buildings, thus multifunctional units. The difference between the length of a row of outhouses, a detached dwelling or a detached privy explains the diversity in size from (Table 4). One reflection is that summing up these different categories of function, in theory, (although, perhaps not so common in practice) there was the possibility to construct all buildings in a burgage plot in post and plank technique.

Table 6 Number of storeys in post and plank buildings with data from preserved buildings and historical sources.

Number of storeys in post and plank buildings		
	Preserved buildings	Historical sources
1 storey	I	IIIII II
1,5 storeys	III	(I)
2 storeys		(I)
2,5 storeys	II	

The archaeological data has been left out of (Table 6), because it has not been possible to determine from the data whether the houses had more than one storey or not. However, all seven archaeological objects had a ground floor. The preserved buildings had one building in one floor, and three with one-and-a-half floors. Then there were two buildings with two-and-a-half storeys, however they were built in a mix of techniques. Either with post and plank on the ground floor and the first floor in log timber. Alternatively, the ground floor in stone and the first floor in post and plank, thus none of these examples have a whole structure built in post and plank technique. The historical records do not fully indicate the number of storeys, nonetheless, the height of the building has been registered, which might give some indications. For example, a building with a hayloft would be counted as one-and-a-half storeys, or the building with a multi functionality including chambers and rooms measuring 8.3 metres in height might have been a two storey building.

Table 7 Traces of the use of mixed techniques in post and plank buildings with data from archaeological reports, preserved buildings and historical sources.

Mixed technique in post and plank constructions			
	Archaeological remains	Preserved buildings	Historical sources
Log timber/ post and plank		I	
Stone/ post and plank		I	
Timber-framing/ post and plank		I	

The archaeological remains and the historical records did not reveal any evidence of mixed technique in the buildings (Table 7). Nonetheless, the preserved buildings from Visby had three different versions of mixing techniques. It was sometimes only a part of the ground floor that was constructed in post and plank technique and the rest in log timber. While, another house had a ground floor in stone and a first floor in post and plank technique. Yet, another building had a post and plank ground floor but upper gables in timber-framing technique. This kind of data is difficult to get at through field archaeology, particularly if the first floor is constructed in a divergent technique. These are only three examples; conversely it does give an idea of possible ways to play with house construction and aesthetic values.

Two of the archaeological remains had pad stones and two cases had planted posts, which are different ways of stabilizing a building. Four preserved buildings had pad stones and there is a mention of it regarding two of the houses in the fire insurance records.

Concerning windows and hatches, only the privy was fitted with a small window in the fire insurance records, and none of the archaeological remains contained window glass. Regarding the preserved buildings, four had windows and two had hatches.

Fireplaces and chimneys are other important features, only the brewery had a fireplace in the archaeological data, and none was recorded within the historical cases. Two preserved buildings however had two different heat sources in the houses; in one, two fireplaces: one in a corner, as well as a central fireplace; in the other, one corner fireplace and a ceramic stove. There were also two houses with a single heat source; one with a corner fireplace and the one with a central fireplace.

Reflections on post and plank buildings

The data is far too small to make deductions on regional differences. However, the overall picture becomes slightly clearer with the combination of materials from above and below ground, as well as visual and written sources. The layouts, number of rooms and storeys could only be discussed from the preserved buildings, drawings, and historical sources. The functions and house measurements to some extent also came out from the archaeological material. There were no mentions of insulation in any of the data but some deductions on chimneys and windows could be made through all the data sets. There were a number of mixed techniques used in the preserved buildings, and in the fire insurance records there were several buildings with panelling. It is however odd that post and plank buildings have been so elusive in the Gothenburg material given the presence of the technique just outside the city gates.

The province of Blekinge, in south Sweden, is also known for its large building stock in post and plank technique (Holmberg and Göteborgs universitet 2006). Blekinge, was outside of the dedicated research area of this micro study, yet it would be interesting to compare the post and plank buildings in Gotland to those in Blekinge, in the future.

Conclusions

Post and plank is a building technique that always been present but yet elusive, mostly due to preserving badly in the ground. The standing building stock probably also became a victim of the demolition frenzy of the mid-20th century onwards, which has influenced the numbers of preserved buildings. The lack of preserved historic urban outhouses that previously were ubiquitous tells its own tale. The badly preserved archaeological remains of post and plank constructions have had a domino effect making satisfactory documentation difficult and thus in turn affecting interpretation, research and the general knowledge of the technique and its applications. However, more can be done to rectify this situation by opening interpretations up for discussion, taking more photographs of the building remains rather than less. Dedicating some time to make detailed hand-drawings might also help understand a difficult material better.

This technique can be assembled and taken apart and is thus easily moved; capable of having substandard building parts exchanged when required, in this sense it resembles log timber technique. The archaeological data had examples of re-use of faulty building parts from boats and byres. The technique was used for residential purposes, housing animals, and storing goods as well as for numerous other aims. It is a multi-purpose technique that fitted well with the early modern society's needs. The technique was also very often combined with other building techniques, which is important to keep in mind when interpreting archaeological remains. One important property is that a more open layout can be achieved than with log timber technique for example; there is less need for substantial inner walls making it fitting for barns, threshing sheds and cart sheds as well as other open layouts.

Chapter 6

Urban townscapes

Entering into the third step in the micro archaeological scale, I examine the social implications of the townscape such as density and crowdedness. When high numbers of people want or need to live in one place it tends to get crowded. The two following sections will discuss two ways of addressing these issues.

The first section, 6.1, will address storeyed houses and multi-unit houses, which can be difficult to identify within the archaeological data. A multi-disciplinary approach will be used combining archaeology, preserved buildings and historical sources as well as using dendrochronology for a chronological framework to investigate the building stock. The storeyed house has strong connotations of towns and townscapes, and these buildings are important living environments that need to be included more in the urban discussion.

The second section, 6.2, addresses another way of handling crowdedness - the suburbs. What happens immediately outside the city gates? These are people working for the town's benefit, often in the town or in production areas just outside. Walls, fences, ditches and gates often delimited the early modern townscapes limiting growth. The available room soon filled up and other measures of living space had to be developed. However, Swedish heritage law rarely admits archaeology beyond the historic town limits, thus the historic suburbs and their building stock is a largely ignored subject of study within Swedish archaeology. To circumvent the absence of archaeological data, historical records have been investigated to answer questions regarding the composition of the building stock and how it compares to the buildings inside the gates.

6.1 Storeyed houses and crowded streets in urban townscapes

Coupled with the idea of urbanity is that of storeyed houses. Archaeologists in Sweden are seldom bothered to discuss the possibility of the first floor, a question, which needs to be addressed further. It is imperative that the presence of storeyed buildings, or their probability, are discussed in much greater detail, whether they have been identified or not in the archaeological data. It does affect evaluations of both the total volume of the building stock as well as population density.

Operational approach

The first part of the section illustrates examples of archaeological remains that have been interpreted as storeyed houses, in reports. The aim is to synthesize, to critically evaluate and exemplify what kind of archaeological data the interpretation rests on.

The second part is aimed at discussing buildings with several storeys in historical sources such as contemporary descriptions of towns or historic images.

The third part studies preserved early modern buildings with more than one floor/level through dendrochronological analysis, buildings archaeology analysis as well as through drawings/measurements of buildings. Study objects have been selected in Gothenburg, Jönköping and Eksjö. Questions regarding sill stones, foundations, staircases, balconies/open galleries and building techniques will be discussed. Furthermore, the dating of each floor level, in addition to the roof structure, will be addressed, in order to see to what degree the houses have been altered from their original states, functions and uses.

The fourth part of this section is based on an analysis of how these datasets from below and above ground can be understood when put together.

Some specific words concerning construction are explained in the glossary (on page xiv) i.e. jetty, jetty bressumer, girding beam, external staircase, balcony/open gallery etc.

The time-perspective

The period studied revolves around 1470-1850, more or less. There are very few preserved urban wooden houses from the 15th-16th century in Sweden, although Eksjö might have traces of some building parts that old. There are more examples of houses from the 17th and 18th centuries, presented in this section, with a few examples from the 19th century.

Archaeological reports, addressing storeyed houses

As mentioned earlier, it is hard to identify storeyed houses through archaeological remains. Archaeologists are also often careful to avoid over-interpretation. With these two sets of postulates, the number of archaeological building remains reported as possible remnants of a storeyed house, remains low.

Interpretations of archaeological remains of storeyed buildings are usually based on one of the following four types exemplified here:

1. *Postholes situated in a parallel line at some distance from the outer wall of the house.* These postholes have at times been interpreted as remains of a balcony, hence evidence of a first floor.

Such a feature was found in Nya Lödöse, Phase 4:3. Construction 4:3:1, with structures dated to the second half of the 1470s, or the beginning of the 1480s. The remains have been dated through dendrochronological dating and stratigraphy. The row of houses in the burgage plot measured 13.5m long and 6-6.4 m wide. The northern part of the houses was the widest. The row of houses had five rooms and interpreted as possibly having more than one floor (Rosén and Öbrink 2017: 258).

Under the house a foundation had been laid out consisting of logs parallel with street B. Under room A and E, was a layer of clay and above that, squares of peat. What might be layers of insulation consisting of peat mixed with sand and squares of peat, was found in room B. A construction layer of sand covered the whole area of the row of houses. Sill stones were placed under some of the internal walls, while some sill beams were placed directly on the sand. The sand contained sherds of window-glass as well as stoneware, probably belonging to a destruction phase.

In the yard (Figure 1), at some distance from the wall of the house, there was a construction comprising a sturdy pier and planks in a north-south direction. This construction has been interpreted as either a balcony/ open gallery suggesting the house had a second floor, or possibly an external bench to the house (Rosén and Öbrink 2017: 258).

2. The second scenario concerns *remains of an external staircase*, which might indicate a first floor. In the block Kv. Dovhjorten, Jönköping, excavations in 2010 revealed remnants of an external staircase, which suggests a storeyed house, KG 23 plot 2, phase 5 and staircase KG 27/34 dated to the 1730s (Bramstång Plura et al. 2012: 35). The house (Figure 2) had been built on pad stones in the eastern part of the plot, towards plots 3 and 4. The house had been in use over a long duration. The staircase KG 27/34 was located east of the building. The foundation consisted partly of clay and larger stones. There was a cobbled courtyard east of the staircase, which suggests an entrance from the east during this period. The passage was later closed off using a fence (Bramstång Plura et al. 2012: 124).

3. *'The first floor/ roof had collapsed, due to fire, with burn marks, both beneath and on top of the remnant floor'* constitute the third example.

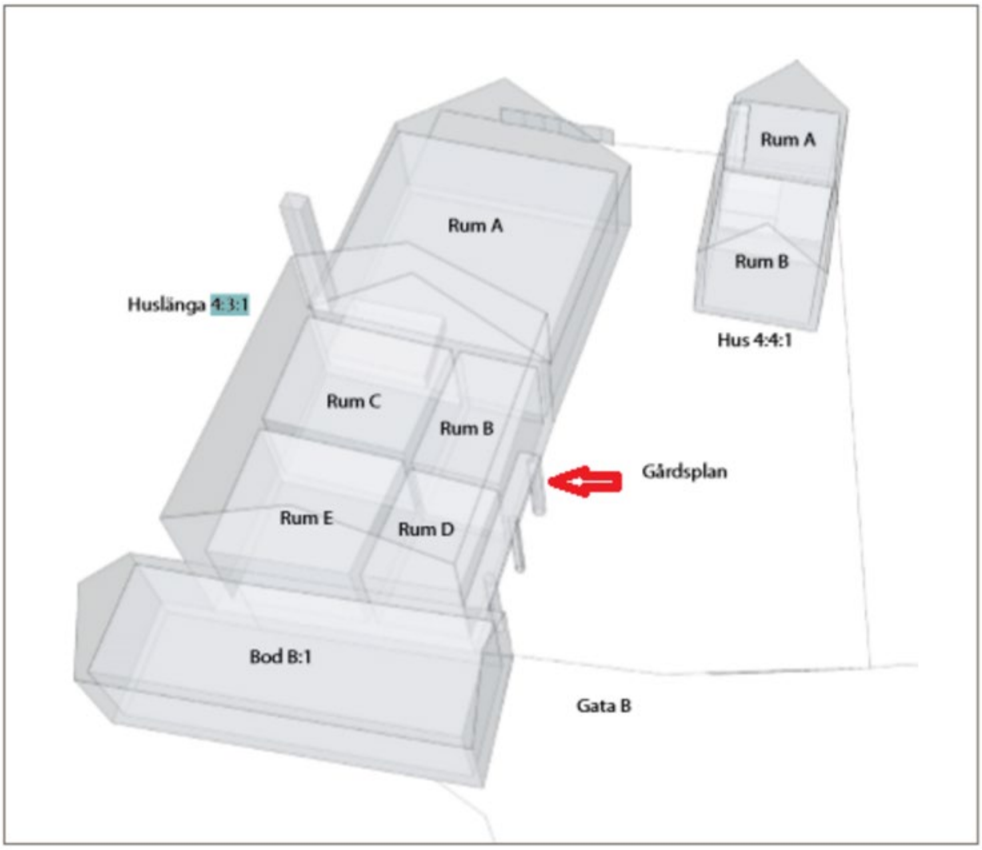


Figure 1 A possibly storeyed house in burgage plot 4:3:1 in Nya Lödöse with postholes situated in a parallel line at some distance from the outer wall of the house. (Rosén and Öbrink 2017, 52)

Figure 2 The remnant of building KG 27/34, dated to ca 1720. Scale 1:150. Kv. Dovhjorten, Jönköping with possible remains of an external staircase (Bramstång Plura et al. 2012: 38)

The feature named *byggnaden*, that is to say the building in the report,[1] in Kungsgropen's church village, in Skellefteå, a log timbered house had been exposed to fire and was partially collapsed (Östlund 2005). The birch bark from the roof construction was preserved, probably because the roof extinguished the fire when it fell down. Other building parts found to the southeast, presumably from the roof, had 'survived' the fire, even the upper parts of the purlin holding up the ceiling. The logs in the wall construction had notches suggesting support for either a ceiling or an upper floor level. The building remains were dated through relative chronology using coins and clay pipes within the stratigraphy of the site of the collapsed building. The oldest coin was minted 1666-1686, and the most recent coin was from 1719. Clay pipes had production dates between the 1660s and 1798 (Östlund 2005).

A number of indications have also emerged from the Gamlebyen material from Oslo suggesting that some houses may have had more than one floor e.g. a wooden deck with traces of fire both on the top and on the bottom (F 37). Remnants from several building layers on top of a cobbled floor (R 23) is another example from the same site. While traces of a fireplace and an outdoor toilet caved in as from a great height (G22, H05 and H07) is yet an example from the survey in question (Sæther 1987: 38).

4. The fourth example is where *the building has an unnecessarily robust sill stone or foundation*, which might point towards a house of several storeys.

In Storkyrkobrinken, Stockholm, a substantial row of pad stones was found belonging to the south-west corner of a building (Figure 3). The building has thus been interpreted as the remains of a stone house, (known to have existed in the block along the lane (Carlsson and Svensson 2015: 132).

It would seem that the same construction was interpreted differently later on in the same report.

The row of pad stones, context group 23, was the most substantial that emerged during the investigation, and has most likely been the foundation for a building of at least two storeys (Carlsson and Svensson 2015: 154).

This substantial row of pad stones is thus a reference to a storeyed house or a stone house, the same logic would however apply, that a heavier than normal building has been erected on top.

Reflections on storeyed houses in archaeological reports

These four scenarios are the most commonly encountered in types of archaeological reports in terms of traces of storeyed buildings.

[1] Just to clarify, archaeological objects/remains are named in different ways or systems for each individual contract archaeological project. This is due to diverse systems of documentation; archaeological firms/museums might choose different approaches. In the Staden Nya Lödöse project for example a building named 1:1:1 indicated (plot 1. house 1, phase 1). This was a very big site with complex stratigraphy. In the case from Kungsgropen, Skellefteå, there were only the excavated building remains of a single house, thus named 'the building'.

Figure 3 A substantial row of pad stones (context group 23) in Storkyrkobrinken in (Carlsson and Svensson 2015: 154).

Postholes situated in a parallel line at some distance from the outer wall of the house.

Postholes give a somewhat good indication of a first floor when they can be found (Figure 20) nonetheless, not that many buildings had posts holding up the balcony or open gallery. There are other, more common, ways of constructing a first floor, usually with a jetty bressumer or a girding beam. Those techniques unfortunately leave little or nothing for the archaeologist to work with.

The second scenario concern *remains of an external staircase*, which might indicate a first floor (Figure 9). Such traces are difficult to assess, presumably, it must come down to the location of the traces. Has it a location that would fit with the rest of the building i.e. is it a logical place to put a staircase? What kind of staircase? Often there was an open gallery even on the ground floor, which would have left traces.

The first floor/roof had collapsed, due to fire, with burn marks, both beneath and on top of the remnant floor, constitute the third example. This scenario probably gives the sturdiest evidence, hardly interpretable in an alternative way. Yet, these kinds of remains are quite rare.

The fourth example is where the building has *an unnecessarily robust sill stone or foundation, which might point towards a house of several storeys*. This is probably the most common basis of interpretation of storeyed houses within archaeology. Nonetheless, after discussing the possibilities of this kind of interpretations with a carpenter and an architect doubts have risen regarding its relevance.[2] They claimed it is impossible to connect the row of pad stones to what kind of house is built, regarding technique - wood or stone, or how many storeys the building once had. They were utterly confused by the question. Foundations can be enormously over-dimensioned for the building (Figure 4), or they can appear likewise under-dimensioned for other buildings (Figure 9). The size of the row of pad stones can relate to any number of reasons e.g. to counter a slope in the terrain, it can contain a cellar or room for storage, it can protect against damp ground etc. All that is needed is a stone in each corner of the

Figure 4 A small building with an over-sized foundation i.e. in this case a substantial cellar. In Gatenhielmska reservatet, Gothenburg. Photo: A. Nilsen

[2] PhD Kina Linscott, architect, PhD Ulrik Hjort Lassen, carpenter

building, the rest of the pad stones relate to insulation and creating further stability.

Thus, all these interpretations are based on data that is hard both to assess and to verify. Archaeology as a method has its limits, and regarding Scandinavian material remains (which are largely wood), this aspect brings its own particular challenges. Other countries may well have altogether different experiences concerning the remains of storeyed buildings, related to the building materials used, and how these were preserved in the ground. However, the authors of the reports mentioned above have been brave to acknowledge that storeyed buildings existed and thus likely parts of the building stock, at their sites.

The storeyed house and jetties

Anund (2001: 637) shows how three-storey stone buildings with cellars and lofts became part of the Uppsala townscape during the late 15th century. He also discusses the oldest surviving log timbered buildings as one- to two-storeys high with one to three rooms per floor level, originating from the 17th century. The buildings usually had an upstairs balcony and an external staircase (Anund 2001: 640; Herdin 1932), demonstrated by a survey of private plots, from historical records from 1763 (Anund 2001: 643; Petré 1958: 3:109). The city contained 280 one-storey buildings, 184 two-storey houses as well as eight with three floors, and one with four. This clearly shows that storeyed buildings formed a large part of the building stock.

A new town foundation project was launched near the old town Oslo in 1624. The new town called Christiania, was founded as the capital of Norway. One of the rules regarding building regulation was that those who could afford the most prominent plots along the main streets and squares should build two storey houses (Roede 2001: 70). Many of the houses had one-and-a-half storeys, which meant the rooms on the first floor did not have full height, thus could be referred to as lofts. However, both the two-storey, as well as the one-and-a-half storey, houses often had a jettied first floor. The generic floor plan was three equally large rooms and a porch, the entrance to the first floor went through an external balcony. These houses were common in town but were also frequent in the countryside (Roede 2001: 103). There seem to be strong similarities between these generic Norwegian houses, and those Anund discusses from Uppsala (see above).

There are a number of theories regarding why jetties were built, and also on why it became such a widespread phenomenon in western Europe, applied to various types of building techniques and adopted in towns as well as in the countryside. Swedish society clearly belonged to this cultural sphere in terms of jettied constructions, which is reflected in preserved buildings and historic images.[3] Jettied buildings did have an aesthetic impact on the townscape, one that differed a lot from the outlook on our towns today. Most of these jettied houses with balconies are now gone or have lost their former context. There was a ban on bay windows in Oslo in 1745, while jetties and bay windows were banned in Copenhagen in 1683 (Berg 1965: 34; Roede 2001: 84). What Swedish views of these features were, at the time, is not clear but demands further study.

Storeyed houses in historical records

One way of collecting more information about historic townscapes is through contemporary descriptions of houses, plots and living environments. At times, these accounts can be captured through texts, discussing entirely different topics, but still come through in terms of backdrops to the narrative.

Mary Beaudry (2017) points to information that historical documents sometimes unintentionally carry about beliefs, actions and taken-for-granted attitudes, which is the base of what she calls 'text-cavation'. Archaeologists often look for information connected to space and activities and how they relate to a social environment within the historical record.

> *'Microhistory, by contrast, makes a key virtue of a considerably scaled-down reading of archival documentation and of all kinds of supplementary records actively sought out. Its minute focus involves reading documents beyond the edge of the page, delving beneath their explicit content to elicit all the clues hidden in the language used, in indirect suggestions, or involuntary implications. The concept of 'the exceptional normal' means highlighting what the unexpected and the unusual, what unmediated and unconsciously transmitted information, can tell us* (Levi 2019: 41–42). '[4]

Thus, in working with micro history, in Levi's sense, remarks have been collected from various historical descriptions to better understand how common or rare the storeyed buildings really were within the urban environment. At other instances, more deliberate descriptions can be found; the crown had proclaimed a desire for assembling all Swedish town histories to create a chronicle. Eric Cederbourg (1739) and Sigfrid

[3] For more information on this topic please read Roede's excellent overview of theories on jetties (Roede 2001: 348)

[4] Edoardo Grendi, 'Microanalisi e storia sociale',Quaderni Storici, xii (1977),506–20;andEdoardoGrendi,'Ripensarelamicrostoria',Quaderni Storici, xxix (1994), 539–49; Simona Cerutti and Isabelle Grangaud, 'Sources and Contextualizations: Comparing Eighteenth-Century North Africa and Western European Institutions', Comparative Studies in Society and History, lix (2017), 5–33.

Sirenius 1737 (Scheele and Simonsen 1999) produced such histories on Gothenburg.[5] There was yet another concerning written by the town magistrate regarding Strömstad.

> '*The average buildings are wooden houses, some with turf and others with tile roofs. No clear grid of streets and squares since only one street is counted, a street running from the southern gate across the square to the north to the bridge and the stream running from a sweet water lake to the salt sea, some distance wide and ¾ miles long towards the east to the highroad to Norway*' (Scheele and Simonsen 1999: 74).[6]

This is a paraphrased translation of the Magistrate's description of Strömstad, from 1737. Unfortunately, the text does not include a comment on the height of the buildings or their number of stories.

To use the term 'text-cavation' actively, I present here some mentions by Cederbourg (1739: 56–57) of activities in Gothenburg that took place on the first floor of some houses, thus confirming the presence of two-storey buildings. The artillery, the fortification and the garrison had many soldiers stationed in Gothenburg and they needed a place for worship in the absence of a designated church. The first floor of the cathedral school seems to have been used to that end. Another building, Kronhuset, was a warehouse owned by the crown, which had a first floor used for storing ammunition of all sizes for the city defence. The space had earlier been used to store grain. A third building with two storeys, is mentioned, the Corps de Garde, built in wood in 1696. The ground floor was used for the command and guard, while the first floor had offices for the storage keeper.

Other types of town descriptions came from travellers' diaries such as Carl Fredric Broocman's account of Trosa (see below), and Abraham Hülphers' descriptions of Falun (1762) presenting town features like the post office, the bailiffs' station, the copper scales etc. Carl von Linné, made observations not only regarding plants and wildlife but also of people, living conditions, culture and customs. He travelled, for instance, to Gothenburg in 1746 (1964) and to Falun in 1734 (1984). Interestingly enough, Linné hardly mentions Falun as a town but focuses on the impact of the smoke of the mines had on everything in and around the town including the buildings. Nor does he comment much about Gothenburg. Mainly a short remark on the small suburb Masthugget outside the gate regarding production sites for lumber and the admiralty's wharf and shipyard.

Sigfrid Sirenius, on the other hand wrote a whole essay on Gothenburg, commenting on both past and present. This is my paraphrased translation of his description of the building stock in Gothenburg in 1737.

> '*The generic structure consists mainly of proper and neat wooden buildings two storeys high with panels on the outside, ornate and painted with oil-based colour in the best way. No one is permitted to erect new buildings along the main public streets unless permission has been given by the magistrate for the design of the external facades facing the streets, as they must do in Stockholm. If they are not decent, they are forbidden to be erected, which will sustain regularity and avoid disorder. This means that each and everyone does not take it upon himself to spoil the external facades and that all houses may have a nice appearance and a regulated structure*' (Scheele and Simonsen 1999: 24).[7]

There seem to be a lot of emphasis on the aesthetics of the town, of the facades and their design. He does state that most buildings were two storeys high built in wood.

Many are interested in comparing townscapes before and after large devastating fires. Such as this observation from Trosa, in 1783. There had been mostly two-storey buildings before the big fire in 1719, most of which had not been re-erected by the time of Carl Fredric Broocman's visit 64 years later.[8] At this time the houses were small and insignificant with roofs made out of planks (B. Pettersson 2014: 13; A. A. Hülphers and Nilsson 1928: 22). A good example of how the temporary becomes the permanent.

Another traveller was Lorenzo Magalotti who wrote his work *Notizie di Svezia* in 1674 (Magalotti 1968; 1986) *Figure 5*. A famous drawing depicts the construction works of a two-storey log timber building.[9]

---

5 Sirenius accounts of Gothenburg and the Magistrates of Strömstad, has been published in the book *Lejonet och skeppet. 1737och 1741 års beskrivningar av Göteborg och Strömstad jämte kommentarer och utblickar*. By Adam von Scheele and Anders Simonsen in 1999.

6 '*Stadens byggnad I giemeen befinnes af Trähuus, dehls med Torf och dehls Tegeltak, utan någon afdehlning, uthi gator och Torg, emedan ej mera kan rächnas, än een gata ifrån Södre Porten öwfer Torget Norr till Broen och Strömmen löpande uthi Sallt-Siön utur ett färskt Wattn ett litet stycke bredt och ¾ mihl långt Öster uth till landzwägen som går till Norrjet*.'

7 *'Stadens byggnad i gemen, består merendehls uti propre och nätta träbyggnader af twå wåningar med bräder utan till beklädde och med ren Architectorisk prydnad utzirade, samt på bästa sätt med Olljefärg anstrukne och målade, warandes ingen effterlåtit till de allmänna och stora gator att få upsättia nya huus, med mindre deröwfer först hos Magistraten /: äfwen som i Stockholm:/ upwises Desseiner till de utwändige faciater emot gatorne, hwilka blifwa approberade, så framt de äro anständige, men i annor händelse, förbiudes att upföra, hwarigenom en god regularitet bibehålles, och alt oordning betages, så att hwar och en intet effter egit tycke får wahnzira de utwändige faciater; hwilken goda ordning giör , att alla husen få ett wacker skick och regulier struktur'*

8 Carl Fredric Broocman is among other things remembered for his book *Beskrifning öfwer the i Östergötland befintelige Städer, Slott, Soknekyrkor, Soknar, Säterier, Öfwerofficersboställen, Jernbruk och Prestegårdar.*

9 Alin urn:nbn:se:alvin:portal:record-84756 (nbn) Location: Uppsala University Library Carolina Rediviva.

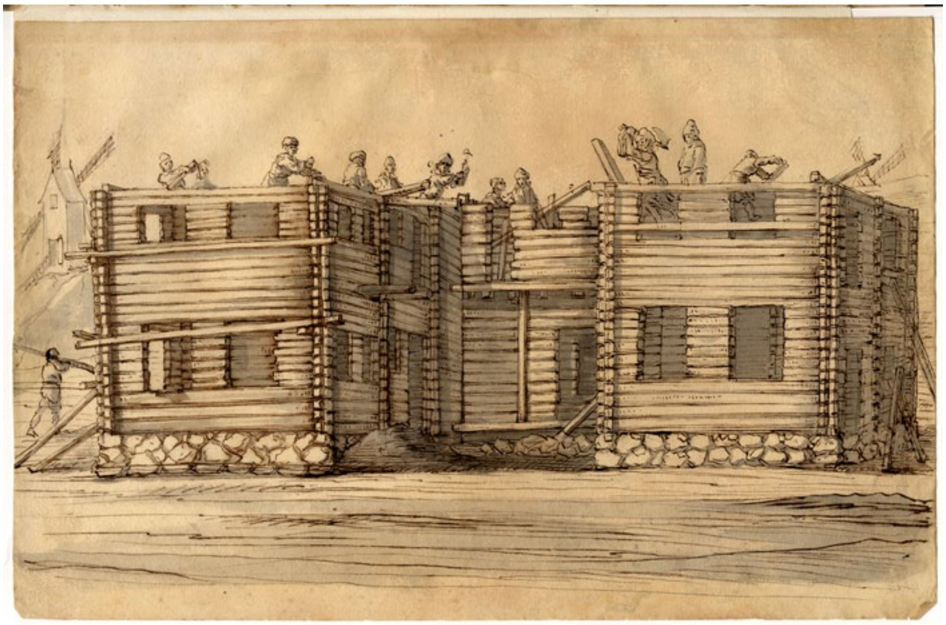


Figure 5 Lorenzo Magalotti's depictions of a house construction during his visit to Sweden in the 1670s (Public domain, no known copyright).

Figure 6 From Lorenzo Magalotti's travels in Sweden. (Public domain, no known copyright).

At least eleven men are at work, building the log building. It is a substantial house with two wings and two storeys high. They have planned for the windows and doors, leaving openings in the walls. The building rests on pad stones two courses high. Several timbers stick out of the façade or hang horizontally on the sides; these were used by the builders as platforms to stand on, while working. The middle section of the building has a jettied first floor supported by a pier and a jetty bressumer. The carpenters use a variety of tools, axes, planes, hammers etc. There are two windmills in the background.

Another drawing from Magalotti's travels in Sweden (Figure 6)[10] depicts a log timber cabin with a turf roof and a large chimney. The chimney has a rather odd position with the door opening immediately adjacent. The gable has a big opening, with shutters. Possibly a tavern or a place to buy beer, considering the people with their goblets inside. The roof gable has been decorated with ornamentation in the form of, what appears to be, horns. Three additional buildings of similar construction can be seen in the background. The houses are set in a mountainous backdrop, they do not seem to be integrated into a regular town grid.

Images of historic buildings with more than one floor

In the block Kv. Apeln 34, in Jönköping, a house foundation and ground floor layout were excavated. There were found to comprise two equally sized rooms joined by a vestibule, interpreted at first by

[10] Uppsala University Library Carolina Rediviva.

archaeologists as a typical one storey building found all over Sweden. However, a photo of the building from 1903 showed the house in fact had had three storeys. There was nothing in the foundation that could have helped the archaeologists make this interpretation, and thus failing to understand that the house had been home for several households, containing in at least three flats (C. Pettersson 2014: 441). Many of the poor also found housing in remodelled warehouses or outbuildings and all sorts of other nooks and crannies and these living environments have proven to be elusive to find archaeologically.

Photographs from the turn of the century

Gamla svenska städer (Old Swedish Towns) is a book series from the beginning of the 20th century. The series was a reaction to the rapid demolition of old townscapes and buildings at that time. The authors set out to collect photos to document as many towns and houses as they could. Sometimes drawings of interior plans and exteriors are included. Conclusions that can be drawn from going through the collection of photographs are that so much have been lost in the town clearances during the course of the 20th century. Secondly, that the old towns included a lot more diversity in building culture and time depth than current townscapes. The towns displayed much more of the building history back then, a feeling that has been lost in most Swedish towns of today.

A number of examples of storeyed buildings pictured in the series will be discussed in terms of the construction of balconies and stairs and what traces they potentially could leave for an archaeologist to find.

- Vinbergska gården, Karlshamn, is one example of a two-storey building with a half open, half closed balcony Figure 7. The balcony is supported by posts, yet the posts rest on a wooden foundation, thus leaving no traces in the ground. There is also a staircase leading into the ground floor and first floor.
- Stadsarkitektgården, Kalmar (Figure 8) also has a balcony on the first floor, which is not supported by posts, simply elongated floor beams from the log timber construction. The staircase has a foundation that could leave traces for an archaeologist though. Notice that steps also lead into the ground floor.
- Kungsstugan, Örebro, is a two-storey building with an open gallery on the first floor *Figure 9*. A staircase leads up to the gallery, which could leave traces of the foundation. However, three additional sets of steps lead to the doors on the ground floor, which would possibly confuse the matter at an archaeological investigation of building remains from a house of this kind.
- Gröna Lund, Stockholm (Figure 10). Here a two-and-a-half storey building is depicted. What is interesting is the supporting construction holding up the extended jetty or possibly a closed gallery, with braces attached to the wooden sill of the building.
- Teaterladan, Hedemora, is an interesting three-storey timbered building, apparently used as a theatre. The row of pad stones is no different to a one-storey building even if this building must be heavier. There are jetty bressumers on each floor. Because of reason of copyright, the photo could not be displayed.

Figure 7 Vinbergska gården, Karlshamn. A house with a balcony that is supported by posts (Bäckström and Wallin 1911, 15).

Depictions of Swedish towns such as Johan Sasse's copper plate of Stockholm in 1652,[11] showing a multitude of storeyed buildings (Figure 11) is another kind of source material to understand the lost townscapes of the early modern.

Preserved and partially preserved early modern storeyed houses

One way to further the understanding of the storeyed house of the early modern period is through investigating preserved buildings.

The preserved building stock is often hard to make sense of today. First, preserved buildings from the early modern

[11] Alvin urn:nbn:se:alvin:portal:record-87196 (nbn) Location: Uppsala University Library Carolina Rediviva, planscher Stockholm, Största format

Figure 8 Stadsarkitektens gård, Kalmar. A house with a balcony and a foundation for a staircase (Bäckström and Wallin 1911, 19).

Figure 9 Kungsstugan, Örebro is a two-storey building with an open gallery and a staircase (Curman et al. 1908, Häfte 1, 1908:33).

Figure 10 Gröna Lund, Stockholm, the building has braces holding up the balcony (Curman et al. 1908, Häfte 1, 1908:49)

Figure 11 Johan Sasse's copperplate of Stockholm in 1652 (Public domain no known copyright).

are few in number, in most Swedish towns. The 15th and 16th century wooden buildings are almost completely missing from the townscape. The houses, in many cases, have lost their former context regardless if they remained in situ or not. These houses usually belonged in a group of houses, either in a row of houses or with detached outhouses forming a burgage plot. It is rarely the case, that all the parts of the burgage plot are preserved. Many buildings have been moved out of their former context, thus losing their meaning to some extent.

Another important reason for the difficulty interpreting preserved buildings is the extensive reconstructions and renovations that have, at times, completely changed the exterior or interior, of the house. Yet, houses that have endured as living environments through hundreds of years are bound to have seen some changes both aesthetically as well as functionally, reflecting practices and preferences of different times. Finally, most houses have not been dated dendrochronologically, but rather based on buildings archaeology investigations, art historical ideas or dated through historical sources.

Operational approaches

I had the opportunity to take wood core samples from eight buildings for further testing through dendrochronology (see Chapter 3 for further details on the method). Five houses were situated in Gatenhielmska reservatet in Gothenburg, a cultural reserve with a number of preserved historic buildings. Two houses were dated in Jönköping, and two houses in Eksjö. However, one of the samples from Eksjö did not give a reliable result. In addition, five reports of earlier dendrochronology datings of historic buildings in Eksjö have been provided to me from Lennart Grandelius and Britt-Marie Börjesgård (Jönköpings länsmuseum), which have widened the scope and discussion accordingly (Table 1).

Efforts were made to find as many places to drill for wood core samples as possible in pivotal building elements on each floor, to be able to establish as reliable datable material as possible. With pivotal building parts, I mean outer walls, as well as samples of the girding beam/jetty bressumer, thus the upper floor levels in addition to the roof structure. The quality of the samples differed between houses but also in regard of the quality and type of wood i.e. pine generally had a better standard than the spruce samples. In some houses, it was harder to get access to the body of the house due to reconstruction, or surface materials e.g. wallpaper and panelling. The drilling was made in collaboration with the carpenter Ulrik Hjort Lassen, who also provided me with valuable input on construction and historic houses. The samples were then processed and analysed for dendrochronological age determination.[12]

A relevant question within urban archaeological investigations is how to identify a storeyed structure. What traces do a two-, or three- storey building leave behind in the ground that a single-storey house does not? Another important question is whether the building had two floors originally or whether the first floor had subsequently been added. Earlier dendrochronological surveys have typically been directed towards interpreting the ground floor as the oldest, thus the original body of the building leaving the rest of the house untested. Which leaves many questions regarding additional floor levels and the roof construction. The difference between a city built with single-storey houses as opposed to storeyed houses is of course enormous, which can make the often-cautious interpretations of urban archaeologists problematic.

Entering these buildings also gave the opportunity to study the layout on all floor levels, as well as a number of other features such as placement of stairs and chimneys, or whether the buildings functioned as multi-storey units or as single households.

[12] At the laboratory for wood anatomy and dendrochronology at Lund university, by Hans Linderson and Anton Hansson.

Table 1 Preserved two-storey houses dated through dendrochronology.

Province	Town	House
Västergötland	Gothenburg/ Majorna	Gatenhielmska huset
Västergötland	Gothenburg/ Majorna	Dahlströmska huset
Västergötland	Gothenburg/ Majorna	Jedeureska huset
Västergötland	Gothenburg/ Majorna	Kullen
Västergötland	Gothenburg/ Majorna	Härberget B
Småland	Jönköping	Smedjegatan 22
Småland	Jönköping	Ulfsparregatan 2
Småland	Eksjö	Forssellska garden
Småland	Eksjö	Vaxblekaren 13
Småland	Eksjö	Fornminnesgården
Småland	Eksjö	Krusagården
Småland	Eksjö	Vinskänken 2
Småland	Eksjö	Boktryckaren 9-10

Gothenburg

Not many early modern wooden buildings are preserved within the walls of Gothenburg, due to remodelling, city fires and 20th century demolition. Consequently, wooden, storeyed buildings from the former suburb Majorna (today part of Gothenburg) will be investigated. These houses used to be part of the periphery and not of the city centre, situated with a mountainous backdrop rather than within a regular town grid. Yet, I still argue that the area was urban although not in the formal sense, a discussion further developed in section 6.2. Majorna was also subject to large-scale demolition during the 20th century, but not as comprehensively as Gothenburg within the defensive moat.

Five houses in Gothenburg have been subject to dendrochronological analysis for the purpose of this study. All houses form part of the area called Gatenhielmska reservatet, it is an open-air museum of sorts in Majorna, historically adjacent but not part of Gothenburg until 1898, although the two areas relied heavily on each other. The buildings in Gatenhielmska reservatet were situated close to the former shipyard belonging to the admiralty and consist of fifteen houses, in situ, from the 18th and 19th century. The reserve is named after the town house, Gatenhielmska huset, or more precisely after the first owner of the plot, the infamous privateer, Captain Gatenhielm (1689-1718), which was given to him by King Karl XII, in 1717. Gatenhielm, was formally in charge of all privateers in Sweden at the time. Some of the houses in the reserve are situated along the street Allmänna vägen, which was the main road west out of Gothenburg and through the suburb Majorna in past centuries. Some buildings are situated along Pölgatan, which shows a good example of a back street. Gatenhielmska reservatet is a good representative of how Majorna use to look, as it is a testament to the unregulated city plan with a mountainous backdrop and squeezed in between two upscale private gardens. There is also a mixture of houses belonging to different social groups.

The two-storeyed houses chosen for this study, for dendrochronological dating, are all situated along the road Allmänna vägen. They will be discussed in order of appearance following the road from Stigbergstorget (the local square) and down to Pölgatan.

Gatenhielmska huset, Kv. Gatenhielm

The building is a town house with two storeys, a large garden and a former ropemaker's workshop, with the square Stigbergstorget right at its front door.

Gatenhielmska huset (Figure 13) is a log construction, in pine and spruce, with an emphasis on spruce from the now-suppressed counties of the historic province of Västergötland as well as Bohuslän, all of which are included in the modern county of Västra Götaland. The spruce timbers were felled in the winter months in 1743/44 and 1744/45, which would suggest, according to the dendrochronological report, that the building was erected in 1745 or soon after. The pine timbers were more difficult to date but were probably felled in the winter of 1619/20, and then re-used. Both storeys of the house were erected at the same time (Hansson and Linderson 2018b).

The ground floor had an entrance onto the square (Figure 14). The house gives an impressive impression as built by the upper bourgeoisie. The entrance is situated at the front centre of the house, with a rounded stone stair with four steps; yet, the door is in the corner of the hallway once entered into the building. The hallway is dominated by an elaborate staircase leading up to the first floor. On the ground floor, there are three rooms to the left of the hallway, and four rooms and a kitchen on the right-hand side, both sides have circular layouts circumventing stacks. There is also a door with a porch leading out to the back garden in the end of the central cross passage.

The rooms on the left consist of one large parlour dominated by a fireplace, painted wallpaper, tapestries and oil-paintings from the 18th century. The next room is a drawing room, which is slightly smaller with a ceramic stove in the corner; the walls are decorated with painted tapestries. The third room is a small and nicely adorned chamber or office. These three rooms give the impression of having been used for official duties or polite entertainment. The rooms to the right of the hallway have undergone heavy modernisation, but a few original features remain. To the front of the house there are two large rooms with ceramic stoves. To the rear there is one big room, possibly sectioned into two rooms, one of which has a ceramic stove. The next room at the rear of the house is a large kitchen with a large fireplace but otherwise with modern facilities.

Figure 12
Gatenhielmska huset, Gothenburg. Photo: A. Nilsen.

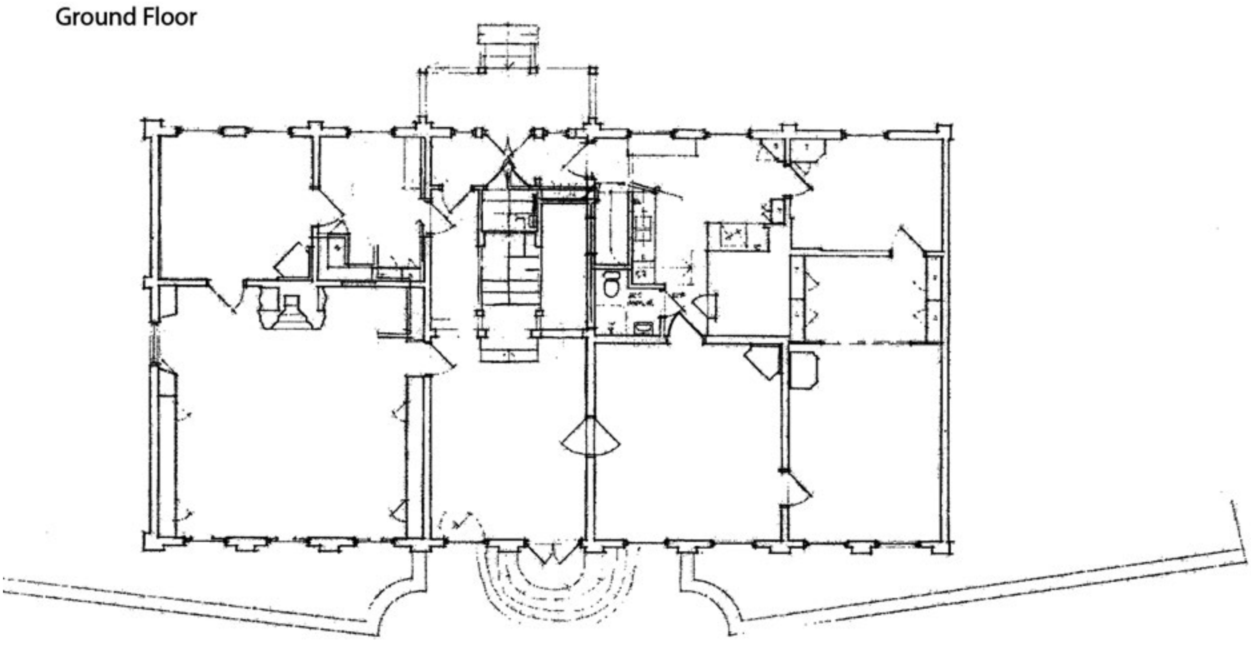


Figure 13 The layout of the ground floor of Gatenhielmska huset in Gothenburg.

The first floor has a slightly different layout and has also been modernised. To the left front of the house, there is a large hall, presently used by a fraternal order, which comes across in the interior. There are also two big rooms with a fireplace/ceramic stove, historically, used for entertaining. To the rear of the house to the left of the staircase there is a large modern kitchen and toilet. To the right of the stairs there is a flat with a big kitchen, again with a huge fireplace but otherwise modern facilities. Three rooms and a small hallway with a bathroom and storage have been built during the 20th century. The division of the house/floor in an official part for entertainment, and a part for residential purposes seem to be repeated on the first floor.

The attic is divided into two sections but otherwise open planned. Half of the house had a stone cellar, which today has been completely modernised.

Gatenhielmska huset, is thus an example of a mid-18th century town house for the upper bourgeoisie with a clear division in the layout between the residential part of the house and the *official part for polite entertainment. The house was erected in one go and with a mix of new and re-used timber in both pine and spruce. Nothing was found that would have been helpful to archaeologist to identify a storeyed building. The house used to have a large garden on the back.*

Dahlströmska huset

Dahlströmska huset is situated to the west of Gatenhielmska huset with a building in between (Figure 15). From the mid-1800s these two houses belonged to the same owner, Mathias Nikolaus Dahlström. It is a two-storey L-shaped log timber multi-unit structure with a small front garden towards the street and a very small courtyard on the back of the house. The front garden gives the building an urban look mostly connected to houses along the main streets rather than the backstreet environment. The house has been covered in wood panelling and painted red. The house also has a stone cellar and an attic. The masonry in the house suggests that it originally contained four kitchens and thus probably also four flats (Roos and Ask 2014: 26). There are a number of 18th century features preserved in the inner decor.

The house was built in a mix of pine and spruce, predominantly spruce. The dendrochronological dating of the building turned out to be problematic with bad quality samples. Of eleven samples, only five were datable and two of those were inconclusive. Nonetheless, all the data points towards the wood having been felled in the winter months of 1740/42 in the region of the

Figure 14 Dahlströmska huset (red). See how it connects to Jedeurska huset nextdoor (with a white facade) Photo A. Nilsen

Figure 15 The layout of Dahlströmska huset. Byggnadsvårdsplan HIGAB

modern county of Västra Götaland, which could suggest that the house in its entirety was erected at that time (Hansson and Linderson 2018a). That would mean that it was planned as a two-storey building from the start. Previously, the house had been dated through analysis of the interior and believed to have originated from around 1750 (Roos and Ask 2014: 26), the scientific dating thus pushes the time-frame back ten years and the house is now one of the oldest in the reserve.

On the ground floor (Figure 15), the entrance is situated in the corner of the street house and the wing. The entrance leads into a hallway with a staircase to the first floor and entrances on either side into the adjoining individual flats. To the right, the part of the house facing the street had one main room/kitchen with a corner fireplace/ stove and a ceramic stove; the chamber also contained a ceramic stove. On the other side of the hallway, another flat can be found with a similar layout.

On the first floor, there were identical flats to the ones downstairs, with a hallway and stairs in between. The attic was open and had been used for storage and for drying laundry. The street house had a stone cellar beneath it with two rooms and a staircase.

Dahlströmska huset, is thus a two-storey house with an urban look and a gable facing the street. The house was built in its entirety around 1740, mainly with spruce timbers. The number of fireplaces and the internal layout would suggest a multi-unit structure that housed four flats. No particular indicators of the first floor that could help archaeologist have been found.

Jedeureska huset

The house called *Jedeureska huset*, is the next house down the street to the west of Dahlströmska huset (Figure 16). The building is L-shaped and was constructed in two storeys in log timber with the gables in timber-framing technique (Figure 17). It has panelling on the street front as well as a small, town-garden, in front of the house. There is a gate, with the first floor above, leading into the courtyard. A large garden adjacent to the house is called

Figure 16 Jedeurska huset with a red façade towards the courtyard (see the photo of Dahlströmska huset for the white front facade). Photo: A. Nilsen

Figure 17 The timber-framed gable in Jedeurska huset, Gothenburg. Photo: A. Nilsen

Figure 18 The layout of Jedeurska huset.
Byggnadsvårdsplan HIGAB

Jedeureska trädgården, both the house and the garden were named after the doctor of the regiment that was active during the cholera epidemic of 1834, Johan Niclas Jedeur. The rear of the house towards the courtyard has a simpler look. There used to be a hall decorated in the late Gustavian style (named after King Gustav III, connected to the period 1785-1810), which was dismantled and moved to Röhsska Muséet. The interior of the house has been heavily altered and modernised to accommodate some art workshops. In the mid-19th century there was a storehouse that was later replaced by another slightly bigger storehouse seen on the drawing as the right wing, which was not subject to this investigation. (Roos and Ask 2014: 31). The focus of the dendrochronological analysis, however, has been on the street house. The building had a preliminary dating to 1790-1810 from basic visual recording of the building in 1965 by Gothenburg City Museum.

Analysis of the dendrochronological samples showed that a mix of pine and spruce had been used in the construction of the building, with the wood collected from a forest in modern Västra Götaland. The first floor and the attic were built in 1761 or possibly some years after. The ground floor has not been successfully dated so it is not clear whether the whole house was erected at the same time.

The pine in the samples was taken from the timber-framed gables (Figure 17) and proved to have been felled somewhere between 1736-1766 which goes well with the dating of the rest of the timber in the attic (Hansson and Linderson 2018d). Thus, it is possible to conclude that the building is some 30 years older than previously thought.

There is little remaining of the original interior decor, features or layout (Figure 18). Nevertheless, the first floor still has three ceramic stoves, some lintels and floors left. Whether it has been a house for more than one household is hard to establish, the previous existence of a hall might suggest that this has been a town house for one household with servants, but it might also be that the house has had different owners for each floor. The house has a robust stone sill, although not very high, adjusted to the slightly sloping terrain.

Jeuderska huset should be seen as stemming from a similar social sphere as Gatenhielmska huset, thus the upper levels of society, with the hall and large gardens indicating the connection. This house is constructed in a mix of building techniques with timber-framed gables in the attic, in an otherwise log timbered building in pine and spruce, all hidden behind wood panelling. It is interesting that it was so much older than previously thought, 30 years is a big adjustment of age. Unfortunately, not much of the interior is intact and much of the historic building has been lost.

Kullen

Continuing down the Allmänna vägen, and skipping one modern house in between the next house in this study is named *Kullen* (Figure 19). An L-shaped corner building, of two-and-a-half storeys, also faces onto Pölgatan, which crosses Allmänna vägen. Kullen, is formed from two buildings that are now incorporated into one, with a tunnel entry leading into a narrow courtyard with an outbuilding. The house has largely been residential but there seem to have been an inn located in the building at one point, named 'the Camelion'. On the first floor, an unusually large fireplace might belong to this context (Roos and Ask 2014: 40).

The dating of the house indicated two construction phases: one from the winter of 1769/70 and the other from the winter 1804/5. The ground floor of the building part to the west or along Pölgatan was erected around 1770 (Hansson and Linderson 2018e). The first floor in this part of the house was built after 1793.

The ground floor of the street house towards Allmänna vägen has a dating after 1752 but more likely 1760±7. The first floor has two datings that point in different directions; one sample is dated to 1804/5 and the other to 1769/70. This might indicate that the timber from 1769/70 has been re-used. The attic covering both parts of the buildings was dated from two samples (one of which was less certain), and points to having been built in 1805. This could suggest that a one-storey building had an upper level added as well as an attic in 1804/5 and was at the same time connected to the neighbouring house through the attic and above the tunnel entry. The timbers were almost all of spruce from the region of Västra Götaland. One piece of pine timber (sample 29) had 172 year rings but could not be dated, it probably originated from somewhere outside of Sweden, possibly eastern Europe (Hansson and Linderson 2018e).

On the ground floor towards Allmänna vägen there has been some modernization and restructuring of the layout, but one ceramic stove is still intact (Figure 20). The entrance is from the inner courtyard, however, an old picture from 1914 shows an extension towards the street where the entrance was placed at the time, the extension was dismantled in the 1930s (Roos and Ask 2014: 42). This could suggest that the layout on the ground floor might originally have been identical to the first floor, without the chamber over the gated covered passageway. There is an inner staircase leading to the first floor with four rooms and a circular layout. The kitchen has, as mentioned earlier, a rather oversized fireplace for a single household and a large kitchen. There are three more rooms on this floor, one big main room and a small chamber, then there is another chamber next to the first one situated above the gate. All three rooms had ceramic stoves. There is also a staircase leading up to the attic. The attic has an open layout connected with the adjacent house with, at the moment, a door. The house rests on a substantial stone sill (possibly a cellar); the house is situated in a slope, which probably demanded a levelling factor.

The house body towards Pölgatan has an entrance from the inner courtyard with some modernizations to the inner layout and function. A hallway leads into a large kitchen with a large fireplace, next to, which is a main room with a ceramic stove and an adjoining chamber.

Figure 19 Kullen, with the pier holding up the closed balcony. Carpenter Ulrik Hjort Lassen who helped collect the wood samples for the dendrochronological analysis. Photo: A. Nilsen.

Figure 20 Layout of the floors in the house called Kullen. Byggnadsvårdsplan HIGAB.

The chamber has been altered into a modern kitchenette and toilet. There is an external staircase leading up to a jettied first floor. The jetty is strengthened by a pier (un-datable, possibly from eastern Europe, as mentioned above). The first floor has also seen a bit of modernization with a modern kitchenette towards the neighbouring house/gate room. There are three additional rooms, a storage unit, toilet and a hallway on this floor. The sizes of the rooms differ slightly from the rooms downstairs. All three rooms have ceramic stoves. The attic covers the entire house. This part of the house rests on a simple stone sill (no cellar).

This house is an example of two single-storey houses that gained an upper floor level and a joint attic at a later date. Kullen, evidences how living environments became denser during the course of the 18th century with four flats instead of the original two. The incorporation of the tavern into the building also shows the possibilities the location along the high road offered. The jettied part of the building towards Pölgatan could also be interpreted as a closed balcony; it is hard to establish its original purpose. The pier stabilizing the jetty is a good example of a piece of construction that could help archaeologists to identify the existence of an upper floor level. This is a predominantly spruce timber building partly constructed with re-used timbers. The house rests on a substantial foundation towards Allmänna vägen and a simple row of sill stones towards Pölgatan. The differences in construction methods seem to be more a reflection of the sloping street and the possible existence of a cellar rather than a difference in construction weight.

Hälleberget A

On the other side of the street Pölgatan and continuing along Allmänna vägen, there is the house called, *Hälleberget A* (Figure 21). It is a two-storey building with a stone cellar. Today the entrance goes through an external stair and a balcony on the back of the building, built in the 1920s. Originally, however, the entrance went through the front of the building with a flight of steps leading onto the main road, Allmänna vägen. Those stairs are now gone but the door is still there but not in use.

The house was used as a residential building until the 1970s. It contains four flats, and that has probably always been the case (Figure 22). The current kitchens were added in 1879.[13] Before that there was an extension to the house towards the courtyard in two storeys where the two kitchens were located, it would seem as though two flats shared one kitchen on each floor, apparently with oversized masonry on the ground floor, larger than a baking oven (Roos and Ask 2014: 46–47). According

[13] According to an inventory by Gothenburg City Museum in 1974.

Figure 21 Hälleberget A towards Pölgatan. Photo: A. Nilsen

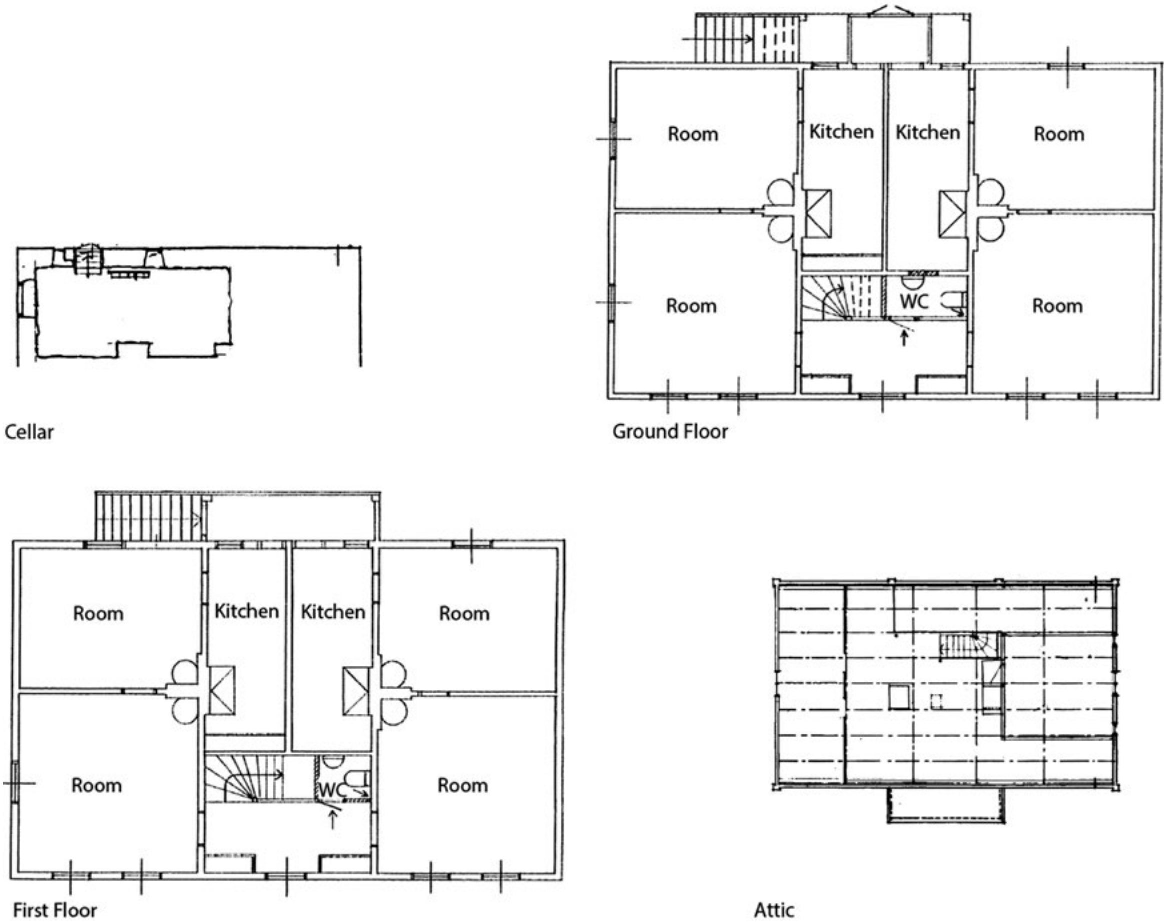


Figure 22 The layout of Hälleberget A. Byggnadsvårdsplan HIGAB

to the local historical society *Gamla Masthuggspojkar*, a merchant, Biörnberg, owned a building on this plot in 1773. His tenants were sailors and carpenters with their families (Roos and Ask 2014: 46).

The scientific dating of the building shows that the whole building was built at one point in 1760. The dated timbers from the cellar were felled in the winter of 1759/60, the ground floor was not datable due to bad quality wood, and the first floor had one dated sample from after 1744 (which does not prevent a dating to 1759/60). The attic had two datable samples from 1759/60 and 1756 respectively. All, but one, samples were spruce and originated from a forest in the Västra Götaland region (Hansson and Linderson 2018c).

The former front door led to a hallway and an inner staircase connecting all four flats. Each floor had two flats with identical layouts with two rooms and a kitchen. As previously mentioned, the kitchens came into use in 1879 so those rooms might have been an additional chamber for each flat or a hallway leading into the old kitchen extension. The rooms have ceramic stoves. Anecdotally it is believed that a ceramic stove maker used to live in the house (verbally from Gamla Masthuggspojkarna) there is in any case a large number of dismantled ceramic stoves stored in the cellar of the house, presumably remains of the ceramic stove maker's stock. In the other cellar, there were two, small rooms, one on each side of the house, probably used for food storage. The attic used to be an open room with traces of being used for drying laundry. Today the attic is sectioned off in several parts for archives and storage.

The building called, Hälleberget A, is a multi-unit structure with four equally sized flats. The house has seen some remodelling through the years especially concerning kitchen units and the location for the entrance. The external stair and current entrances are thus not a good indicator for a house with upper floor levels from an archaeological point of view. The house is built on a substantial stone foundation with cellars. The dating derived from the dendrochronological samples indicates that the house was erected at a single point in time and constructed almost entirely from spruce. This is another example of flats with circular layouts.

Jönköping

Another town with some wooden buildings intact (however, it has been heavily affected by demolition during the 1960s) is Jönköping. It is an interesting medieval town, moved in the 17th century to its current location. The fortification was modified and modernized to meet contemporary standards and threats and, at that time, formed an important function as a border town with Denmark as part of the Swedish line of defence. Jönköping was also important as a gun-manufacturing town as well as for the manufacture of clothes. In the 18th-19th centuries its role altered and diminished after the map of Sweden was redrawn, and it became a town in the centre of the kingdom. Compared to Gothenburg, Jönköping is a smaller town but one, which had its importance during the 17th century. It formed part of the great national plan for idealised town construction and was initially planned to have a circumscribing city wall; however, the wall was never constructed. Jönköping is further discussed in Chapters 5.1 and 7.

The two houses that studied here are both situated in the 'new' eastern part of town and give a glimpse of Jönköping 200-300 years ago.

Smedjegatan 22, Kv. Arkadien 1

The house on *Smedjegatan* 22 is typical for a Swedish burgage plot within the commercial centre of town (Figure 23) an L-shaped two-storey house, which formed part of a row of houses around an inner courtyard. The house was believed, prior to this study, to have been built in 1700 and then altered in the late 19th century (Hallberg 1989: 59–60). The entrance to the building is situated directly onto the street with a shop front with large windows (a late addition). Behind the shop to the left of the entrance there was a former kitchen with a very big fireplace and in one corner a recess for a ceramic stove. The gable of the inner room was made of stone masonry. Access was originally not given to the first floor in that part of the house.

To the right of the front entrance there was another shop with beautiful late 18th century/early 19th century features painted on the wood ceiling. The first floor on this side of the house has been modernized. The attic joined the two building parts from both sides of the courtyard. The house rests on a very discreet row of sill stones. Unfortunately, it was difficult to get a sense of the historic layout of the house and the individual use of the rooms due to heavy alterations (Figure 24).

Dendrochronological analysis reveals that the building was built in log timber with pine. The first sample from the ground floor has been felled sometime during 1802-1826, but most likely in 1807/1817. Sample two had an uncertain dating. The samples from the first floor and the attic point towards a felling during the winter of 1815/16 and the building was most likely erected in 1816, or soon thereafter. The wood has been taken locally from a forest in the county of Jönköping or south Östergötland (Hansson and Linderson 2018f). The previous dating to the beginning of the 18th century is thus a miscalculation of more than a hundred years and there was no evidence within the wood core samples of the assumed rebuild in the end of the 19th century.

Figure 23 Smedjegatan 22 in Jönköping and carpenter Ulrik Lassen drilling for wood core samples. Photo by A. Nilsen

The house on Smedjegatan 22, is situated with its street front towards a busy merchant street and has two shops on the ground floor today. The traditional look of the surrounding houses within the burgage plot suggested potentially old buildings, analysis of the dendrochronological samples provided results for a much younger construction than expected which was around 1807/1817. The ground floor and the first floors along with the attic seem to have been erected at the same point in time, built entirely of pine. It is somewhat difficult to get a full grip on the historic features of this house due to extensive reconstructions especially concerning the internal layout. Nonetheless, the large fireplace on the ground floor does indicate the place of a former kitchen. The ornate roof in the shop to the right of the entrance could perhaps have been part of a former parlour or decor for the shop front. It is unclear how long the premises have been used as shops. There were no traces of any construction features that could help archaeologist to identify a two-storey building.

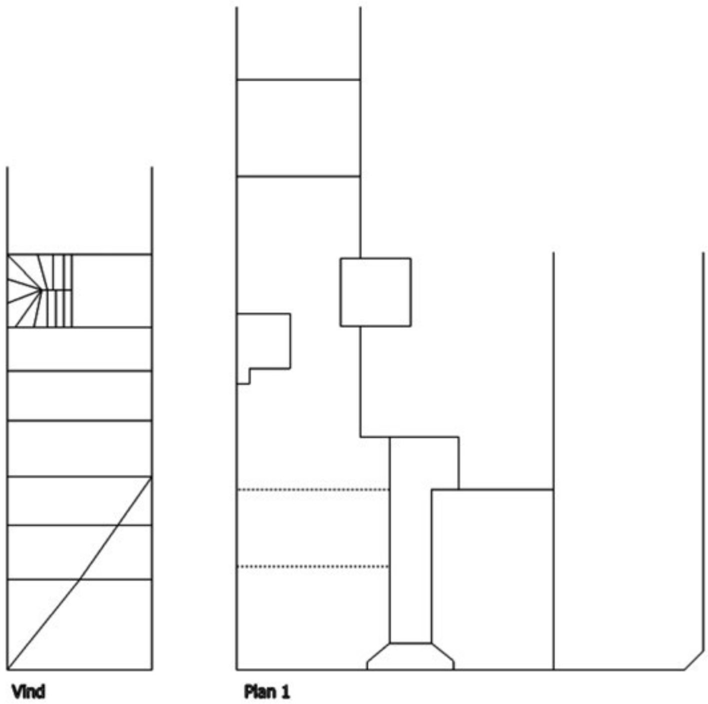


Figure 24 Smedjegatan 22, layout (*Plan 1* means ground floor, *vind* means attic). By Ulrik Hjort Lassen.

Ulfsparregatan 2/ Östra Storgatan 76, Kv. Bohus

The house was previously located at Östra Storgatan 76 but was relocated to *Ulfsparregatan 2* and restored in 1961-63 (Figure 25). It is a building with two levels with yellow panelling. It has a slightly jettied first floor and has been interpreted as likely originating from the first half of the 18th century (Hallberg 1989: 68). The interior of the house has been altered and modernised (Figure 26).

The building is constructed in log timber technique with pine originating from local forests. The scientific analysis show that the timbers from the ground floor were felled after 1725, those from the first floor after 1730 and in the attic they were felled

1710-1740. Hansson and Linderson (2018g) suggest that the building most likely was erected during the 1730s, the timbers, in all probability, felled in the winter 1737/38.

Ulfsparregatan 2, is a jettied two-storey building dated to the end of the 1730s. It is today used as a multi-unit structure; whether that was the case historically has not been established. Here, pine is the timber of choice. There was nothing in the ground construction that could have helped an archaeologist to identify a storeyed building.

Eksjö

In Eksjö, a lot of minor rescue archaeological interventions have been undertaken yet very few have been conducted in connection with the buildings or courtyards because of the remaining and protected historic building stock. Old town Eksjö has a variety of residential and workshop environments from the 17th century and onwards with a lot of backyard outbuildings still intact. There are many buildings with jetties and the main building technique is log constructions. Several of the historic houses in Eksjö have external

Figure 25 Ulfsparregatan 2 in Jönköping. Photo by A. Nilsen.

Figure 26 Ulfsparregatan 2, layout. By Ulrik Hjort Lassen.

balconies, such as Forssellska gården, Krusagården and Färgaregården. These balconies seem to have been built during the 19th century but could well be an older phenomenon. There are also a number of old shop fronts remaining along the old shopping streets (Agertz and Grandelius 2003: 79). The city plan has renaissance origins with a winding character and many blind alleys, as opposed to the 19th-century right-angled and regular city grid on the other side of the main square. Another interesting aspect of Eksjö is the multitude of wall paintings and the painted ceilings from the 17th century and after. It is however important to point out that none of the houses have remained completely unaltered since the 17th century but that many have kept elements of past decor or interior features (Nilsen 2014).

Forssellska gården, Kv. Ciselören 1

On the 16th of August in 2015, a violent fire destroyed the burgage plot Forssellska garden, with one fatal outcome (Figure 27). In the aftermath of the fire, the building antiquarian Britt-Marie Börjesgård managed to document those parts of the house, which were not completely destroyed, before the building was torn down.

The burgage plot, Forssellska gården, consisted of four rows of houses in two storeys around an inner courtyard (Figure 28). All the houses were built mainly in log-timber technique and there were three open balconies towards the courtyard. The building had one house/unit in each quarter. The part facing Norra Storgatan had large shop-windows on the ground floor, and the interior of the houses had been modernised. Two and a half storeys high with a furnished attic, which combined with the high roof made this part of the house seem a floor higher than the rest of the building (Börjesgård 2017: 7–9). The passageway leading into the courtyard was situated on Arendt Byggmästares gata. Just north of the tunnel entry there was an area of wall constructed in a post and plank type technique. Here, the sill was made of unworked stone and mortared with lime. South of the entrance to the courtyard, the sill instead consisted of large hewn quarry stone. The house showed several parts with patchwork repairs in various techniques; it is evident that many beauty flaws can be hidden behind panels (Figure 28). The building towards Arendt Byggmästares gata had a much lower stone sill (Börjesgård 2017: 11–15). This building was constructed after 1830 according to the dendrochronological analysis (Börjesgård 2017: 52).

The eastern part of the building towards the alley Vaxblekaregränd showed many alterations with vertical planks (behind the panelling) and the house rested on a simple row of stones. The building was mostly constructed in log timber and was two storeys high (Börjesgård 2017: 20). There were two cellars in the house one to the east and one to the west. This house was built with wood felled in the winter of 1842/43 (Börjesgård 2017: 52).

The building to the north was only briefly studied, but was built in post and plank technique, and standing two

Figure 27 Forssellska gården after the fire (Börjesgård 2017: 8).

Figure 28 A plan of Forssellska gården before the fire, drawn up in 1969 then altered in 1983 (Börjesgård 2017: 10)

Figure 29 The image at the top left shows the patchwork construction behind the panelling. The image at the top right shows the post and plank construction. The two images in bottom depict the inner courtyard with balconies in Forssellska gården in Eksjö. (Börjesgård 2017).

storeys high. Many of the planks were re-used timbers. It had a balcony facing the inner courtyard (Börjesgård 2017: 27–28).

The house towards Norra Storgatan was the oldest and the most complex building (Figure 29). The ground floor was constructed in log timber technique, while the first floor was constructed from a patchwork of vertical and horizontal planks. The gable towards *vreten/dropprummet* (the space, between two buildings in adjacent properties, wide enough to ensure that roof drippings did not fall on the neighbouring building) was built in post and plank technique. There were several shopfronts facing onto the street (Börjesgård 2017: 30–33). The northern gable was constructed in log-timber and interestingly the timbers on the upper floor level were longer, 6.53m, than the timbers on the ground floor, 4.8m. The projecting timber had a hole underneath that might be a trace from a post. On the top of the timber there was a mark from a head of a log-timber construction. Together, this might indicate that the timber had been the base of a balcony. The projecting timber was 1.82 m from the wall beneath. In the northern part of the building the ground floor was scientifically dated to 1655 while the first floor had subsequently been added in the 1770s (Börjesgård 2017: 38, 40). Seventy-six samples were sent to the lab, only three samples were of spruce; the rest were pine (Hansson and Linderson 2017).

Forssellska gården, is interesting for the patchwork constructions hidden behind panelling, the mix of building techniques, the possible remains of a balcony and the associated pier, possibly archaeologically recoverable in the ground. The courtyard comprised four rows of houses around a courtyard, one of the houses was two-and-a-half storeys while the others were two. The pad stones of the buildings' foundations differ in size and construction. The oldest came from a building with a ground floor from 1655 with a first floor later added in the 1770s. The eastern building was erected in the 1840s and a further building dates from the 1830s; the buildings built in post and plank do not seem to have been dated. It is possible to follow how the urban environment became slowly more dense over time. The timbers in the construction are almost entirely pine and many of these timbers seem to have been re-used.

Vaxblekaren 13

The burgage plot called Vaxblekaregården (presently a hotel) is a two-storey, jettied house with, for the area, an unusual roof construction consisting of a hipped roof with an inserted wall-line, raising the upper part of the roof from the lower (*Sw. valmat tak/säteritak)* (Figure 30). The house has a large stone cellar with a vault, similar to the medieval cellars in central Stockholm. The house was constructed from pine logs of the highest quality (the wood being at least 300 years old), and collected from forests north of Eksjö (such as Göberga gård in Tranås). The interior and layout of the house has been heavily altered during the 20th century.

Figure 30
Vaxblekaregården, Eksjö with a jettied first floor and an unusual roof.
Photo: A. Nilsen.

The walls of the house and wall paintings have been dated through dendrochronological analysis, which indicated that the building was built after 1706/07. There are two wood samples with older datings - 1687 and 1647 - which are thought to be reused wood within the construction (Linderson 2002a). The paintings were of the five senses and are now part of the collection, and on display at, Eksjö museum. The burgage plot has been associated with various crafts during the 17th century i.e. tailor and pearl-stitching and in the 19th century it was turned into a wax bleaching industry (the only one in the country outside of Stockholm) (Agertz and Grandelius 2003).

Vaxblekaregården is a two-storey building with a jettied first floor and an unusual roof. Added with the large and professionally crafted vaulted cellar and the beautiful wall paintings the house gives an impression of a well-to-do burgage property from the first decade of the 18th century. The wood used in this log-timber building was of the highest quality and predominantly pine.

Fornminnesgården, Kv. Kopparslagaren 2

The burgage plot called *Fornminnesgården* is a jettied two-storeyed row of houses, connected in an L-shape around an inner courtyard, constructed in log-timber technique of pine (Figure 31). Additional outhouses complete the circle around the yard. *CTH/ Byggnadsvård* did a lot of research into fire insurance records and other historical sources in 1998/99 (Figure 32) relating to changes to the property over time (Berger et al. 1998).

Analysis shows that there have been two building phases: one from an earlier period (P4, P7) around 1678 or shortly thereafter; the second from the winter of 1751-52 (P2-3, P5-6) (Eggertsson 1999).

Fornminnesgården is a row of jettied buildings currently used as a museum by the local historical society; the following samples have been taken from the ground floor (P2, P3, P4, P7). A one-room building, towards Arendt Byggmästares gata, with a corner fireplace and

Figure 31 Fornminnesgården in Eksjö. Photo by A. Nilsen

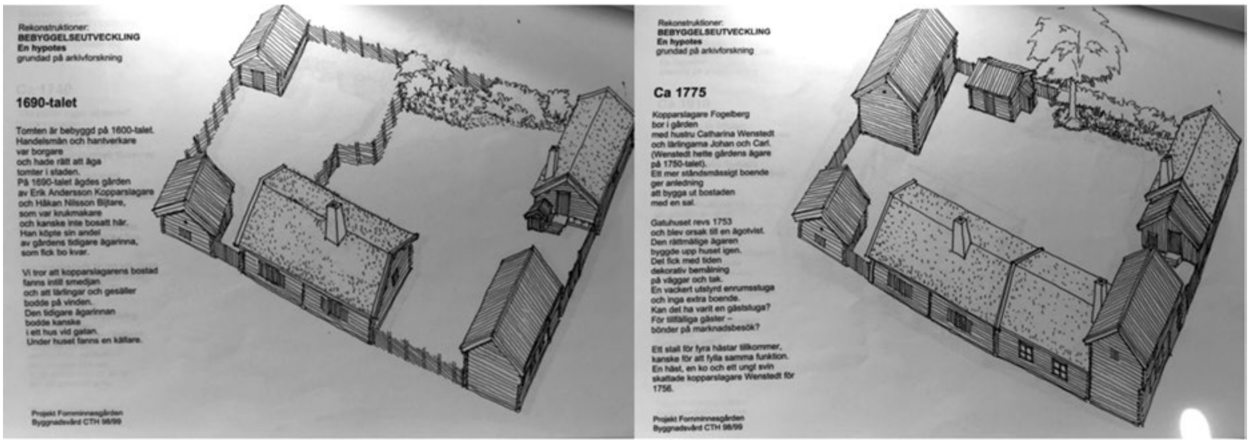


Figure 32 CTH/ Byggnadsvård made these interpretations of the building development based on the dendrochronological analysis (Berger et al. 1998).

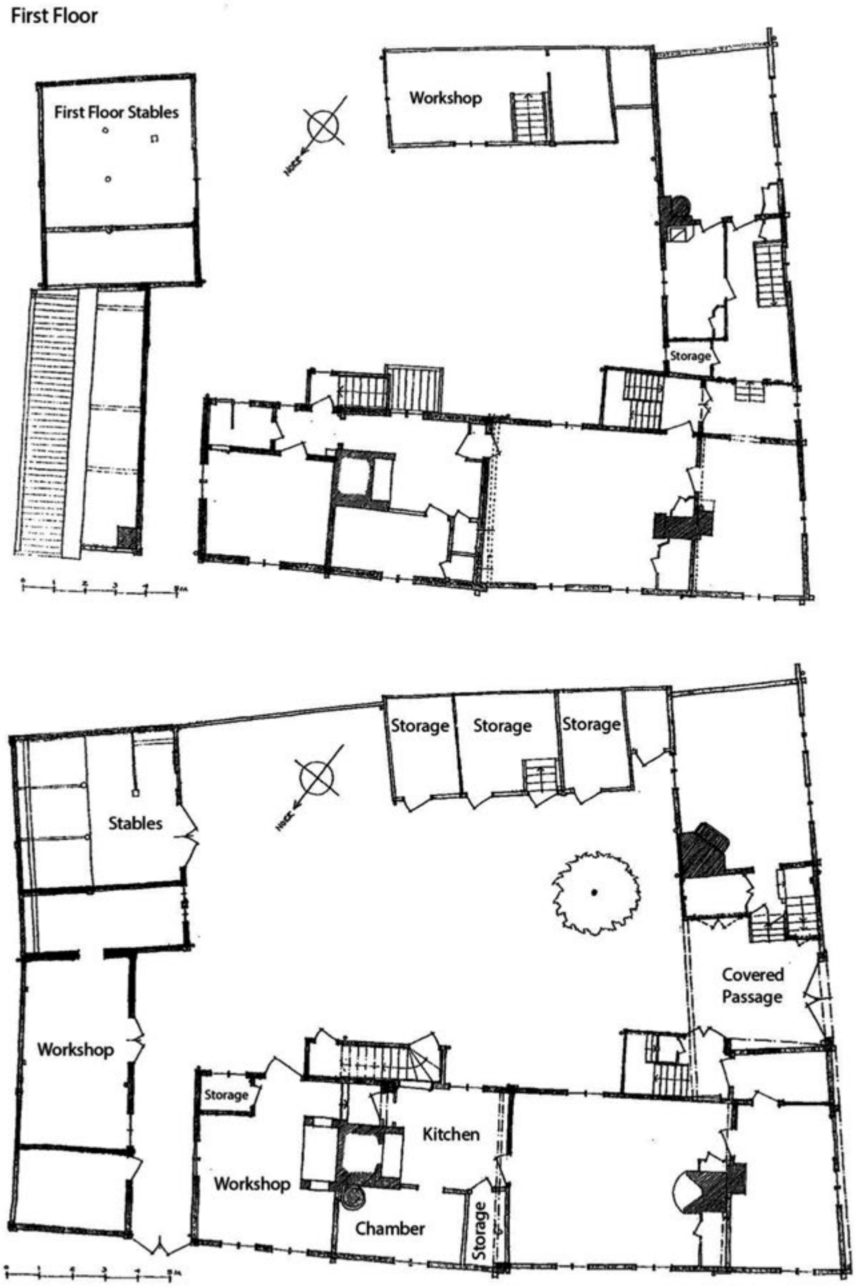


Figure 33 The layout of Fornminnesgården in Eksjö. CTH/Byggnadsvård (Berger et al. 1998) and Lennart Grandelius.

an entrance on the gable-end (P7). There is a small storage facility outside the door and a short stair entering to the side of the covered entrance (P3). On the other side of the entrance there is another house with a vestibule with a side entrance leading into a chamber/shop with a ceramic stove, from this room another door leads into a main room with a fireplace (P4). There is yet another door leading on into the next room, however this door could be a later addition. The next room has been divided into a main room/kitchen with a large fireplace towards the inner courtyard. Facing the front of the house there is a chamber (P2) and a room for storage. Behind this room, there was a workshop/smithy with another large fireplace and a modern toilet, the location is ideal for a smithy since the house is adjacent to the river, Eksjöån.

The first floor has a slightly different floorplan than the ground floor (Figure 33). Starting in the same part of the house with one room with a ceramic stove in the gable end corner. Two doors are located on the same gable-end (P6), one leading to a hallway (above the covered entrance) with a staircase that leads down to the gate. There is also a small room with a small fireplace and a storage room next to it. From the hallway, there is a short step that leads to a second vestibule (P5) with a staircase leading down to the right, and straight ahead is the door to the adjoining room. This corner room has a ceramic stove. A door leads into the next room, which is larger with a ceramic stove/fireplace, according to the fire insurance records this room was used as a hall. The door leading into, what seem to be a separate flat, is probably a later addition. The flat has three rooms a kitchen with a very large fireplace towards the inner courtyard and a chamber facing the front of the building. The kitchen leads into a hallway that has an external staircase to the right, a room to the left and most likely an earlier storage facility that has been turned into a bathroom.

Fornminnesgården was a jettied row of houses comprised of a single one-room flat, one two-room flat and a further flat with three rooms (including the kitchen) on the ground floor. On the first floor there are two two-room flats and one flat with three rooms. Counting six possible flats in total, it is of course conceivable that one household could have accessed two floors. The dendrochronological dates indicate that the row of houses originally was built as a single floor in the 17th century and that the first floor was added in the mid-18th century. This burgage plot also has outhouses, and the stable, in particular, could well be old, the fire insurance records mentions a pigsty, a wood shed and a privy, these buildings have not been analysed. [5]

Krusagården, Kv. Färgaren 4

The burgage plot *Krusagården*, is a two-storeyed log-timber building surrounding an inner courtyard (Figure 34). King Gustav VI Adolf planted an oak in the courtyard while on his coronation tour of Sweden in 1954, which is still there. The building has a first-floor open balcony, built during the 19th century. There have been various

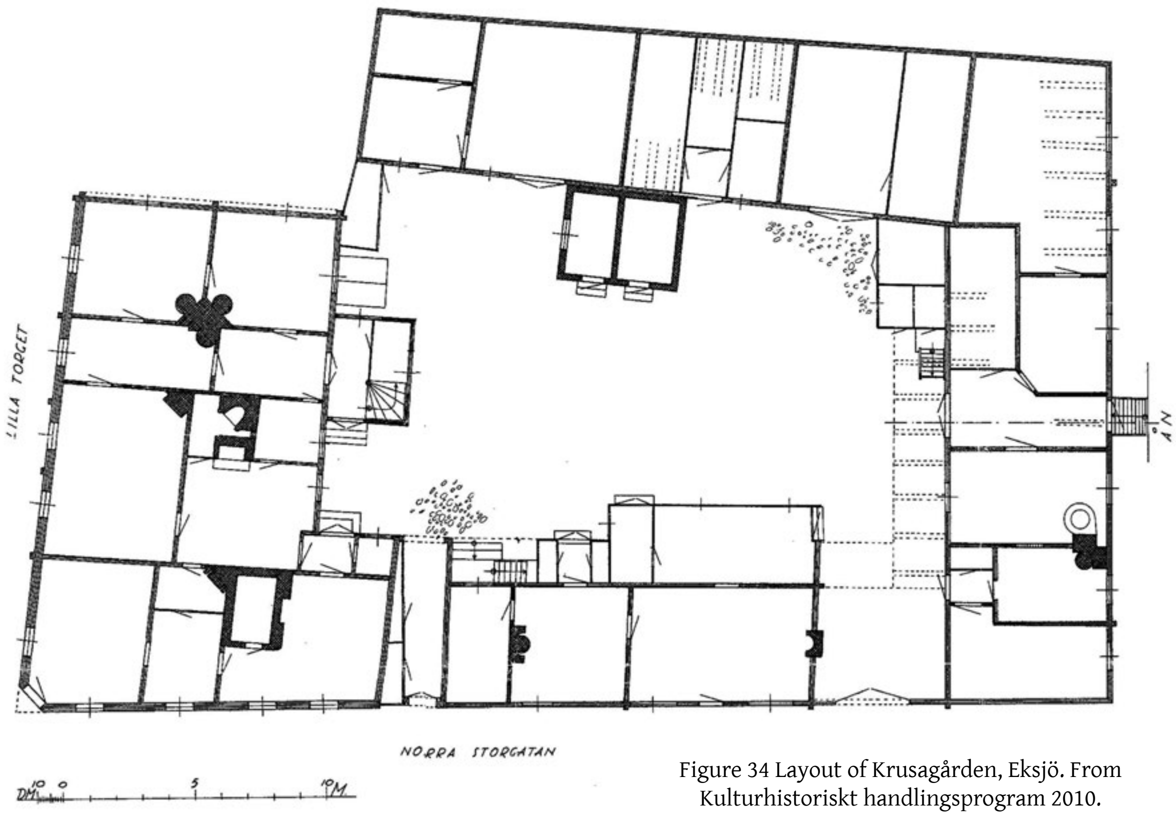


Figure 34 Layout of Krusagården, Eksjö. From Kulturhistoriskt handlingsprogram 2010.

crafts related to the burgage plot; a distillery and a jail in the 18th century, and later, a tannery, with large barrels buried in the courtyard, during the 19th century (Agertz and Grandelius 2003: 24).

Dendrochronological samples were taken by Lennart Grandelius in 2002, four (possibly five) samples, F3-F7, have a felling date in the 1690s, one from 1624, F1, which was taken at the gable towards the tunnel entry, and another from 1605, F2, taken from an inner wall on the ground floor. The two older samples might have been re-used timbers, all the samples were pine (Linderson 2002b). Unfortunately, the report did not say where the samples, F3-F7, were taken in the building, or from what floor.

The timber came from various places; F1 was sourced from Uppland, F2 came from the same place as the timber from the block Kassamannen 3, and samples F3-F5, F7 came from forests north of Eksjö; meanwhile F6 came from Södermanland (Linderson 2002b).

Krusagården is a typical burgage plot with the residence towards the street and the outbuildings accessible only through the inner courtyard. The dated timbers point towards the construction of the house towards the end of the 17th century. However, the timbers originate from several areas of woodland geographically spread over a vast area of central Sweden. There is an open balcony in place today, yet, it is unclear whether there was one in the past. An archaeological investigation might clarify that.

Vinskänken 2

The burgage plot *Vinskänken 2* is a jettied building in two storeys built of pine in a log-timber technique (Figure 35). Sampling for wood cores for dendrochronological analysis has been conducted in the attic at two occasions; in 2016 by Grandelius (Linderson 2016) and in 2018 by Nilsen and Grandelius (Hansson and Linderson 2018h) and one sample of a door frame in the cellar by Grandelius in 2016.

The samples from the attic suggests that the timbers were felled between the years 1818-1841, 1829-1848 most probably during the period 1818-1829 with a gradual renewal of some building parts over the years, according to the dendrochronological reports (see above). The doorframe had timbers felled in the winter of 1587/88 with the oldest year-ring from 1362±10 (Figure 36). Meaning that the pine tree was established just after the Black Death. Eksjö as a town was moved to its current location in 1586, during Johan III's reign, and the doorframe was constructed in the years following the move. All the timbers were taken from a local forest.

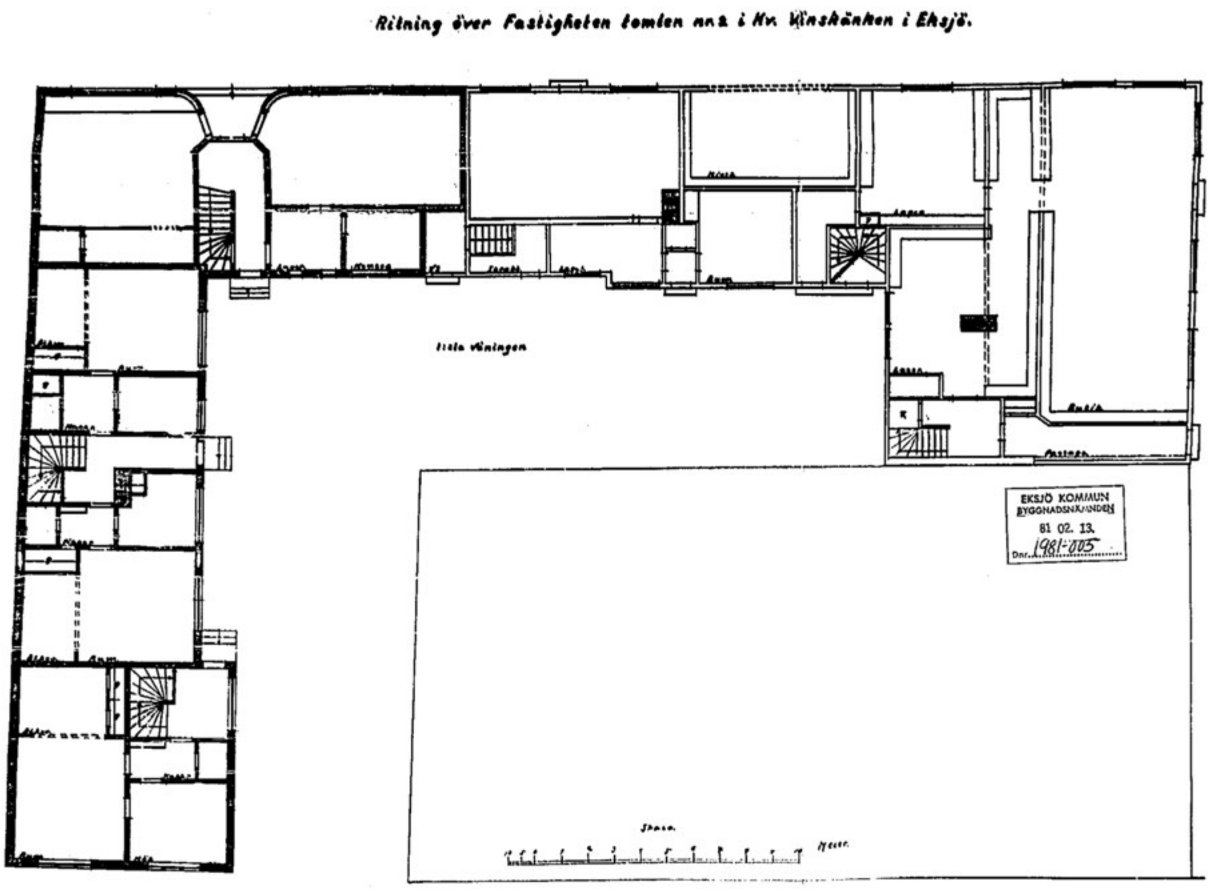


Figure 35 The layout of Vinskänken 2, Eksjö. Lennart Grandelius

Figure 36 Lennart Grandelius showing on an imprint on a door in the cellar. A painted ceiling on the first floor, Kv. Vinskänken 2, Eksjö. Photos A. Nilsen

The samples can probably be seen as cluster sampling from the building pointing to a long building history with the attic added quite late in its existence (Linderson 2016). More samples on the lower floors would clarify this. The flat on the first floor had a beautiful painted ceiling and on the ground floor, there is a shop.

Vinskänken 2, is a jettied two-storey building with the attic, at least, having been constructed at the beginning of the 19th century. How old the cellar and the ground floor were has not been yet established. It could well be that old timbers and the doorframes were re-used, or it could, instead, be a very much older ground floor. It is an exciting building for sure.

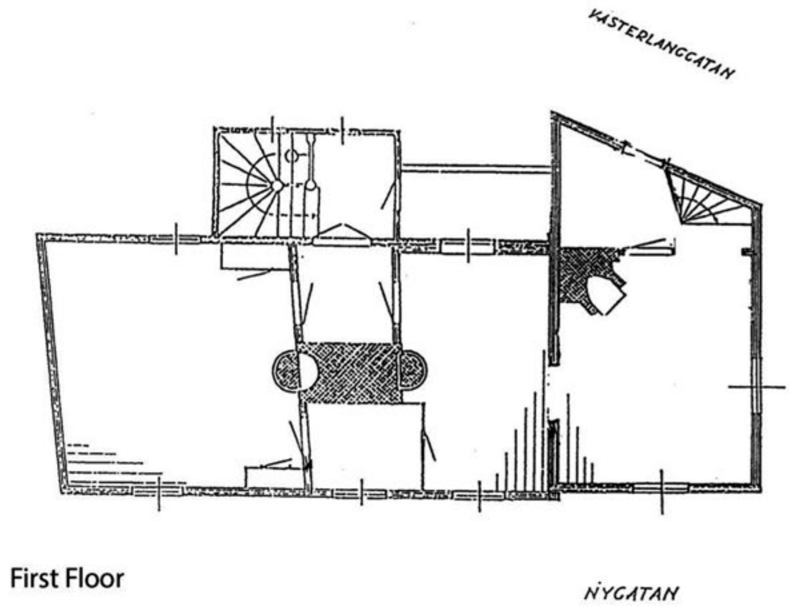
Boktryckaren 9-10

There are two, two storeyed houses at *Boktryckaren* 9-10, that Lennart Grandelius has taken samples for analysis from and subsequently generously shared with me. For clarity, let us call them *'the corner house'* towards Västerlånggata and Nygatan, and '*the street house'*. situated on Nygatan (Figure 37). The dendrochronological analysis shows that they were built in two phases with felling of the pine timbers in the winters of 1688/89 and again in 1831/32 (Eggertsson 1997).

The corner building was originally a one-room house with a corner fireplace and a vestibule (the latter most likely added later), the entrance to the house was situated on the gable-end towards Västerlånggatan (Figure 38). In the vestibule there is an internal staircase leading up to the first floor, where there are also traces of a former window on the gable-end of the room towards the vestibule that would enhance the theory that the vestibule, was added later. All the dated timbers from the ground floor were felled in 1688/89 in this part of the house.

The ground floor in the street house has not been dated. Nevertheless, the layout shows a front entrance at the centre of the sidewall fronting onto the street, leading into a hallway with doors to a room on either side. To the right of the entrance there was a chamber with a

Figure 37 Boktryckaren 9-10, Eksjö. Photo by A. Nilsen



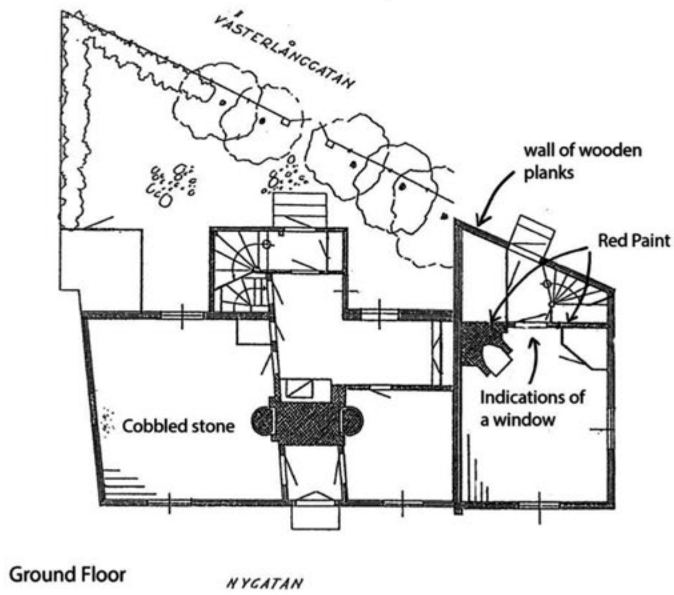


Figure 38 The layout of Boktryckaren 9-10, Eksjö. Lennart Grandelius.

ceramic stove and another door leading to a kitchen with a fireplace facing the back of the house. On the left side of the front entrance, there was a larger 'main' room/parlour with a ceramic stove. This room also had another door leading into to the kitchen to the back. The kitchen has an L-shape and leads on to the stair to the upper level of the house and a backdoor leading into a porch and the garden towards Västerlånggatan. Thus, there was a circular layout to the ground floor.

The layout of the first floors in both houses replicate the layout of the ground floor minus the front entrances and back entrances. The kitchen is missing from the first floor in the street house. The timbers of the first floors in both houses have been dated to 1831/32 with one sample from the sidewall of the corner building dated to 1847 (possibly from a later repair). The results of the analysis can either be interpreted as, a) two single storeyed houses, which had their first floors built at the same time or, b) there was only one single-storeyed corner house at first and when a two-storeyed street house was built next to it, a first floor was added to the corner building as well. The results from the attic give the same date as the first floor in both properties. Without dendrochronological analysis results from the ground floor in the street house the full picture will not be reached.

Boktryckaren 9-10, are two houses with, probably, different building histories. The corner building with an old ground floor from 1688/89 and the first floor added as late as 1831/32. This, originally, one-room house was quite typical for 17th *century urban dwellings and can be found in similar form all the way back to the 10th century towns in Scandinavia* (Linscott and Nilsen 2018)*. It is difficult to say whether the house was used as one residence/flat or two after the upper floor was added. It is comparable with the corner flat next to the tunnel entry in Fornminnesgården (see above). The circular layout in the building and the missing kitchen on the first floor in the street house might advocate for a later building phase for that building, than the corner house with corner fireplaces.*

Analysing the data from preserved storeyed buildings

It turns out that the preserved buildings are a good source of information about early modern houses. Although, many buildings have been through heavy alternations it is still possible to find answers to specific questions. Sadly, urban wooden buildings from the 15th and 16th century are exceedingly difficult to find in Sweden. Nevertheless, some of the buildings had building parts of a very old age. Here follows some synthesized reflections on the data sample.

Dating

Many of the buildings now pertaining to the reserve Gatenhielmska reservatet in Gothenburg/Majorna were built in the 1740s or 1760s, on land owned by the Old Admiralty shipyard and wharf. Only one of the houses, Kullen, originally had one floor, and the first floor was added 40 years later. The other buildings were constructed with two floors from the start.

Smedjegatan 22, in Jönköping was a big surprise. The estimated date was set to 1700 but the building turns out to have been built in 1807/1817. The building on Ulfsparregatan 2, on the other hand, dates to 1730s.

Two of the houses from Eksjö, Vaxblekaren 13 and Krusagården had dates suggesting they were built in one go in 1706-7 and in the 1690s respectively. While the remaining buildings have several dates indicating several instances of reconstruction. Some with parts of the row of houses or perhaps the first floor built in the 17th century, then to be altered or added on to later on.

Since wooden constructions are built with detachable, and often reused building parts, it is theoretically possible to find the first floor to be older than the ground floor. Therefore, all floor levels should be dated.

As demonstrated in (Table 2), these wooden houses have been in use for a long time (the oldest one almost 350 years), thus wooden houses should not arbitrarily be understood as fragile or transitory. Their relevance has been sustained through transforming and reconstructing the buildings over time, thus the whole building history is important when interpreting context and change.

Pad stones and cellars

All investigated buildings had pad stones, there was no clear correlation between the size of the row of pad stones or foundation to the size of the building. Nine of the buildings had cellars, something that should be further researched in the future in terms of type of construction, size, use and location. None of the foundations would have left traces easily identifiable as a storeyed house.

Two houses in Eksjö, Vaxblekaren 13 and Vinskänken 2 are not included in Table 3, they are both heavily reconstructed internally, thus there were difficulties interpreting the historic layout.

Table 2 Dendrochronologically dated preserved two-storey buildings from urban settings. As well as information regarding if the buildings rested on pad stones or cellars.

Province	Town	House	Dendro-dated	Padstones/cellar
Västergötland	Göteborg	Gatenhielmska huset	Ca 1745	Yes/yes
Västergötland	Göteborg	Dahlströmska huset	Ca 1740	Yes/yes
Västergötland	Göteborg	Jedeureska huset	Ca 1761	Yes/no
Västergötland	Göteborg	Kullen	1760/1804-5	Yes/yes
Västergötland	Göteborg	Härberget B	1759-60	Yes, Yes
Småland	Jönköping	Smedjegatan 22	1807/1817	Yes/no
Småland	Jönköping	Ulfsparregatan 2	1730s	Yes/no
Småland	Eksjö	Forssellska gården	1655/1770s/1830s	Yes/yes
Småland	Eksjö	Vaxblekaren 13	1706-7	Yes/yes
Småland	Eksjö	Fornminnesgården	1678/ 1751-52	Yes/yes
Småland	Eksjö	Krusagården	1690s	Yes/yes
Småland	Eksjö	Vinskänken 2	1818-1829	Yes/yes
Småland	Eksjö	Boktryckaren 9-10	1688-89/1831-32	Yes/no

Table 3 Layouts, regarding single- and double row plans and corner and central fireplaces in preserved houses.

Town	House	date	Corner fireplace	Central fireplace	Single row	Double row
Gothenburg/ Majorna	Gatenhielmska huset	Ca 1745		X		X
Gothenburg/ Majorna	Dahlströmska huset	Ca 1740	X		X	
Gothenburg/ Majorna	Jedeureska huset	Ca 1761		X		X
Gothenburg/ Majorna	Kullen	1760/ 1804-5	X	X	X	X
Gothenburg/ Majorna	Härberget B	1759-60		X		X
Jönköping	Smedjegatan 22	1807/ 1817	X		X	
Jönköping	Ulfsparregatan 2	1730s		X		X
Eksjö	Forssellska gården	1655/ 1770s/ 1830s	X	X?	X	X
Eksjö	Fornminnesgården	1678/ 1751-1752	X	X	X	
Eksjö	Krusagården	1690s	X	X	X	X
Eksjö	Boktryckaren 9-10	1688-89/ 1831-32	X	X	X	X

Seven buildings had a corner fireplace (towards an outer wall) and they all corresponded with a single row floor plan i.e. floor plans only one room 'deep'. There were eight (nine) centrally placed fireplaces i.e. located towards an innerwall, they align with eight examples of double row floor plans i.e. two rooms 'deep'. One building, Fornminnesgården, is the only one that has a central fireplace placed in a single row floor plan. Probably, an attempt at modernisation in an older house. Four buildings had both the corner fireplace/ single row floor plan and the central fireplace/double row floor plan. They all correspond to construction dates that point to an older building being rebuilt or modified at a later date, thus a modernisation. While it is also possible to read from the dates that the oldest houses i.e. Krusagården 1690s, Forssellska gården 1655/1770/1830s have the corner fireplace and single row layout, they can also be found in much younger buildings i.e. Dahlströmska huset 1740s, Smedjegatan 1807/1817.

Ulfsparregatan 2, 1730s and Gatenhielmska huset 1745, seem to be the most recent buildings to adopt the central fireplace and double row layout. Thus, these two ways of placing the fireplace and two modes of organizing the space and building practice, seem to exist side by side.

Living space and the layout of the built environment

Other practices that these houses reflect are houses meant for one household or several. During the early modern period, there was an increase in multi-unit structures i.e. several flats under one roof. Thus, flats for rent or private ownership sometimes with some shared facilities, for example Hälleberget A had at an earlier building phase a shared kitchen. Kullen, Dahlströmska huset and Hälleberget A are examples of multi-unit structures in Gothenburg. Smedjegatan 22, in Jönköping might have been divided into flats as well, it was hard to establish though due to heavy alterations of the internal layout. All the buildings from Eksjö appear to have been multi-unit structures. Perhaps not originally, but as the buildings were added onto with more storeys and more buildings, occupation of the burgage plots became increasingly denser.

All the houses, except the block Kv. Bokhållaren 9-10, in Eksjö are examples of houses organised in a row, then slowly surrounding the inner courtyard. The same can be said of Smedjegatan 22, in Jönköping. The Gothenburg material instead yields examples of L-shaped houses with one house facing the side wall towards the street attached to a building with the gable towards the street house i.e. Dahlströmska huset, Jedeurska huset and Kullen. Gatenhielmska huset and Hälleberget A are detached buildings, one a single household and one is a multi-unit structure. Both houses have outbuildings nearby, but not attached. Gatenhielmska huset, Jedeurska huset are upper-class buildings with halls for entertainment and large gardens. Ulfsparregatan 2 is more difficult to assess, it could be either a single household or a multi-unit building. Dahlströmska and Jedeurska huset have small front gardens..

Entries, stairs and balconies

Three buildings have entries at the street front i.e. Gatenhielmska huset (1745), Hälleberget A (1759-60) and Ulfsparregatan 2 (1730). On the other hand, as

Ulfsparregatan 2 has been moved from another block, I cannot comment as I do not know how it was positioned there.

The rest of the buildings studied had entrances towards the inner courtyard, they can be interpreted as more closed off from the public sphere.

Regarding stairs, only Krusagården and Forssellska gården had external stairs or rather open galleries on the first floor; they were also among the oldest buildings in the survey.

Kullen, Jeuderska huset, Fornminnesgården have tunnel entries or covered passageways to the courtyard.

Jetties

Five buildings in total: Kullen in Gothenburg, Ulfsparregatan 2 in Jönköping and Vaxblekaren 13, Vinskänken 2, and Fornminnesgården in Eksjö had jetties. All except Kullen had quite discreet jetties only protruding slightly from the wall on the ground floor. Kullen had what more seemed like a closed gallery instead. The pier holding up the jetty/balcony is the only trace that would have given an archaeologist clues to a storeyed house.

Reflections on the data collection from preserved storeyed buildings

There are a whole range of questions that can be addressed through studies of preserved buildings. The questions that I have raised are certainly only a drop in the ocean. There is a lot to learn but there are also some limitations. One such limitation and disappointment is how seldom storeyed houses would leave traces in the ground that could be helpful for archaeologists in their interpretation process.

Another complication is how to identify multi-unit structures in the archaeological material, they are clearly common in the early modern townscape as demonstrated in Chapters 5.2-5.4. Some ideas regarding living standards and differences between social groups can also come forth from this sort of dataset.

Two houses had a mix of building techniques e.g. Jedeurska huset in Gothenburg was built in log timber technique in the body of the building yet the gables where built in timber-framing technique. Forssellska gården in Eksjö consisted of four attached buildings surrounding a courtyard. The buildings were built mainly in log timber, yet one building had two storeys in post and plank technique and there were several parts constructed in what could only be described as patchworks of vertical and horizontal planks in various techniques, all hidden behind panelling.

There are context-related questions depending on whether the building is in situ or not, and the extent to whether heavy reconstructions should be addressed. Functions in the building in question or elsewhere in the burgage plot could be investigated. In this sample, the houses are presently used as dwellings, a museum, workshops for artists, meeting rooms for various associations, as shops and cafés. Historically though, the houses were used as dwellings, a ropery, an inn, a custody, a ceramic oven workshop and as shops. There are still some preserved outhouses belonging to the same burgage plots as the buildings studied, and as such they would benefit from a separate study in the future.

Ongoing research on the Swedish building stock

The project Houses and households in Swedish towns 1600-1850 (*Hus och hushåll i svenska städer 1600-1850* run by archaeologist Göran Tagesson and, historian, Dag Lindström, have presented a lot of interesting data) with a focus on the 18th and 19th century.[14] They have been examining a large number of historic wooden houses in Linköping and Kalmar, with an emphasis on dendrochronological dating, building analysis, orthophotographic technology as well as the social history of the houses and their residents. [15] They have taken a slightly different approach to the buildings than in this study, but with similar questions. They have compared 'types' of houses to see if they followed a strict pattern or if there where room for differences, while also ideals of style or designs have been discussed. Tagesson and Lindström, have studied how the buildings have functioned both socially and practically in terms of spatial practice and construction but also within the social network regarding households, servants and tenants. The burgage plots have been examined for traces of workshops, dwellings in single households or multi-unit structures i.e. flats. They also discuss the buildings themselves, from dendrochronological analysis, remodelled and preserved buildings as well as storeyed houses. Questions have arisen whether preserved buildings, in open-air museums with extensive areas of historic buildings, such as Old Linköping, with houses that have been moved and remodelled, can be used for research at all. Lindström and Tagesson have then argued for ways to include them in the study. Their project *Houses and households....* has shown an excellent way of studying built environments from the early modern period, with a broad multidisciplinary and inclusive scope.

[14] Göran Tagesson, Arkeologerna http://arkeologerna.com/bloggar/hus-och-manniskor/ 2018-12-21

[15] Other members of the research project are professor Per Cornell at University of Gothenburg and carpenter Mattias Hallgren from Traditionsbärarna.

Gunilla Gardelin is another researcher who has written about the reuse of wood and vernacular architecture foremost in medieval and early modern warehouses and wooden churches on the countryside, in Småland (Gardelin forthcoming).

Other closely-linked questions to the storeyed house are households (see Chapter 1), layouts and number of flats within a multi-unit structure, to further the understanding of town life. A household can mean many things either a larger unit such as a family with live-in staff; it could also mean a widow with children or simply living on her own. It could be soldiers accommodated together with a temporary shared economy, lodgers living with a family but not with a shared economy or a husband and wife with a large family and so on; the list goes on. It was common to rent accommodation and it was common to share room with others. Housing was sometimes scarce and accommodation had to be found where they existed, thus complicating interpretations for researchers today. People often moved within towns.

Conclusions; town living and getting on with the neighbours

Storeyed houses are hard to find within the archaeological record, as well as in the ground, in Sweden. This study has shown that few traces clearly indicate storeyed houses as archaeological remains. Yet, storeyed buildings were ubiquitous in the Swedish early modern townscapes, more so than archaeologist often likes to admit. The houses had many different types of construction, function and appearance. Regardless of whether building remains have been found and identified as those of a storeyed house or not, reports on urban surveys should ideally include at least a comment on storeyed buildings, perhaps only as a reference to a material often missing from the archaeological context.

Going into the preserved houses it is apparent that most of them are indeed multi-unit structures divided into several flats. It is visible through the number of kitchens, the distribution of rooms, the location of internal and external doors and stairs. It is something often discussed in relation to 19th century urban residents but should be considered concerning older urban buildings as well. This is a good indication of the intensification of occupation of the townscape and the increasing number of people coming into urban areas, thus changing the social formation and organisation of the built environment. Town houses belonging to the richer strata of society are also part of the social formation and show glimpses of a different world where dancing, entertainment and social networking were essential.

The most common building technique among the houses in this survey has been log timber constructions. Nonetheless, storeyed houses were often constructed in timber-framing, and post and plank technique does occasionally occur, at times in a mix of techniques. There seem to be a freedom to build with whatever the carpenter had at hand and not necessarily follow a specific technique when the outer wall was to be covered with panelling, as seen in the Eksjö example from *Forssellska gården*. Gothenburg stands out for the use of spruce rather than pine in log-built structures while the reuse of timber seems ubiquitous.

The layouts of the buildings have either a circular plan, which is a new way of organizing the inner space from the 18th century onwards, with rooms placed around a central chimneystack i.e. the double floor plan, often these plans also includes the kitchen as a separate room. Some houses had a hall and room for polite entertainment, but most houses did not have room for such activities. The other older type of floor plan is where the rooms lie in a straight line with typically a front room/vestibule, a main room/parlour and a chamber.

The rows of houses are important parts of burgage plots, and the discussion on storeyed houses. The density has slowly increased within the plot as the various ancillary buildings have multiplied and additional storeys were added. Detached houses have in this way been incorporated into rows of houses, finally surrounding the courtyard completely, with access only through the covered passageways.

When the stairs were moved indoors archaeologists lost one of the keys to identify the storeyed house. When it comes to the foundation, not much is needed for erecting a wooden building even of two floors, a simple row of sill stones or even just four stones, one in each corner, are sufficient. When the foundation is more robust other needs or reasons are probably behind that particular choice. It is worth noting of how few concrete identifiers could be found within this micro study that potentially could aid archaeologists in their interpretations and search for storeyed buildings.

Notably there was a large number of fireplaces and ceramic stoves, suggesting a high consumption of firewood. Of the thirteen houses in the survey there were eight with stone cellars. Five of the houses were built in one storey first, with the first floor added later. Eight houses were built in two storeys from the beginning. These numbers can vary a little since the building, could have been two houses originally merged into one, with slightly different histories.

Ancillary buildings have not come into this survey despite often being two-storey buildings. There are not many period outbuildings left and those that exist are often heavily altered, but that is something that might be interesting to pursue in a future study.

Balconies have unfortunately not been a big part of this survey, the example from Forssellska gården was erected in the 19th century. Finding the storeyed house in the archaeological material is a challenge and will continue to be so.

The main point that I wish to make is that these buildings 'hide' in plain view within the surveyed building stock and archaeologist must be more willing to think of buildings in a vertical sense and additional floors. The acknowledged presence of the storeyed house cannot be limited to the times certainty and material evidence can be found; it needs to be brought into the discussion in all urban surveys.

6.2 Life on the margins – buildings and living environments in the urban centre and periphery

This section aims at highlighting some of the intricacies of the social and economic organization of life and the built environment inside and outside of the city limits. Urban archaeological deposits outside the city boundaries are seldom investigated archaeologically in Sweden due to current legislation; therefore, historical sources are explored, such as probate inventories and fire insurance records.

Operational approach - the case of Gothenburg and Majorna

In the previous chapters (5.2-5.4) the inner-city building stock was discussed through an interdisciplinary approach, while section 6.1 investigated buildings both within and outside the city limits.

Gothenburg in the 17th and 18th centuries was a heavily fortified town, circumscribed by walls in addition to a moat. Access to the city came through the city gates and a guarded harbour front. However, two settlements outside the moat also existed within the city limits: Haga with a fortlet or sconce and a settlement; and Masthugget with a harbour and a settlement. Yet, immediately adjacent to Masthugget another settlement had been established, Majorna, connected to the Admiralty and the deep water harbour for international traffic. The suburb Majorna, belonged to another jurisdiction and was not part of the city of Gothenburg. The densely settled suburb was therefore not credited as urban even though the size of the population would have warranted it, even Cederbourg (1739: 83) called the area similar to a small town with beautiful houses and blocks of flats.

In this micro study, I will compare the building stock inside the city walls of Gothenburg with the houses directly outside, in the suburb of Majorna. Since there is no archaeological data on the building stock and living environments from Majorna, this will be a strictly historical investigation using probate inventories and fire insurance records to compare the two areas in question.

This study is based on a project regarding questions of centre and periphery with archaeologist, Martina Hjertman. We have been working on issues of marginality and stereotyping, as well as the difference in

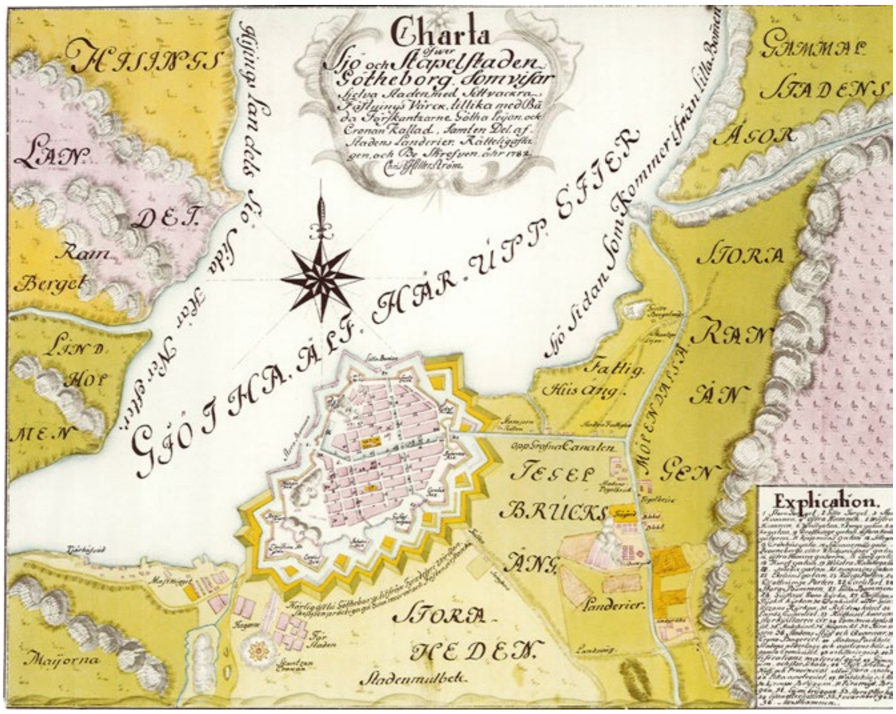


Figure 1 Map of Gothenburg within the moat and the periphery in 1782; Haga, Masthugget and Majorna. (Charta öwfer sjö och stapelstaden Göteborg) By Christ. Hillerström.

archaeological knowledge between areas mostly inside as opposed to outside of former city gates (Hjertman and Nilsen 2014; 2015). The understanding of circumstances and the true economic and social base can never be fully reached if agriculture, and various areas of productions i.e brickworks, mast making, glassworks and iron pot foundery and consequently living in urban areas outside of the city gates are not incorporated in research. The law regarding archaeological investigtions in Sweden, seldom includes areas like Majorna (more on this later in this text) even though the area has been vital for the success and prosperity of Gothenburg. To remedy the lack of knowledge due to legislation on archaeology, other data have been studied that has relevance to the physical space, materials and conditions of outskirt areas. We have gone through probate inventories and fire insurance records to understand more of the historic conditions within the appointed areas. We have assembled data and gone through archival records together but the analysis of the historic documents have been done individually resulting in two chapters in our respective doctoral works with slightly different themes.[1] Hopefully, these discussions will thus paint a broader picture of the issues at hand.

The marginal centre and the central periphery

Centre, periphery and marginality are loose concepts that can be difficult to pinpoint since they tend to change depending of from whose view it originates. The centre and the periphery often refer to geographical places but they can also have social connotations. Marginality has a stronger connection to social issues such as lack of power, access to resources or a voice in the community but it can also be a geographical place in the margins or fringe of society, homelessness perhaps being its most prominent form.

This text focuses on Gothenburg and its city centre with the town council as well as the magistrate and as the power base for the commerce and the international financial network of the district. Majorna, Haga and Masthugget are representing aspects of periphery and marginality both geographically and socially (Figure 1). It is on the other hand possible to see Majorna and Masthugget as the centre for shipping, global connections on a social level and as a hub for the available work force.

Haga and Masthugget were part of Gothenburg from the beginning i.e. city formation, despite their location outside the city gates. Haga as part of the fortification and situated next to the fortlet *Skansen Krona,* and Masthugget for the harbour facilities. Haga was seen as a temporary residential district that would be torn/burnt down in case of war; hence, a large number of tenement households occupied the area (Cederbourg 1739: 76). Haga was created as an area for growing vegetables and food production for the citizens of Gothenburg (Scheele and Simonsen 1999: 21). Food was of course also coming in from the urban hinterland(Palm 1998). Masthugget had lots of sawmills and timberyards down at the harbour since Gothenburg was a great exporter of timber. Another important product from Masthugget was masts for ships, which gave the area its name. In the early 18th century, Haga and Masthugget could be nice places to live and it was not uncommon for ship captains to live in this area close to the harbour, such as Captain Daniel Shierman,[2] ready to set sail with the tides and not hindrerd by the opening hours of the city gates. There were several large gardens and big houses in Masthugget, Haga and Majorna. Most of the staff belonging to the Admirality were stationed/living in beautiful and decorated houses in Masthugget or Majorna according to Cederbourg (1739: 83).

At the beginning of the 18th century Majorna was sparsely inhabited and mostly rural but some larger estates with big gardens could be found such as *Hviloplatsen/Söderlingska trädgården* belonging to Carl Bagge (1754-1818) who lived in Gothenburg, but used the estate as a summerhouse. The house burned down at the beginning of the 19th century but the garden is still in use today.[3] The townspeople used the area recreationally and came to *Slottskogen*, a forest owned by the crown in Majorna, for walks and picnics (Cederbourg 1739: 76, 80; Scheele and Simonsen 1999: 23) much as the forest/park continues to function nowadays. During the second half of the 18th century Majorna grew exponentially drastically changing its residential make up and character bringing complex social issues of marginality with it as will be discussed later on. Cederbourg's description from 1739, and previously that of Sirenius in 1737 (Scheele and Simonsen 1999: 23) paint, conversely, Haga, Masthugget as well as Majorna in bright colours and positive words.

The analysis of building environments in the marginal parts of the city centre as well as the peripheral areas surrounding the town will be based on a variety of historical materials to capture social practices and to some extent individuals with a comparative method. Combining archaeological sources and historical written sources is not a new concept in historical archaeology, neither in a Swedish context (Jeffrey 1984;

[1] 'Urban Marginality- ...' a preliminary title on Martina Hjertmans thesis.

[2] Daniel Shierman Captain, in the East India Company, Sävedals häradsrätt FIIb:1, Bouppteckningar (1735-1788) Bild 121- 129. Probate inventory 4.11.1766

[3] Göteborgs gatunamn, Carl Sigfrid Lindstam, Göteborgs Kommuns Namnberedning, Göteborg 1986 ISBN 91-7810-577-3, s. 280. Det forna Majorna, [andra upplagan 1940], Axel Rosén, Göteborg 1938, s. 171, 202ff. Hus och människor kring Pölgatan - en krönika om Gathenhielmska Kulturreservatet i Majorna, Sture Larsson och Lars Olsson, utgiven av Föreningen Gamla Majgrabbar i Göteborg 2007.

Rosén 1999; Tagesson 2014), nor in other countries such as the United States where Beaudry (2017), Mrozowski (1999) and Orser (2011) for example have worked extensively with probate inventories and material culture connected to social diversity. Matthew Johnson (1997; 2010) has used similar methods and materials researching the British early modern built environment.

The micro study approach, assembling a number of specific examples of fire insurance records and probate inventories from the investigated areas will help contextualize and personalize the individuals, buildings and places. Without actual archaeological investigations in the periphery, these historical records can help answer some of the questions regarding housing, the city- plan and social diversity. Historians have worked with materials connected to social history in different ways; Holmlund (2013) followed a poor woman's path through a flawed social security system in the 19th century and how it affected her life. Ahlberger (1996) has studied probate inventories as a way to discuss consumption habits, and more recently Andersson (2006) has used the same to find information on clothing. So far, fire insurance records seem to have been favoured by antiquarians and architects (Blomberg 1991) because of the ample descriptions of external and internal designs and the building techniques of particular historic houses. This information can also help recreate building construction phases and trace ownership. However, some archaeologist have started to find this important material to be of use (Carlsson and Svensson 2015; Fennö 2006; Tagesson 2016; Tagesson et al. 2017).

Probate inventories give names, addresses and time of death as well as a view of ownership, materiality and wealth and in many cases an indication of social vulnerability. The selection is based on persons owning property, or real estate. There are different questions regarding what kind of living arrangements the probate inventories disclose: was the property in sole ownership or co-ownership; single family households or flats in a tenement block? Was there access to a well i.e. drinking water within the plot? The reading of the historical probate inventories will focus on spatial, material and social matters. The probate inventories are not directly comparable or exchangeable with archaeological material from the same plot. Some items might appear in both contexts but most will not. The sources belong to different parts of the chain of disposal for material goods as they pass through the hands and lives of people. It is important to understand that not everyone is represented in probate inventories: basically, to qualify, a person had to own something. There was also a cost involved, both to the registrar as well as a poverty tax, which did not hit everyone the same. It could in fact be a trivial sum to some people but could be a substantial amount to others depending on the state of the affairs of the deceased, since even the most destitute had to pay it. There are a lot of people that fell through the cracks of the system and therefore are really hard to find through records of ownership, although they could perhaps be found through the magistrate's records or employment records of various kinds.

Fire insurance documents give detailed information about types of houses, measurements, the state of repair, number of floors as well as data on how many rooms had heating; the layout of the buildings, number of outhouses and the total worth among other things. The estimated worth can give an indication of how equivalent houses were valued in accordance with the location/district in the centre and the periphery. These documents also inform of the readiness to handle fire with information on such topics as access to water and fire equipment. In historical records (of all sorts but here mainly referring to governmental or magistrate records) the connection made between wood constructions and urban fires is very strong and often repeated, which is why it is interesting to include this question in the discussion (Houltz 2016). This material gives very detailed data about the part of the buildings that the archaeological sources lack and the archaeologist needs more knowledge about, which is everything above ground. They also give information on things archaeologists do find, such as baseplates, wall constructions, layout. Conversely, most of the houses presented in this chapter are today, probably, remnant structures in the ground. Again, fire insurance was not something that everybody had, there was a cost involved (as always with insurance) and not affordable for all. Another aspect is whether a building was in good enough shape to be considered insurance worthy.

There is a total of ten insured properties in Majorna in 1795, all of which have been included in this study. From Gothenburg, 19 fire insured properties between the years 1800-1804 have been located through Olga Dahl's work, ten of which had enough information to be analyzed.[4] Clearly, these records only represent a mere fraction of the building stock.

Fire insurance companies and the city fires

Brandförsäkringsverket (the Fire Insurance Company) was founded in 1782 after the king, Gustav III, had decided to make fire insurance available to the public. *Göteborgs brandförsäkringskontor* (Gothenburg's Fire Insurance Office) was founded in 1792 and *Göteborgs*

[4] Östen Dahl, www.gbgtomter.se copyright Olga Dahl. A database on all the plots and plot owners within the fortifications in Gothenburg 1637-1807

Nya Brandförsäkringsförening (Gothenburg's New Fire Insurance Company) was founded in 1829. It has been possible to locate fire insurance records for Majorna, the earliest records are from 1792. However, for the properties within the city of Gothenburg the records seem more scattered within the archives and the earliest insured property that I could find was from 1800. Thus, the outskirt building stock seem to have been insured before the houses within the city limits.

Six detrimental city fires caused a lot of damage in Gothenburg between the years 1792-1813. In 1792, 110 houses were destroyed and 600 families became homeless. These numbers are horrible but also interesting because it seem like a very large number of people lived in those houses, 5,45 families per house. Yet, it is difficult to know what is meant by the unit 'family' (further discussed in Chapter 1). In 1793, there was yet another fire leaving only three houses intact on Kvarnberget (a hilly and marginalized unregulated part of Gothenburg), and one 400 persons became homeless. The year after, in 1794, the city district Nordstaden burned down losing 84 houses. In 1802, 180 houses were lost in another fire causing homelessness to 3000 persons. In 1804, yet another 218 houses burned on Stora Otterhällan (another hilly and largely unregulated part of town) and finally the fire that has been named as the last of the big urban fires in Gothenburg devastated 96 houses along Sillgatan, in 1813 (Bæckström 1923). These are thus evidence that both the regulated and unregulated parts of town were hit with fires regardless of the city plan. Large numbers of people had to be rehoused for a long period of time and with short notice, often after having lost all their possessions, property and livelihoods in the fire. Thus, in 1792 there were 5,4 person per house while the number increased to 16,6 persons per house in 1802. That is a rather big change. Probably due to the fires forcing people to move into the fewer remaining buildings, partly due to people transferring from the countryside to the cities at this time and perhaps also the multiunit house played a part. Conversely, Majorna (a dense harbour community outside the city walls) was not subject to a widespread fire until 1862.

It is easy to see what inspired people to buy a fire insurance but perhaps also why some people could not afford to. There was a very large number of empty/vacant/burned out (whatever one should call them) plots due to these fires. It would have seemed almost pointless to rebuild after the third continuous strike. The aftermath of the fires must have produced very densely populated environments in the parts of town not hit by fires, while the rest of the town was apparently laid waste and unoccupied. Perhaps the continuous fires were also partly responsible for or inspiring people to resettle, for example, in Majorna or other outlying areas near the town.

A possible contributing factor to the widespread impact of the fires might have been the ample use of plank-walling because every time a plot was devastated the magistrate implored the owner to fence off the area (Bæckström 1923: 12). The fire could thus easily follow the plank-walling between every plot in the district over and over again. Had the burned-out plots been left without the fences, might the fires not have spread as quickly and as comprehensively? Admittedly, this is my own theory.

Law making and land use – planning for social separation

Gothenburg was developed as the key harbour town for Western Sweden and was in many aspects a prestige investment by the government.

Entering the early modern town of Gothenburg was to enter a fortress. There were four main city gates, and beyond these gates, the tollbooth could be found (Bengtsson 1999: 57–63) (Figure 2). There were further obstacles to pass: the moat separated the town from the surrounding area. High city walls protected the citizens from gunfire and intruders. There were also two rocky outcrops within the city walls that formed part of the fortification, Great and Little Otterhällan (Little Otterhällan was also called Kvarnberget). These two hills did not have a regulated town grid, settlement was allowed but with the reservation that the houses would be demolished if the town was attacked. The outcrops would then be used for military purposes. A bar, or boom, was lowered into the water during the night to protect the harbour from trespassing ships at the city gates on the riverside of the town (Cederbourg 1739: 36, 77; Scheele and Simonsen 1999: 18) in two places called The Great and Little Boom (Stora and Lilla Bommen). A schedule was to be observed for the opening and closing of the city gates, so that if someone missed the closing they had to wait outside until morning. It also meant living with a permanent presence of the military who made up 17 % of the population of Gothenburg in 1750 (Hallén 2018: 198); it was common for taxpayers to put up soldiers in their homes as a form of taxation (Scheele and Simonsen 1999: 121). The high walls must have affected the flow of fresh air within the town and the amount of light some houses would get, especially in the streets closest to the walls.

There was a lottery, connected to the distribution of plots for newly founded Gothenburg, at the town hall in Nya Lödöse on the 18th of June in 1621. The lottery regarded three types of houses; those who wanted to build stone houses received the best plots by the square and the main streets. Another option was to build wood houses with a stone façade, these houses were appointed plots along the regular streets and canals. The third possibility was to build wood houses and those were to be placed in the back streets. It turned

Figure 2 The toll booth and city gate at Carlsporten 1787, Gothenburg, with the harbour in Masthugget in the background. Elias Martin (Public domain, no known copywright)

out that most people wanted to build wood houses with a stone façade, because they wanted easy access to the water from the canals. A number of noblemen wanted to build simple wood houses on the back streets, to be used as overnight lodgings during short visits to the town (Bæckström 1923: 11). The magistrate who wanted them to build palaces similar to the ones in Stockholm did not appreciate this. This sort of preplanning of urban development that signified the foundation of Gothenburg did not occur in Majorna even though some attempts and suggestions were made.

Behind the successes of some the leading men who were mainly merchants and such in Gothenburg, there were other realities to account for, whose lives and living environments are largely forgotten. Behind the facades of public buildings and squares were the residential quarters of workers and their families (seen on the cover of this book). Thus, parts of the Gothenburg city centre also formed part of the marginal and the peripheral centre.

Cederbourg wrote about Drottninggatan as the narrowest and most densely populated street in Gothenburg with smaller plots than the rest of the town (1739: 37, 39). Sirenius said (in 1737) that there was no need to create streets, or name them, on the hilly parts of town (Otterhällan and Kvarnberget) since only poor people lived there (Scheele and Simonsen 1999: 27, 32)

The circumstances behind the rapid growth of Majorna

Per Hallén (2018: 194–98) discusses the economic development of Gothenburg in the 18th century where iron and wood had been, and continued to be, the most important export products (Cederbourg 1739: 131–33). Imported goods such as textiles, tea, coffee and raw sugar among other things were a good source for work for people in the area (Cederbourg 1739: 136–39). Two major changes to the economic platform of the town came in the form of the great herring fishery and the earnings and goods from the Swedish East India Company. These changes also brought new need for a better, deeper and bigger harbour than the one in Gothenburg. Improvements were made to the existing deep-water harbour, at the old Älvsborg castle/town long-since abandoned. Hand in hand, with the increase in shipping, there was a need for a bigger work force and the workers needed a place to stay. This brought about a rapid development in 1775-1800, of the area around the harbour to the west of Gothenburg. The districts of Majorna and Kungsladugård were part of the land previously belonging to the royal castle of Älvsborg, which, at the time of development, was intended as salary for the county governor who collected the surplus from farming (Hallén 2018: 201).

'In 1746 only about 100 people lived on the land belonging to the state demesne. By the year 1815 close to 7 000 lived in the area. It was the 5th largest town in Sweden, only not a town in formal meaning. In 1763 there were 183 plots of land leased out to companies and private persons in 1772 that had increased to 199 and 236 plots of land in 1786. Almost everyone was leased from the county governor. But an increasing number of tenants did sublease to other families.' (Hallén 2018: 203).

Hallén (2018: 207) points to the problem of taxation in poor communities like Majorna. There was little revenue to be collected within the parish when a large part of the population depended on seasonal work within the shipping industry. Only a town could tax the shipping so Majorna (being simply a parish) was left behind, while business was booming in Gothenburg.

Thus, there were a number of different aspects of control and spaces: economic, geographical, social, and political; along with spaces in nature: of energy and flow and so forth are multisectional and complex in their nature. They all form part of a composite spatial field of social practice (Lefebvre 1991a: 8). Majorna suffered from a lack of economic and political control over the flow of produce, money, strategies and general say so concerning their own situation.

Early on, in 1716, there was a suggestion for a city plan for Majorna by Johan Eberhard Carlberg. This was when there were still only a handful of buildings in the area. However, the plan with its regular street pattern was never realized. Instead the area was held back by the city council in Gothenburg, not willing to have a competing town so close by, and with a superior harbour at that (Hallén 2018).

The geography of the landscape, where the harbour being the major contributing factor to the development and affluence, influenced the living environment. The geography, conversely, also became connected to a negative social understanding of the area as well as of its inhabitants. The buildings spread out in an irregular pattern over a hilly landscape. Most of the populace were workers connected to the harbour and tenants rather than plot owners. These circumstances formed part of the overdetermination (Lefebvre 1991b) i.e. the non-urban lable and not being urban or an urban place ended up affecting many people's lives through an underdevelopment of the area.

These issues turned out to be long lasting and difficult to overcome (see discussions of the demolition frenzy in Chapter 2).

Homes and living environments in the centre and the periphery.

To gain a better understanding of these two areas, inside and outside of the city limits, and their respective living

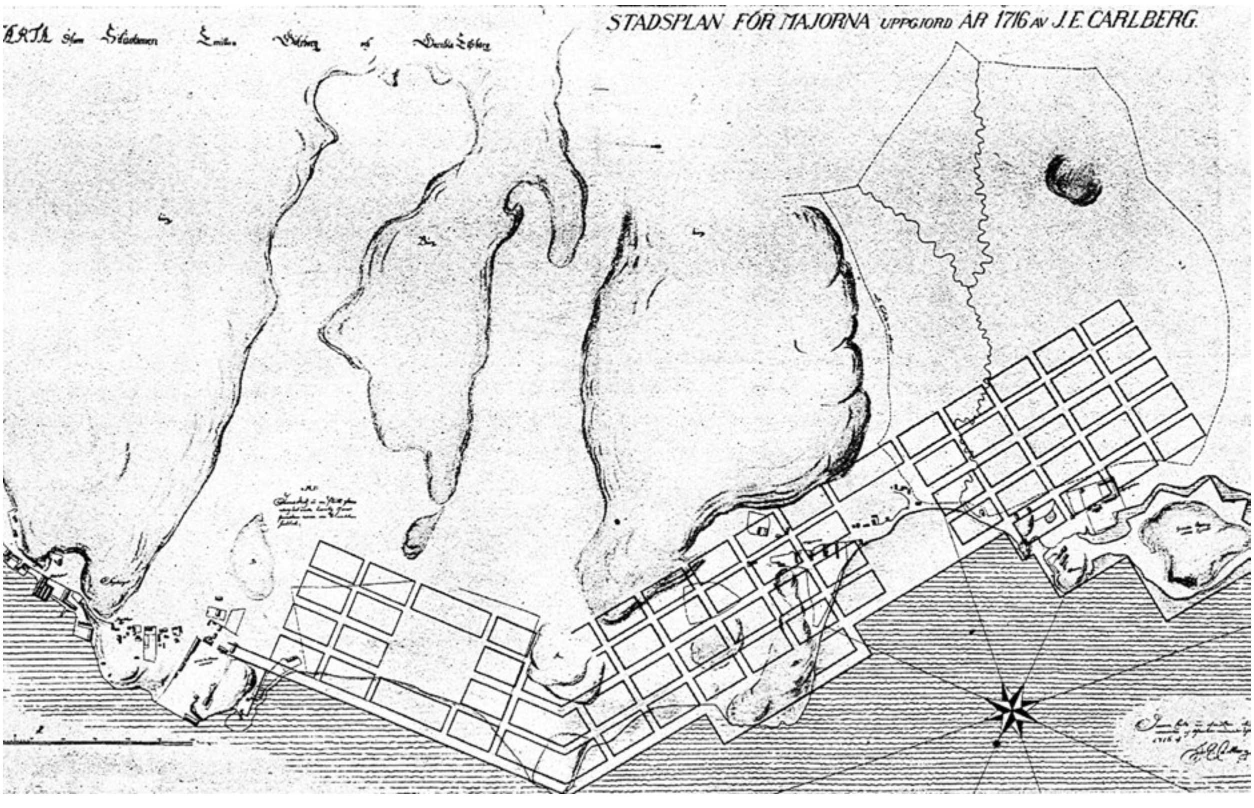


Figure 3 A city plan/suggestion for the regulation of Majorna, 1716 by Johan Eberhard Carlberg. Public domain, no known copyright.

environments, a number of probate inventories and fire insurance records will give information of homes and economic platforms. Instead of prolonging the stereotypical image of these areas, the micro level will focus on individual cases.

Probate inventory records and ownership

The focus of the probate inventories are for the purpose of this discussion on real estate, or land, and not household goods, to compare with information from the fire insurance records on buildings and property. These probate inventories have been selected randomly from 1795, in Gothenburg, with the only criteria that real estate is mentioned.

R (Rd) = Riksdaler a historic monetary unit

Plantage & landeri = working estate producing farm gods for the city on city land

Rote = a geographically assigned/ postal ward, larger than a block but smaller than a city district

Figure 4 Glossary

Descriptions and estimated worth of properties within Gothenburg in the probate inventories from 1795 (Figure 4).

These probate inventories (Table 1) gives examples of people owning properties both inside and outside of the city gates, using the property outside the walls for cultivation. There are also a number of burnt-out plots from the frequent urban fires in Gothenburg. Not much of worth seems to be left after a fire and the devastation must have been gruesome, at least as much financially. Although, even debris after fires can have some value, perhaps as firewood or as hardcore for building. There is a vacant plot mentioned, which is another urban phenomenon, a long time could pass before a plot was rebuilt after a fire and at times there were a lot of these empty spaces within the city plan. Some workshops such as a bakery, a smithy, a ropery and a shop give evidence of some activities within the plots. These are mostly properties of workers and their properties' respective values give some indication to their social standing. Properties could be owned in parts, that is part of the

Table 1 Probate Inventories from 1795, Gothenburg. (Bouppteckning, Göteborgs Rådhusrätt och Magistrat före år 1900 EIIIa:35).

Reference	Owner	Property	Worth
EIIIa:35 (1795-1796) bild 240/ s463b	Uhr Fabriceuren/ clock maker Lars Simson	House and property, on Kyrkogatan 3 rote No 57. + A plantation with house and garden situated outside the city gate in the 11th rote under No 85 (which seem to be in Masthugget)	1252,16 rd 2256,16
EIIIa:35 (1795-1796) Bild 65/ sid 115b	Skräddaremästare/ Master Taylor Johan Frölanders wife Madame Margaretha Frölander	A burnt out plot, in the 10th rote on Qwarneberget, No 42 24 ½ell long and 13 ½ell wide.	33,16 rd
EIIIa:35 (1795-1796) bild 378/ s 731	Skomakare/ cobbler widow Madame Bromans	A house situated under No 37 at Magasinsgatan close to the Ropery	450 rd
EIIIa:35 (1795-1796) bild 379/ s 733	Handelsman/ Merchant Claes Peter Odenüs wife, Madame Gunnur Odenius	A house and property at Kyrkogatan No 66 + A vacant plot at the same street, No 75	833,16 rd 83,16 rd
EIIIa:35 (1795-1796) bild 175/s335	Bagaremästare/ Master baker Magnus Dahlgren	House and property at Sillgatan with a bakery, No 21. The purchase included 2/3 of the plot and 1/3 of the buildings. One room with a shop towards the street, a porch, a room, a kitchen and a bakery.	1216,32 rd
EIIIa:35 (1795-1796) bild 211/s409	Gunne Björkmans widow Maria Björkman	A burnt out plot in the 3d rote on Kyrkogatan.	83,16 rd
EIIIa:35 (1795-1796) bild 173/ s331	Klensmedsmästaren Swen Hangström	Half of a house and property at Sillgatan No 8 in the 7th rote. The purchase included the first floor and a smithy in the backyard.	200 rd

Table 2 Table of probate inventories from Majorna 1803-1806 showing properties.

Reference	Owner	Property	Worth
FIIa:14 Ver:a (1803-1806). Bild 406-411	Sjö-Militie Commisarie J. G. Lyckå	2100 acres² plot No house description but leases out rooms.	666,32 rd
FIIa:14 Ver:a (1803-1806). Bild 412-415	Tractören Emanuel Bafaljer	The croft Djurgården at Kungsladugård 2 storey building with a small garden	300 rd
FIIa:14 Ver:a (1803-1806). Bild 431-433	Nils Lundgren	The croft Lale Elfsborgs Kungs Ladugård no 29. 1966 ¾ell² plot, house with 4 rooms, kitchen, attic, wood shed and cabbage field	300 rd
FIIa:14 Ver:a (1803-1806). Bild 454-457	Coopvaerdie Capitaine Abraham Bolins widow Christina Bolin	The croft Siarius no 10, Elfsborgs Kungs Ladugård. 300 ell². House with a kitchen and 3 old wood sheds	33,16 rd
FIIa:14 Ver:a (1803-1806). Bild 462-466	SjöTulls Wacktmästaren Isaac Lundberg	House and plot/farm in Elfsborgs Kungs Ladugård, No 232. The house had 3 rooms, 2 kitchens, 3 wood sheds, a byre for 3 cows, a cabbage field. 1779ell². Yearly payment to Mr Director Franchel	200 rd
FIIa:14 Ver:a (1803-1806). Bild 467-469	Timmermannen Johan Hindric Grimberg	House no 11 in Elfsborgs kongs Ladugård. With 3 rooms, 2 kitchens, an attic and a small field.	133,16 rd (?)
FIIa:14 Ver:a (1803-1806). Bild 500-504	Hökaren Anders Landgren	House and plot on Sågängen in Elfsborgs Kungs Ladugård House and plot Tronen in EKL House and plot Stenhyttan in EKL Undeveloped land along Kärret and Långemåsen on EKL	666,32 rd 516,32 rd 516,32 rd 100 rd
FIIa:14 Ver:a (1803-1806). bildid: C0108403_00 509-00520	Capitainen at Flottarnes Constinctions Stat Carl Arfwid Pettersson	House no 226 and plot of 5781 ell².	
FIIa:14 Ver:a (1803-1806). bildid: C0108403_00527	Hög-båtsmannen Carl Fagerström	The croft Fabor in EKL no 99 with a 275ell² plot. The house had 3 rooms, 1 kitchen, an attic, 2 cellars, 1 wood shed.	200 rd

plot or parts of workshops or buildings. The property descriptions are limited and rather vague in these probate inventories from 1795. Several of the probate inventories belong to widows and wives, women would always be registered with the husbands title. However, the widow could take over the right to run the business after the husband's death, which would seem to have been fairly common in Gothenburg in the 18th century (Scheele and Simonsen 1999: 126).

Probate inventories from Majorna a few years later in 1803-1806 give information on properties and plots in the harbour community outside the city.[5]

Table 2 shows properties of quite substantial size but with generally low value compared to Gothenburg. Many of the houses have more than one kitchen, which might indicate that more than one household resided on the property in a multiunit structure. Most of these probate inventories describe leased plots but indicate ownership of the buildings. Some seem to sublease rooms, thus functioning as proprietors themselves. They all leased from the crown, who owned the area Elfsborg Kungs Ladugård. Some of the estates included animal husbandry and many of the houses were called crofts, indicating a farming estate. The cabbage fields and the gardens would have given the people living on the plots a chance of self-sufficiency something harder to achieve within the city walls. All the owners except

[5] Härad: Sävedal, Stift: Göteborg, Länkar: Göteborgs Arkivguide om Mariebergs församling ArkivDigital Online: Sävedals häradsrätt FIIa:14 Ver:a (1803-1806). Riksarkivet: Sävedals häradsrätts arkiv, Bouppteckningar, huvudserie, E/GLA/11082/F II a/14 (1803-1806).

two had connections to the sea and the harbour seen through their work titles: captains, bailiffs, seamen, carpenters etc. The shopkeeper Anders Landgren owned several properties in Majorna and we meet him a few years earlier in the fire insurance records from 1795 as well. It is always a treat when the same persons appear in several historical sources.

Reflections on probate inventories as an historical source material

Probate inventories are records where information about ownership and property is in focus. They are generally more detailed, relating inventories of gods and personal belongings, than when discussing real estate. However, some information can be had regarding buildings and plots. The plots are mostly described geographically i.e. with something similar to an address, or if the building is adjacent to some other building or feature that people (at the time of writing the record) would be familiar with. The records detail co-ownership of properties, workshops and the number of buildings along with their estimated value. Sometimes even the internal layout is described, usually when the property is co-owned, detailing who owned what. Vacant plots, destroyed plots and burned-out plots were described and valued. It also becomes evident that many individuals own several plots, both in the city and outside. Thus, the stigma of belonging to the suburbs cannot have been so severe at this time, 1795-1806. Women were the owners of several properties in the survey.

Fire insurance records

The year 1795, has been chosen for the study of the empirical data, because that year is part of the big expansion of Majorna, it is interesting to see the conditions in Gothenburg during that same time. There were only ten properties with fire insurance in Majorna at the time and these are all included in the study, thus the majority of the building stock was still uninsured.

For Gothenburg the first six fire insurances were bought in 1800 but only one gave enough information to be used in this study. There were seven properties insured in 1803, and five of those could be included. Finally, there were four fire-insured properties from 1804. In total ten fire-insured properties from Gothenburg have been included in the study out of 19 insured properties in all. Fire insurance was something new on the market, thus most houses within the city walls were not insured.

Houses in Majorna in 1795, seen through fire insurance records

Fire insurance records from 1795 (one is from 1793), detail ten plots, in Kungsladugård and the surrounding area of Majorna, describing 35 houses in total.

Appendix 11 show that the residential houses had a large variety in the number of rooms. Three of the houses had one hall each, and one house had two halls suggesting that facilities for entertainment were in place for these households. The number of kitchens per house give an indication of multiple flats within one building; in these cases, four houses had two kitchens. The number of fireplaces and ceramic stoves also points to how the rooms were heated. It is apparent that firewood was an important commodity considering that these 14 houses had 72 heating sources. From a fire insurance perspective, there were a lot of fires to keep track of.

Most of these property owners seem to be members of the upper working class; some own their own businesses (Table 3). Oddly enough the one property that has the highest estimated value is called a croft, yet when taking a closer look the value reflects a total of six houses valued individually to a relatively low sum. Some of the properties are holdings, which means that they owned the buildings but not the land. The big difference between the estimation in the fire insurance records and the probate inventories is that the land does not get valued in the fire insurance records. Some of these properties are essentially farms with animal husbandry as part of their subsistence; some are businesses of other character, such as a shop,[6] and a brewery.[7] There are also mentions of larger orchards.[8]

There were 35 houses in total of which 19 were built in log timber technique, nine in timber-framing technique and five in post and plank technique. It is interesting that all the houses were constructed in log-timber technique, in a mix of fir and pine, which seem to have been common practice in Gothenburg during the 18th century. The widespread use of fir and pine in the houses in Majorna is corroborated in the dendrochronological analysis in Chapter 6.1. There were 22 one-storey buildings of which three were dwellings, three one-and-a-half storey buildings, five two-storey buildings and three two-and-a-half storey buildings.

Fourteen of the houses were residences and 21 were outbuildings and similar light industrial units, such as a tannery, stables, byre, privey, sheds, woodshed, sheep shed, barn, cowshed, cart shed, feed room, corn shed, brewery, office, larder and a pig stye.

Measurements of log timber buildings

For a closer description of each individual house, see Appendix 11. The log timber constructions include

[6] Fire insurance record: 2337 Sågängen, Landgren Anders, Krögaren, 1795

[7] Fire insurance record 2089 Gamla Amiralitets varfvets grund nr 32, Sperring Brita Christina, Mademoiselle, 1795

[8] [9] Fire insurance record 2338. Gård och ägendom nr 225 Marts kallad, Reuterqvist Petter, källarmästare, 1795

Table 3 Property owners in Majorna in 1795 from Fire Insurance Records (Riksarkivet, Digitala forskarsalen, Brandförsäkringar, Västra Götalands län, Örgryte och Göteborgs Karl Johans församlingar).

Property holders in Majorna 1795, Fire insurance records	**Number of buildings**	**Worth**
Inspector Johan Hernblad, torpet Justitia, Majorna insurance number 2020	6	2081,24 rd
PÅ ELFSBORGS KONGS LADUGÅRDS ÄGOR. ANDERSSON ABRAHAM, HANDLANDEN. Insurance number 2278	1	800,40 rd
Insurance number: 2337 SÅGÄNGEN, LANDGREN ANDERS, KRÖGAREN	3	666,32 rd
Insurance nr: 2263, Lundsberg nr 221, CEDER PETER, HOFMÄSTARE	1 + 1 well	666,32 rd
Insurance nr 2089, GAMLA AMIRALITETS VARFVETS GRUND NR 32, SPERRING BRITA CHRISTINA, MADEMOISELLE	2	1347 rd
Insurance nr 2053, LILLJEDALEN KALLADT I SK SLOTTSSKOGEN, SANDBORG, HERR VÅGMÄSTAREN	4	980 rd
Insurance nr 1887, NR 26 GAMLA AMIRALITETSWARFVET ENKEFRU FÄNDRIKSKAN ELISABETH BERG	4	491,20 rd
Insurance nr 2334, PÅ ELFSBORGS KONGS LADUGÅRDS ÄGOR, Johan Hernblad Frälse Inspectoren	2	1997,32 rd
Insurance nr 2338 GÅRD OCH ÄGENDOM NR 225 MARTS KALLAD, REUTERQVIST PETTER, KÄLLARMÄSTARE	5	1359,48 rd
Insurance nr 1838 TORPET NEPTUNUS WID MAYBUGTEN: HOLMSTRÖM MAGNUS, AM:TS ÖFWERSKEPPAREN	5	600 rd

a range of house sizes from 19,3m^2 to 146,3m^2, these buildings also have different functions, of course, from privies to residences and barns and so forth (Table 4). Consider that the square meterages only reflect the ground floor, and there were many houses with more than one storey.

Measurements of timber-framed buildings

The constructions in timber-framing technique also range from very small, 3,2m^2, to quite large, 119,6m^2 and include functions of various kinds (Table 5). The list indicates that the timber-framing technique formed a large part of the building stock considering these are buildings from five out of ten investigated plots with nine different owners.

Table 4 Table of measurements of log timber buildings in Majorna 1795 from fire insurance records.

Log timber measurements	**Building**	**Length**	**Width**	**Height**	**Number of storeys**	**Square meters**
Johan Hernblad	1	16ell/ 9.5m	16ell/ 9.5m	14ell/ 8.3m	1.5	90.25
Johan Hernblad	2	20ell/11.8m	14ell/ 8.3m	18ell/ 10.6m	2	97.9
Johan Hernblad	3	11ell/ 6.5m	6ell/ 3.5m	6ell/ 3.5m	1	22.7
Johan Hernblad	5	13ell/ 7.7m	7ell/ 4.1m	6ell/ 3.5m	1	31.5
Johan Hernblad	6	26ell/ 15.4m	5 ell/ 2.9 m	10ell/ 5.9m	1	44.6
Abraham Andersson	1	26ell/ 1.4m	13ell/ 7.7m	14ell/ 8.3m	1.5	63.9
Anders Landgren	1	18ell/ 10.6m	12ell/ 7.1m	7ell/ 4.1m	2	75.2
Peter Ceder	1	20 ½ell/ 12.1m	10 ½ell/ 6.2m	8ell/ 4.7m	2	75
B. C. Sperring	A	48ft/ 14.2m	28ft/ 8.3m	18ft/ 5.3m	2.5	117.8
Sandborg	1	21ell/ 12.4m	9ell/ 5.3m	6ell/ 3.5m	1	65.7
Elisabeth Berg	1	14ell/ 8.3m	8 ½ell/ 5m	9 ½ell/ 5.6m	2	14.5
Elisabeth Berg	2	13ell/ 7.7m	8ell/ 4.7m	4 ¾ell/ 2.8m	1	36.1
Johan Hernblad	1	23 ell/ 13.6m	14ell/ 8.3m	8 ½ell/ 5m	2	112.8
Johan Hernblad	2	21 ell/ 12.4m	10ell/ 5.9m	4ell/ 2.3m		73.1
Petter Reuterqvist	1	26 ell/ 15.4m	16ell/ 9.5m	10ell/ 5.9m	2	146.3
Magnus Holmström	1	27 ell/ 16m	14ell/ 8.3m	5 ¾ell/ 9ell/ 3.4m/ 5.3m	2	132.8
Magnus Holmström	2	7 ½ ell/ 4.4m	7 ½ell/ 4.4m	4ell/ 2.3m	1	19.3

Table 5 Table of measurements of timber-frame buildings in Majorna 1795 from fire insurance records

Timber-framing measurements	Building	Length	Width	Height	Number of storeys	Square meters
Anders Landgren	3	4ell/ 2.3 m	2 ½ell/ 1.4m			3.2
B. C. Sperring	B	59ft 6in/ 17.7m	18ft/ 5.3m	8ft/ 2.3m	1	93.8
Sandborg	2	24ell/ 31ell/ 14.2m/ 18.4m	9ell/ 11ell/ 5.3m/ 6.5m	5 ½ell/ 5 ½ell/ 3.2m/ 3.2m	1	75.2/ 119.6
Sandborg	3	17ell/ 10m	7ell/ 4.1m	5 ½ell/ 3.2m	1	41
Petter Reuterqvist	2	15ell/ 8.9m	8ell/ 4.7m	5ell/ 2.9m		41.8
Petter Reuterqvist	3	18ell/ 10.6m	13ell/ 7.7m	5ell/ 2.9m		81.6
Petter Reuterqvist	4	8ell/ 4.7m	4ell/ 2.3m	6ell/ 3.5m		10.8
Petter Reuterqvist	5	8ell/ 4.7m	4ell/ 2.3m	6ell/ 3.5m		10.8
Magnus Holmström	3	13ell/ 7.7m	7ell/ 4.1m	4ell/ 2.3m		31.5

Table 6 Table of measurements of post and plank buildings in Majorna 1795 from fire insurance records.

Post and plank measurements	Building	Length	Width	Height	Number of storeys	Square meters
Anders Landgren	2	9 ½ell/ 5.6m	7 ½ell/ 4.4m	4 ½ell/ 2.6m	1	24.6
Peter Ceder	1a	5ell/ 2.9m	12 ¾ell/ 7.5m	5 ½ell/ 3.2m		21.7
Peter Ceder	1b	11ell/ 6.5m	5ell/ 2.9m	3ell/ 1.7m		18.8
Elisabeth Berg	3	10ell/ 5.9m	7ell/ 4.1m	4 1/3ell/ 2.5m		24.1

Table 7 Table of measurements of unknown building technique in Majorna 1795 from fire insurance records.

Unknown building technique measurements	Building	Length	Width	Height	Number of storeys	Square meters
Johan Hernblad	4	12ell/ 7.1 m	8ell/ 4.7m	4ell/ 2.3m	1	33.3
B. C. Sperring	b + cellar	14ft 9in/ 4.4m	18ft/ 5.3m	5ft 3in/ 1.5m		23.3
Magnus Holmström	4	4ell/ 2.3m	4ell/ 2.3m		1	5.2
Magnus Holmström	5	4ell/ 2.3m	4ell/ 2.3m		1	5.2

In comparison, the post and plank constructions seem to keep to a more consistent size (Table 6). They are fewer in number but still a relevant technique in Majorna in the late 18th century.

Some of the houses were not given as detailed descriptions as other houses. Thus, the measurements are listed but not the construction technique (Table 7).

Houses in Gothenburg in 1800-1804 seen through fire insurance records

The fourth case study includes ten fire insurance records from 1800-1803, which were the earliest that were found from the city of Gothenburg, detailing 21 buildings on ten city plots. For an overview and for detailed descriptions *see Appendix 12*.

Plots, owners and estimations of property value

These property owners (Table 8) are workers, craftsmen and merchants, indeed the least valued estates seem to be at Otterhällan, which was recognized as a marginal area of their contemporaries (Scheele and Simonsen 1999: 27). Still, the Janitor Bahrman near the moat and Mademoiselle Barkenbom in city district Västra Nordstaden also have low-value properties. It could be connected to the number of buildings as well. The one that stands out is restaurant-keeper Crohn who owned five buildings, one of them being a theatre in Västra Nordstan. There seems to be a natural mixture of high- and low-end properties and no apparent division of social classes in different districts within the city walls, possibly apart from the rocky outcrops of Otterhällan and Kvarnberget.

Building techniques and exteriors

There were 21 buildings in total on ten urban plots; six houses were constructed in log timber, of which five were panelled, three painted red and two painted yellow, nine timber-framed houses, of which four were panelled and three painted red (Table 9). There were also three stone houses, one building with a mix of techniques and two buildings where the technique was not revealed in the documentation. Thus, nine of the buildings would have looked similar externally, not revealing what kind of construction technique was used behind the panelling.

Table 8 Property owners in fire insurance records from Gothenburg 1800-1804

Reference	Owner	No. of Buildings	Worth	Place
Dahl 2.58, 1803.	Vaktmästare/Janitor Joh. And. Bahrman	1	1024,42 rd	Mot Vallgraven
Dahl 2.65, 1804.	Metal worker Johannes Winterstein and Ingrid Isacsson	1	266,32 rd	Otterhällan
Dahl 4.20, 1803	Merchant Carl Johan Törngren	2	5508 rd	Sunnan Stora Hamnen
Dahl 4.56, 1804	Baker Anders Molin	2	2048,12 rd	Sunnan Stora Hamnen
Dahl 4.101, 1803.	Hustimmerman/ Carpenter Johan Pettersson	2	1059,8 rd	Otterhällan
Dahl 5.24, 1800.	Merchant Zacharias Arfvidsson	2	4500 rd	Sunnan Stora Hamnen
Dahl 5.73, 1804.	Merchant Tobias Lundgren	3	6258,45 rd	Östra Nordstan
Dahl 7.34, 1803.	Mastersmith Waldemar Hasselgren	2	4445,4 rd	Västra Nordstan
Dahl 7.60, 1803.	Restaurant keeper C J Crohn.	5	8618,32 rd	Västra Nordstan
Dahl 8.58, 1804.	Mademoiselle Anna Caisa Barkenbom.	1	1700 rd	Västra Nordstan

Table 9 Table of construction techniques and the exterior of buildings in terms of panelling and paint.

Building techniques	Number	Panelled	Painted red	Painted yellow
Log timber	6	5	3	2
Timber-frame construction	9	4	3	
Stone house	3			
Mix of building techniques	1			
Unknown technique	2			
In total	21	9	6	2

Types of wood in log timber constructions

The timber buildings in this survey have been constructed in pine or fir or indeed a mix of pine and fir, something that seem to be the usual way of construction in Gothenburg (Table 10).

Measurements of log timber buildings

The buildings constructed in log timber have in this material had two to two-and-a-half storeys (Table 11).

The relationship between the height of the house and how substantial the stone foundation, is not evident, one two-storey building has 1,1m stone foundation while another has only 0,2m.

However, consider the information regarding the townscape with the measurements regarding the height of the buildings. The square meterage measurements only reflect the ground floor.

Table 10 Wood types in log timber constructions in fire insurance records from Gothenburg 1800-1804

Timber type	Pine	Fir	Fir/pine
Log timber house	2	1	3

Table 11 Buildings in log timber in fire insurance records from Gothenburg 1800-1804

Log timber	Long	Wide	Height	Square meters	Stone foundation	No. floors
Dahl 2.58, building 1	12 ½ell/ 7.4m	12ell/ 7.1m	11ell/ 6.5m	52.5	1 ¼ell/ 0.7m	2
Dahl 4.56 building 1	30ell/ 17.8m	17ell/ 10m	8 ½ell/ 5m	178	½ell/ 0.2m	2
Dahl 4.101, building 1	21ell/ 17ell/ 12.4m/ 10m	12ell/ 7.1m	9ell/ 5.3m	88/17	5.20ell/ 3.4ell/ 2.15ell 3m/ 2m/ 1.2m	2.5
Dahl 5.73, building 1	26 ½ell/ 15.7m	24ell/ 14.2m	10 ¾ell/ 6.2m	222.9	1.9ell/ 1.1m	2
Dahl 5.73, building 2	10 ¾ell/ 6.2m	4.8ell/ 2.8m	8 ½ell/ 5m	17.36	½ell/ 0.2m	2
Dahl 5.73, building 3	26.12ell/ 47ell/ 47ell/ 15.5m/ 27.9m/ 27.9m	14 ¾ell/ 9ell/ 7 ½ell/ 8.5m/ 5.3m/ 4.4m	9 ½ell/ 5.6m	131.7/ 147.8/ 122.7	½ell/ 0.2m	2

Measurements of timber-framed buildings

The timber-framed buildings keep within the same size as the log timber constructions mentioned above (Table 12). There are several one-storey buildings in the data but they vary quite a lot in size. There are also two houses with two and three floors respectively. Notice, that the stone foundations do not reveal the difference between one-, two- and three-storey buildings.

Measurements of stone buildings

The are only three houses within this study built in stone and/or brick (which probably reflects their percentage within the actual building stock quite well) and they are two to three storeys high (Table 13). These houses also keep within the same footprint as the rest of the houses discussed. It would have been interesting to know more about the stone foundations (unfortunately no information was given on this in the records), since that would have given some information on the question of the size of foundations and the mass of the construction.

Measurements of mixed-technique buildings

The mixing of building techniques within one building has continually appeared within the data of this work and is an interesting part of the building stock (Table 14). This particular building has been constructed in stone and brick and with timber-framed uppermost gables.

Measurements of buildings in unknown building techniques

Unfortunately, some of the records reveal only little information in regards building technique and the size of the building (Table 15). Here are two houses with one floor and one with a furnished attic.

Function

The log timber houses in this micro study were all dwellings while the timber-framed buildings were used for more varied functions such as dwellings, sheds, warehouses, shops, stables and, indeed, a single theatre. Many buildings, including the stone ones had mixed uses consisting of a dwelling as well as other purposes. Thus, a combination of dwelling/warehouse, dwelling/ shop, dwelling/ shop/ warehouse, dwelling/ workshop or dwelling/office recur.

Eight houses had only one floor, none of these had identified kitchens, conversely, there were still three

Table 12 Timber-framed buildings from fire insurance records from Gothenburg 1800-1804

Timber-frame	Long	Wide	Height	Square meters	Stone foundation	No. floors
Dahl 4.20, building 1	24ell/ 14.2m	10ell/ 5.9m		83.7		1
Dahl 4.56 building 2	9ell/ 5.3m	4ell/ 2.3m	6ell/ 3.5m	12.1		1
Dahl 4.101, building 2	17ell/ 10m	10ell/ 5.9m		59		1
Dahl 5.24, building 2						1
Dahl 7.34, building 1	25 ¾ell/ 15.1m	14 ½ell/ 8.6m	14.14ell/ 8.3m	129.8	1 ½ell/ 0.8m	3
Dahl 7.34, building 2	24 ½ell/ 14.55 m	10.20ell/ 6m	11ell/ 6.5m	87	¾ell/ 0.2m	2
Dahl 7.60, building 2	62ell/ 36.8m	19 ½ell/ 11.5m	15ell/ 8.9m	423.2	½ell/ 0.2m	1 (?)
Dahl 7.60, building 3	27ell/ 16m	10ell/ 5.9m		94.4		1
Dahl 7.60, building 4	9 ½ell/ 5.6m	5ell/ 2.9m		16.2		1

Table 13 Houses built in stone from fire insurance records from Gothenburg 1800-1804

Stone buildings	Long	Wide	Height	Square meters	Stone foundation	No. floors
Dahl 4.20, building 1	40 ½ell/ 24m	17ell/ 10m	11 ½ell/ 6.8m	240		2
Dahl 5.24, building 1						3
Dahl 8.58, building 1	28 ¾ell/ 16.8m	14ell/ 8.3m	9ell/ 5.3m	139.4		2

Table 14 Houses built in mixed techniques from fire insurance records from Gothenburg 1800-1804

Mix of techniques	Long	Wide	Height	Square meters	Stone foundation	No. floors
Dahl 7.60, building 1, (stone + timber-framing)	29ell/ 17.2m	16ell/ 9.5m	11 ½ell/ 6.8m	163.4		2

Table 15 Houses with non-identified building technique from fire insurance records from Gothenburg 1800-1804

Unknown building technique	Long	Wide	High	Square meters	Stone foundation	No. floors
Dahl 7.60, building 5	42ell/ 24.9m	8ell/ 4.7m		117		1
Dahl 2.65, building 1						1.5

kitchen stoves between them. Only one building had one-and-a-half floors (one floor with a furnished attic), one kitchen was mentioned but no kitchen stove. Nine houses had two storeys, two of them did not have kitchens. Two houses had one kitchen each, and four houses had two kitchens while another house had three kitchens.

The two houses that had one kitchen had; two kitchen stoves, one baking oven and the other had one kitchen stove, three baking ovens and four ceramic stoves. The four houses with two kitchens had;1) one kitchen stove and four ceramic stoves, 2) two kitchen stoves, two baking ovens and no ceramic stoves, 3) two kitchen stoves, two baking ovens and 8 ceramic stoves, 4) two kitchen stoves, one baking oven and no ceramic stoves. Finally, one house had three kitchens with four kitchen stoves, one baking oven and six ceramic stoves.

What conclusions can be drawn from this confusing scenario? Most likely are some of these houses to be understood as multiunit structures, thus housing more than one household (a household could be a lot things; family, a family with servants, a single person, tenants etc.). More than one household might use some kitchens. The one-storey buildings are often outbuildings of various kind. The most apparent conclusion must be that there are no easy answers and no clear equivalence between kitchen and kitchen stove. Several of the houses had an abundance of ceramic stoves making more rooms useful and comfortable in the winter months than ever before. Some houses do not seem to have ceramic stoves at all. These houses were thus, probably, used in a different manner with more activities taking place in the only/few heated rooms.

These 21 buildings contains 77 spaces named as rooms, five chambers, four halls for entertainment and 20 kitchens. There are also a number of other rooms/spaces mentioned; those directly connected to a dwelling such as six cellars and a privet. Places to store things/food/ provisions such as three sheds, eleven larders, six warehouses, two woodsheds, one salt shed and ten granaries. There are likewise various types of workshops; three bakeries, three breweries, one malt sieving room, four shops, one smithy and one undefined workshop, two stables and three cart sheds as well as a stable chamber, which gives some evidence of the presence of animals. Finally, the theatre presents examples of more unusual rooms; the ticket office, one billiard room, dressing rooms, the orchestra and an amphitheatre.

Reflections on fire insurance records as historical source material

When comparing the owners' list in *Table 4* with Majorna 1795, with *Table 9* from Gothenburg in 1800-1804, there do seem to be a larger number of properties valued well below 1000 rd in Majorna. There also seem to be a large number of buildings within each property, still not increasing the total value.

From a room/spatial point of view living outside the city walls might have given the opportunity to find larger plots but the individual houses seem to keep to a similar size and composition with those in Gothenburg. Some stone houses and the timber-framed houses would have stood out in the townscape as higher than the rest of the building stock. The social structure points to a heterogeneity with a combination of privately owned plots and houses on leased properties, but there are also traces of special uses of halls for entertainment to suggest that higher levels of social networking and polite life were sought after. On a functional level (Bedal 1995: 19; Volmer and Zimmermann 2012: 24) there are some indications to suggest that living on the outskirts would be detrimental for business or living circumstances when comparing the value of properties, from this particular material. Equally, there were people living with similar standards within the city walls. Yes, there were some with big personal fortunes within the city but there were also a large number of people of lesser means. The same can be said of the people on the periphery. However, these examples are too few for drawing definitive statistical conclusions.

Buildings built in post and plank technique were found in the records from Majorna but not in Gothenburg. Is the absence of post and plank buildings in Gothenburg a reflection of the sample or is it a difference in what techniques that were used in the two areas? A wider sample of fire insurance records or further archaeological investigations will have to answer that in the future.

There is more data that could be collected and discussed using this material, such as indoor environments with number of rooms with wallpaper, or with wall-mounted furniture, fire equipment, or the structural layout of the plots from the sometimes attached plot charters, just to mention a few ways forward.

The historical sources analysed here have given a comparable material, to the archaeological data discussed in previous chapters, to work with. Many of the same questions were applicable to both materials, and some new relevant questions and answers as well. Fire insurance records and probate inventories are only two sets of data, there are many other historical sources that could be explored to this aim. Something for future studies to discover.

People, property and location – central value vs peripheral space

The study of living environments and conditions in the centre versus the periphery can be understood as

Figure 5 Example of plot charters from fire insurance records from 1816, from the property Sågen on the land of Elfsborgs Kungs Ladugård close to Gothenburg (i.e. in Majorna).[9]

a study of social formations, thus material functions within a social environment. It is also a question of seeing the social divide, which is sometimes manifested through a geographical distance within the landscape (Sereni 1967) but often rather through a social exclusion or durable inequality (Tilly 1998). The difference between those who owned property or material possessions and those who did not own anything at all could be staggering. To find those who did not own anything is difficult, however they do turn up in some documentation: probate inventories sometimes also include those who only have some personal possessions such as clothes, bedlinen and perhaps a few items of other character. They can be mentioned as tenants in someone else's property to mention a few places.

Micro theory is a through line throughout the scope of this work and this section also takes a stepping point from the particular or the micro perspective. Rather than painting with a big brush over the social landscape, the aim was to find the particular: cases, voices, persons to exemplify life in different social and geographical spheres.

This micro study thus focuses on an urban-like area outside of the formal town. The same kind of houses were found in Gothenburg and Majorna alike, yet the property value seems to be higher within the city centre. The periphery, Majorna, on the other hand offered larger plots with more space, even room for urban farming. There was poverty and marginalisation in the periphery as well as in the city centre, nonetheless, there were also well-off citizens in both places. Some people in Gothenburg owned property in the outskirts as well, often summerhouses or working estates producing farm goods, vegetables, tobacco or fruit. At times, it was only small plots of land for growing vegetables for the family. Crowdedness, or high-density living was a reality in the suburb and the city alike. Large amounts of people moved into the area from the countryside looking for work, most of which ended up renting their accommodation in Majorna, causing over-crowdedness. While the frequent urban fires and influx of workers, and mandatory lodging of soldiers and their families, impacted on the density of

[9] 2020-05-29 Historiska kartor – Göteborgs stad goteborg.se 'Västra Göteborg', 'Del av Kungsladugård' viewed 2020-06-08.

living space in Gothenburg as well, when large parts of the town were simultanaeously laid waste. Yet, the elite could delegate the lodging duty to the poor, thus escaping the problems related to crowdedness through monetary advantages.

Perhaps, the suburb could offer a less controlled space than the city within the fortifications. No curfew at city gates, a lessened presence of formal power or functions in the suburb, whereas that same presence of official functions also gave power, services and tax revenue to the city. There were pros and cons for both spaces or places, and not as black and white as it has often been depicted in research. Sweden was on the one side, a hierarchical society favouring the rich and powerful regardless of where they lived – city, suburb or countryside. At the same time, a number of regulations disproportionately hit the suburb negatively compared to the city.

The concept of structured practices (Cornell and Fahlander 2002: 16) can mean that a building was built for a specific purpose or an ideal number of people but eventually through time these premises could change, sometimes dramatically. In Majorna*,* but also in Gothenburg people flooded in from the countryside in the late 18th century to find work. The number of people in every individual house increased radically, strongly affecting the social structure within Gothenburg.

Lefebvre (1991b: 403–4) talks about the underpinning of the city, that is; needs, affordability, supply of building materials, modernity and the location as well as the context of that location both geographically and socially. All of these aspects have affected the inhabitants of Majorna and Gothenburg differently. Lefevbre's (1991b: 14) ideas about ideal space and real space are also relevant to the discussion because without the archaeological surveys within the outer areas there is a dependency on other historical sources to grasp the realities of the past living environments. The other side to this is what bearing the lack of ideal space (the regulated town plan) had on the perception of the area and its inhabitants. These historical sources can also help the understanding of some peripheral areas within the city limits such as the unregulated building pattern in the hilly areas Lilla Otterhällan (Kvarnberget) and *Stora* Otterhällan within the fortifications, where archeology has not been undertaken. The difference in infrastructure between the two areas are an important component for understanding the environment and the implications it had on the everyday life of the inhabitants.

Repetitive structures are another key ingredient to the urban form. The cover of this book shows an example of the small wooden buildings on the streets behind the official buildings on the big square. These kinds of houses were the most common in 17th-18th century Gothenburg, none of which remain today. These small wooden one-storey buildings as well as those with an added first floor level were similar or even identical inside and outside of the city walls. The major difference between the two areas was the 'tamed' landscape, the regulated city grid with neatly ordered plots in rows on the inside as opposed to the 'untamed' landscape and the lack of orderliness on the outside of the moat. Nonetheless, the repetitiveness of the structure in terms of size and form of the buildings could give the appearance of regularity without being planned.

For future research…

Archaeological source material can contribute with an understanding of the physical realities of the location, the most obvious being materialities such as items of everyday use but also physical remains of buildings and traces of food consumption that can say something different than probate inventories and fire insurance records. The excavation of a burgage plot can give answers to other things than the historical documentation usually reveals - such as strategies for waste collection, the internal structure of the plot and of activity areas of differing kinds. However, the information received from the archaeological record is dependent on the type of investigation – anything from narrow trial trenches to large excavations extending across entire blocks – which of course affect the level and quality of the information that can be gathered. The archaeological empirical data and the historical material complement each other well; and the interdisciplinary method can bring forward new information and aspects. Unfortunately, the law in Sweden is written in such a way that the peripheral areas seldom becomes subject to archaeological investigations, which is why archaeological data is not included in this study of Majorna (Figure 6).

A closer investigation of the collected understanding of the urban development of Gothenburg and the city's surrounding settlements, would further urban research in a larger perspective, as would similar investigations on other towns.

To receive a new understanding, a macro level needs to be studied regarding how the presence or absence of a planned infrastructure, affects different types of built environments, and how it influences on a micro level i.e. the everyday life of individuals and their home environments.

Another aspect is the organisation of the infrastructure and its influence on people's perceptions of built environments and their inhabitants. Fire safety was a

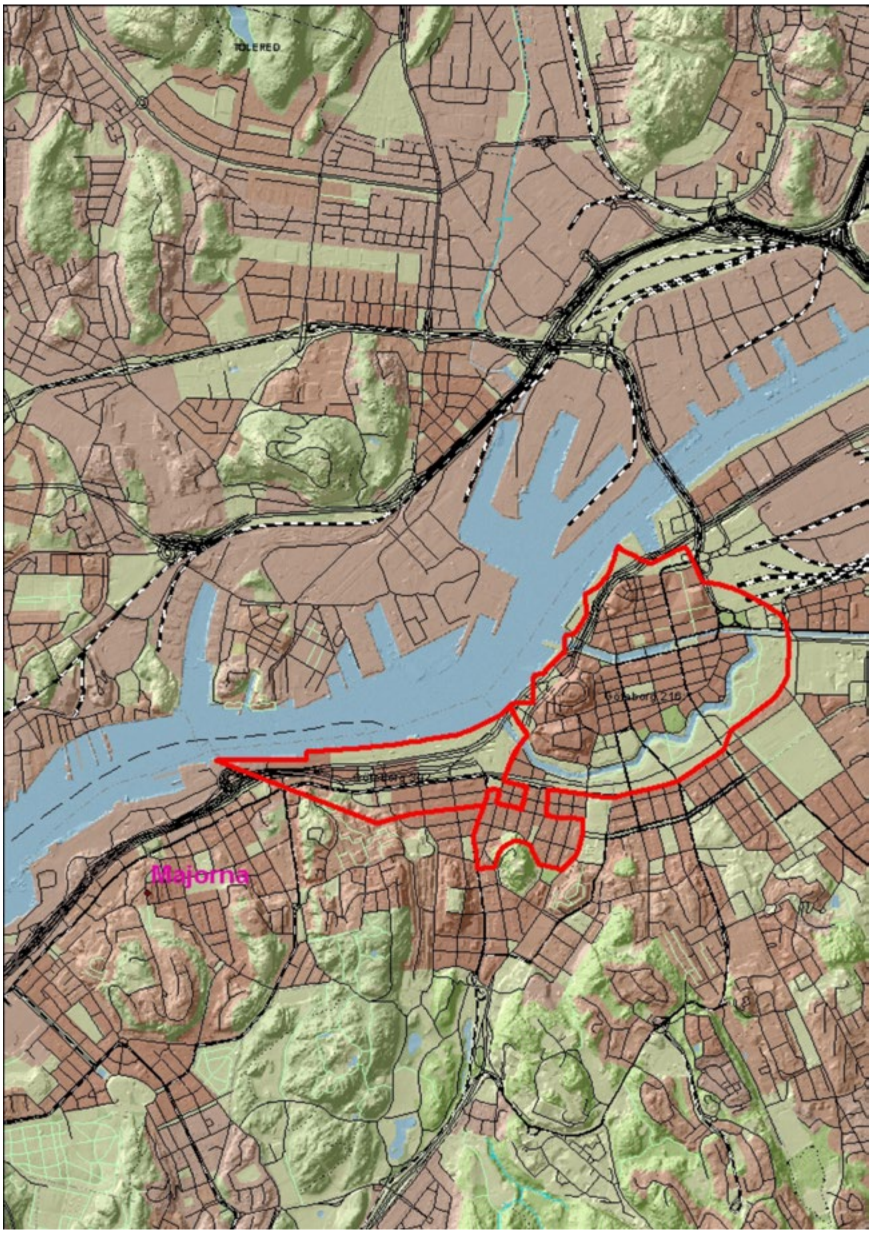


Figure 6 Image of the appointed archaeological city layer of encompassing Gothenburg, Haga and Masthugget but excluding the early modern layers of Majorna.

big issue in the urban landscape, did a regulated city plan increase or decrease the risk of fire spreading and how did the 'obsession' with fencing urban plots influence this matter? Water accessibility and waste collection are other such infrastructural issues that can influence perception.

Questions of centre and periphery as well as marginality do, of course, not only apply to urban research, but are vital to landscape archaeology and the division of resources and elements of subsistence. Which is another way of describing the city within its immediate boundary, as opposed to city lands, thus land owned and used by the city (Walaker Nordeide 2005). The hinterland is yet another level, entailing land, routes, people and resources in a reciprocal dependency between land and city.

The lack of value often placed on the history and everyday life of commoners has a negative influence on the official storytelling and understanding of important contributors to our shared heritage. The voice of the subaltern often goes unheard partly because of scarce written sources, or else influenced by a stigmatizing rhetoric in contemporary writings. Interestingly the elite residences in the periphery are also excluded from the story told because they do not fit into the stigmatized homogenous image of the margins.

Chapter 7

Contextualizing urban vernacular architecture – distinguishing the actual and the ideal

This chapter is the fourth and final step on my micro scale placing the individual towns in their social, geographical as well as political context, thus creating a macro level for town formation and city planning. This final discussion is thus not to be regarded as results of the analysis but rather as a contextual background to city formation.

It is difficult to determine periodization since it builds on concept rather than real life events. In respect of the Swedish so-called medieval period it was exceptionally short, beginning in 1050, thus ending the Viking age, and lasting until the reformation in c. 1536. It could be argued that it was even shorter, seeing a big shift in society in the later decades of the 15th century with the 'discovery' of the Americas and the start of the colonial era. Colonialism brought with it changes to worldview, eating habits and consumption on a very broad scale. King Gustav I abruptly transferred the feudal governance of Sweden towards an absolutist state while also making the throne hereditary, which changed the trajectory of the country at the beginning of the 1500s (Anderson 1996: 184–85).

I have shown that some traditions or building processes were indeed very long and slow and stretched past artificial periodization while new processes started and existed side by side with older ideas and practices. Fernand Braudel (1972) argued how these slow processes impact society more profoundly in the long term than transitional cycles and structural crises. Mats Hallenberg (2015) discusses how 'premodernity' should be interpreted analytically rather than described chronologically, and that periodic ruptures reaches certain parts of society but rarely all at once. That could mean that the early modern period had a *longue durée* with long processes and slow changes until the turn of the 19th century, while traces of the medieval and beginnings of the modern in terms of structural organisation existed simultaneously.

The c. 330 years discussed includes a set of perimeters or political aspects of city development. A few themes have been chosen to highlight pivotal areas within city formation and management, which influenced the urban landscape dramatically. These are all complex discussions individually and will only be discussed briefly to contextualize the urban wooden buildings.

Measuring, plotting and creating – the production of space

Towards the end of the 15th century, the art of town planning and fortification theory, based on classical ideals, became ever so popular and important. The rectangular street grid and large squares similar to Roman cities and camps were at the heart of the theory. Regularity, uniformity and wide streets placed inside a circular town plan with star-shaped fortifications became the hallmark for Italian urban architecture. The problem was that these radial cities, the most famous of which is the fortified town of Palmanova, Italy, built by Venice, were not entirely fit for human occupation (Braun, Hogenberg, and Skelton 1966: 431; Forsberg 2001: 24–26). On Swedish territory, the radial plan was created as an early attempt to rebuild Kalmar, as a copy of Palmanova, after the war against Denmark, in 1615. Already, after 30 years the town was moved, from a defensive point of view, to a better location (Forsberg 2001: 28), but with a grid plan of completely different logic than the old one.

These rather theoretical, complicated and not very pleasant town plans were soon to be abandoned for a simpler idea of the principal of order. It was easy to comprehend, it was uniform and quantifiable, forming something of a routine rather than art (Forsberg 2001: 26). To understand this type of urban planning architectural communication theory (Rapoport 1988; 1982) can be used, where the architectural design conveys messages of identity, status and power. Thus, the next town plan for Kalmar followed a simple grid system with a fortified town wall in an near-oval shape (Larsson 2018; Tagesson 2018). For a long time there was a strong resistance to moving, but after about 60 years all the townspeople had relocated into the new town of Kalmar (Larsson 2018: 181). Maybe the reason why Sweden managed to see so many town formations and regulations through in the end might have something to do with shaving the principle down to its essentials. Leaving most of the theoretical and often expensive 'fluff' so to speak aside. It made the work manageable, economically feasible and it made it possible to get the populace on board with the projects.

Not much is known about the planning stages to build Nya Lödöse or the extent of the involvement from the monarch in the 1470s. Yet, King Johan III called on the burghers to move back to the old town of Nya Lödöse after losing the town of Älvsborg and the castle to the Danes, in 1563. Nya Lödöse would have its town charters back and the townspeople their plots and settlements. The burghers were also granted the villages of Qwiberg (today called Kviberg) and Härlanda, as well as the working farms of Widekiärr (Videkärr) and Torpa, which were exempted from tax. These areas should be considered town land to be used for grazing, farming and so forth (Cederbourg 1739: 18).

The archaeological investigations in Nya Lödöse have unearthed parts of the city grid, showing that street B follows the line of the riverbank of the river Säve. Street A replicates that line at a distance. While street C, follows the main road from Old Lödöse that passed through Nya Lödöse, to the town of Älvsborg. The logic of the street grid, partly originated from the topography and the previous road systems, was very similar to the early stages of the contemporary Norwegian town Oddevoll, now Uddevalla (Sw.) (Öbrink, Williams, and Nilsen 2018: 280). Some sort of measuring using string and the riverbank as tools have most certainly been in place, but the advancement of surveying had not yet been fully developed.

The towns from the end of the 15th-16th century often had a grid system but it was not strictly regulated i.e. Nya Lödöse, Eksjö, Karlstad and Uddevalla. Eksjö had to be moved after an enemy attack that destroyed most of the old town in 1568. Arendt de Roy was the man put to work staking out the plot systems and streets on a new spot of land. Yet, the result, which is still in place today was not a regular grid system but rather winding streets with several blind alleys (Råberg 1987: 39).

There were small towns, founded in the early 17th century with a regular grid but not much else in terms of urban aesthetics such as Säter, Borås and Sala (Råberg 1987: 41). Eksjö and Säter are among the only Swedish wooden towns that having escaped large urban fires preserved most of their historic building stock in situ from the 16th and 17th century, with the early modern street grid largely intact (Nilsen 2014).

Gothenburg, Jönköping and Kalmar received the most attention, economic means and strict directions from the government. The regulations regarded the exact location of the towns, the fortification and overall town plan and development, since these cities were to be the 'shop window' so to speak of the Swedish Empire (Råberg 1987).

The fortifications and the city walls displayed new dimensions during the early modern period as opposed to the medieval era. The walls had to withstand gunfire rather than simply stop a charging cavalry. Enormous earthworks, fortifications in stone and one or several ditches surrounded many towns. Other towns had plans to build significantly more powerful defences/fortifications than they ended up with, some had to make do with a simple toll fence i.e. Jönköping and Karlstad (Ahlberg 2005; Nilsen 2013).

The demolition of the city walls in most fortified towns in Sweden, in the first half of the 19th century, signalled the end of the early modern era in its most tangible form. The city thus gained a new set of prerequisites with light, sun and an openness, creating a possibility for parkland and a less distinguishable limit between the centre and the periphery. Gradually the major part of the small wooden buildings in the centre of town perished due to urban fires, through demolition or by being replaced by stone houses. At least in major cities like Stockholm and Gothenburg. In other towns such as Jönköping or Falun, some or even many early modern wooden houses have been preserved.

Organization of urban space

The Swedish government went about implementing many of the ideas that came out of the Leiden University. Sometimes it was the Dutch teachers' rejected ideas that came to be realized in Sweden (Råberg 1987: 22). Nowhere else in Europe did a government take such comprehensive measures regarding their town restructuring projects, at least not on European soil (Öbrink, Williams, and Nilsen 2018). For the most part the green-field ideal town formations came to be realized in colonial settings.

In 1610, it was decided that all Swedish towns should be surveyed with the intent of gathering information of what the current towns actually looked like and to address issues of security in terms of fortifications, town grids and structures, fire safety and so on (Råberg 1987: 40). In essence, a stock taking to find out how much effort it would take to make the Swedish urban landscape up to date and in line with the monarchy's growing importance on the European political and military arena.

As mentioned earlier, Gustav II Adolf, who seem to have inherited his father's, Karl IX, interest in town formation, formulated plans for a large number of Swedish towns in respect of fortifications, city walls, town grids and town relocations. He gave town charters to Luleå, Norrtälje, Sala and Säter as well as Alingsås and Borås (Råberg 1987: 36). While, Gothenburg remained the crown jewel of the city formations during Gustav II Adolf's reign (Råberg 1987: 36). There were some far-reaching plans for Jönköping, Karlstad and Uppsala that only came to be half implemented (Nilsen 2013). Jönköping was moved and re-developed on a green-field site, but it did not get the city wall or the fully developed city plan. The land turned out to be too

Figure 1 5 Karlstad. A drawing of how Karlstad should be fortified from the 22nd of April 1648. Mattias Monson Blom. The War Archive.

wet to build on (Nilsen 2013: 68–74). Karlstad suffered the same problems as Jönköping, it did not get the city wall that had been planned and it could not fully develop the city to its intended size due to problems with marshy underground, nonetheless, its street grid was regularised (Nilsen 2013: 74–82). One of the plans for the town formation and fortification of Karlstad had been reused, the name of the town Vänersborg had been crossed over and Karlstad had been written instead (Figure 1) (Nilsen 2013: 75).[1]

Uppsala was regularised during Queen Kristina's reign, but did not get a city wall. Yet, the regulation of the street grid did not reach the internal parts of the blocks that kept the medieval orientation of the alleys and plots (Nilsen 2013: 62–68). The government pulled out all the stops for the development of Gothenburg. The town Nya Lödöse, was dismantled and the buildings together with its citizens moved to the green-field site of Gothenburg. This was at the same time a completely new town in many ways lacking in continuity from Nya Lödöse. As opposed to West and East Jönköping (Nordman 2014) or Kalmar, which was rather the old town dressed in brand new clothing so to speak, where the townspeople were even re-using nails and old medieval sized bricks from the old town (Larsson 2018: 180). Gothenburg got the regular street grid, the Dutch canal system, the latest in fortification technology and a modern, for the time, city administration (Cederbourg 1739). Stockholm on the other hand, never built the full-scale early modern fortification (Ahlberg 2005; Forsberg 2001; Råberg 1987) probably due to the challenging topography; a further issue, doubtless being the spread-out nature of the town from the 17th century and onwards. There was a comprehensive regularisation, of parts of Stadsholmen, but mainly of the surrounding city districts (Råberg 1987; Forsberg 2001). Falun, did not become a fortified town either but was regularised during Queen Kristina's time on the throne (Sahlström 1961).

In the existing towns, changes were sometimes made after devastating urban fires or enemy attacks when there was a lot of re-building and the possibility for re-ordering on a larger scale. However, with the

[1] 0424:064:001 Karlstad. [på baksidan]: Affrithning opå Carlstadh medh des befästels och huru houn fortificeras schall den 22 Aprilis 1648: Mattias Monson Blom. Krigsarkivet.

provision of a 'ready to go' regular city plan already at hand. If there was not a plan in place, at the point when works started, the city grid was largely kept as it was. The damaged building stock made it conceivable and manageable to get the citizens on-board with the project. Thus, it turns out that the highly flammable, movable, and much-criticized wooden building stock made the re-ordering possible. Partly by burning and partly by the reasonable ease with which it could be dismantled, moved, and re-erected, and ironically also through being relatively easy to mass-produce, the form of the city could be adapted to the plan. Many houses or even neighbourhoods were torn down to make way for the new (Råberg 1987: 41). The wood house enabled the populace to afford and quickly fill the city grid with houses on green-field sites and getting people a roof over their heads after fires.

All the while, Nils S. Fahlman proclaimed in 1667 regarding Falun:[2]

> '*Let us now discuss the buildings of the famous town! Nobody, that with their own eyes see them, could deny that their stature and construction is more than appropriate and appealing. Therefore, they give our town splendour and remains a substantial adornment for the same. And if one claims, that the burghers' private houses in our town are not beautiful and do not remind of either the fine tastes of the French, or the sense of style of the Italians nor the wealth of the Germans or the neatness of the Belgian buildings, one should remember, not to diminish the merits of the wooden buildings, yes, even their singular grace*' (Sahlström 1961: 48). *Paraphrased translation.*

This text by Fahlman shows a sense of somewhat patriotic pride of the wooden building stock. A foreigner, De la Motraye, on a visit to Gothenburg in 1716 made his observations of the town in his book *Travels*:

> '*The public buildings are not worth noting, except perhaps the town hall and the governor's house, and even less so the burghers' houses which are all wooden and low, and have nothing to recommend them but their being uniform*' (Bæckström 1923: 35).

This reflects the love-hate relationship the Swedish government and people in general had with the wooden building stock.

Swedish society and its urban settings, in particular, went through an enormous restructuring during the early modern period, and we can still see its influence on our cities today, essentially lacking everything medieval not built in stone. Lefevre (1991) talks about how the social room is built and organised and how it affects people's use and perception of it. The early modern urban room was to a large extent a stage set to reflect the long reaching power of the monarchy (Anderson 1974; Tagesson 2013). The city architect used regularity to create uniformity and the uniformity was in turn generated by iterated practices (Cornell and Hjertman 2018) of slow changes to the building culture. The uniformity could also be helped by regular plot sizes and house measurements. Placing similar houses next to each other in a repetitive pattern also strengthened the impression of planned uniformity. If a lot of people build similar houses it can look uniform or regulated without actually being pre-planned at all (Cornell and Hjertman 2013). The variety within the building stock could be disguised through regulating where houses of certain building techniques or sizes were placed in the original city plan making some difference between monumental and domestic space (Larsson 2018: 175, 180). The next stage, when people start expanding and building after their own mind, tastes and needs, was of continual concern to the magistrate and to government. There was an ongoing large-scale production of space with the monarchy as the puppeteer but with a great number of people wanting to, and indeed did, implement their own ideas along the way, thus in a communal effort forming the urban stage in an extensive *châine opératoire* (Leroi-Gourhan 1993).

The people involved

Nya Lödöse, Gothenburg, East Jönköping and partly Falun were all planned and constructed on green field sites. That is to say, there was nothing there before building. While Stockholm, Uppsala and Karlstad for instance went through a reordering of the street grid and an expansion of city land.

So how does one go about building or reordering a town? Some people, that were indispensable for the success of the city formations and town reordering, are less visible in the historical records. However, there were interactions between actors at different levels in the hierarchical order with various degrees of 'say so' or power. Under the auspices of the council there were a number of city officials that had the responsibility for the day-to-day running of the project, who were also overlooking public properties, building companies, garbage collections and street maintenance as well as fire services (Forsberg 2001: 66–67).

There were a number of people in the chain of command involved in town planning and the practice of mapping

[2] Nicolaus S. Fahlman, Oratio de clarissima sveonum civitate Fahluna. Translated to Swedish in E. Nordenstam Dalarnas hembygdsbok 1932:22. *'Övergån nu med mig, mina åhörare, till den ryktbara stadens byggnader! Ingen, som med egna ögon betraktar dem, torde förneka, att deras resning och byggnadssätt äro mycket lämpliga och tilltalande. Därför giva de vår stad glans och utgöra en icke ringa prydnad för densamma. Och om man påstår, att borgarnas privata hus i vår stad ej äro vackra och icke erinra om vare sig fransmännens fina smak eller italienarnas stiltrohet eller tyskarnas välstånd eller belgarnas prydliga byggnader, så bör man komma ihåg, att man ej bör frånkänna träbyggnader deras förtjänst, ja, de förete till och med ett egenartat behag*'.

Figure 2 Close up of a surveyor at Öreryd in Småland, Sweden in 1735. Arvid Hagman.

and measuring. Towards the end of the 16th century and early 17th century mathematics and surveying becomes more important for military and civilian purposes and starts to get more attention at the universities in Sweden. The body of university teachers lacked the right qualifications, thus, the solution was to send Swedes to Dutch universities, primarily, to study the art of surveying and the mathematics behind it, to become engineers and draughtsmen (Ahlberg 2005: 260, 263; Rodhe 2002; Råberg 1987: 39). Architects have also had a part in the town formation, largely focusing on the architectural overall design of certain city districts with famous figures i.e. Erik Dahlberg or Nicodemus Tessin the older, as well as the younger (Ahlberg 2005: 266).

Ideally, to establish a town, a plot of land would first be surveyed. The first Swedish surveyors were Anders Bure and his cousin, Johan Bureus, who drew up a map of Stockholm in 1602 (Ahlberg 2005: 269). Ådel Franzén has made a note of what she calls the people in the margins i.e. a surveyor's self-portrait in the margin of a map.[3]

The surveyor has depicted himself (Figure 2) and his co-workers (Figure 3) surveying a common in the parish of Öreryd in the province of Småland, in June 1735. It is not urban mapping but the tools of the trade would have been the same, the staff, an *ell* (1.143 m) long, and the measuring chain in hand (Figure 3). Arvid Hagman himself is portrayed at work by the drawing board.

The land-surveys had enormous importance for the understanding of the Swedish landscape and for the development of the urban. The amount of professionals that came out of, and helped create the urban project as a whole profoundly changed the mind-set and way of working and organizing big scale projects.

The surveyors and the fortification architects had to realise the geographical and topographical realities sometimes wilfully ignored by the initiators of the town plan or just as often part of the defensive strategies. That meant dealing with bogs, high tides of rivers, sea or lakes as well as mountains within the town plan. This was before the invention of dynamite, so levelling rock took a huge amount of time and effort. Problems with wet ground were a common issue since many towns were deliberately placed in marshy areas for defensive reasons. Gothenburg (Almquist 1929: 331; Cederbourg 1739: 32) and Jönköping as well as some areas of Stockholm had to reinforce the ground and sometimes enlarge the foundations of buildings to be able to build. Wooden box revetments filled with sand and twigs are common archaeological features, in many early modern Swedish towns, to this end. Falun solved the problem with the accumulation of slag from the copper mine through using it as foundations to build the new town on, which is also visible as a stratigraphic layer in archaeology (Wehlin et al. 2018). Bengt Wilhelm Carlberg was the city engineer (1727-1775) in Gothenburg and he points out, in 1753, that stratified layers from the city formation could be seen when digging deep in the ground i.e. the original horizon with grass, paved streets, floors and sill beams from buildings (Bæckström 1923: 186). Carlberg also mentions that the city grounds have been successively filled in with sand coming with English ships as ballast over several years increasing the soil depth substantially (Bæckström 1923: 186).

[3] 2014-04-14 https://arkeologijonkoping.wordpress.com/2014/04/14/ett-ovantat-mote-med-manniskor-i-marginalen/ by Ådel Franzén. Jönköpings läns museum. (2019-07-18)

Figure 3 Surveyor's co-workers in action. Öreryd, Småland, Sweden in 1735. Arvid Hagman.

Johan Adler Salvius was the man in charge of staking out the plots and canals of Gothenburg together with Johan Schult who apparently had previous experience of plotting canals. Unfortunately, Schult had to leave with short notice and left Salvius to handle the situation with his co-workers and the master of the wall (Almquist 1929: 62). Eventually, city officials were appointed such as a secretary, an enforcement official, a building contractor and so forth (Almquist 1929: 66). By and by management of the project was divided between various council members and to help them in the daily work they employed a master timberman and his staff. In Gothenburg timbermen and carpenters from a woodland area called Risveden in Ale some 30 kilometres up river were contracted for house construction and timber supply (Bæckström 1923: 22). Carpenters were among the earliest to form a guild of construction workers in Gothenburg, in 1650 (Bæckström 1923: 22). For simpler work or rough work on construction sites city soldiers, daily workers or farmers were contracted, who paid taxes in the region. These workers did an essential part of the labour, without them there would not have been any town formation or regularisation. Nonetheless, the Fortification, the Artillery and even the Admiralty employed skilled people who lend a hand when they could (Bæckström 1923: 23). Forsberg (2001: 70–71) mentions a similar set up of workers and chain of command from the city accounts from Stockholm. She also discusses carters and pullers as important workers. While women were involved through heavy work, carting sand in wheel barrows, stirring mortar, carrying bricks and paving the streets with sand at roughly half the men's wages (Forsberg 2001: 71). Nils Ahlberg (2005: 251–308) also discusses the actors within the city formation and town reordering processes stating the multitude of people involved in realizing the projects.

Reordering the town plan and moving houses

It was imperative that plots had owners, since it was a plot owner's duty to keep the street in good working order (filling-in potholes, have a useable surface) and tidy, which included shovelling snow in the wintertime (Forsberg 2001: 161). The council was accordingly determined to fill all empty plots after fires; however, that determination was in place all the time and in all towns.

There was an edict in place for the council of Stockholm, to expropriate plots where the owner had not built the kind of building they had promised or not built anything at all (Forsberg 2001: 163). The edict was the same in Gothenburg the years after the city formation; many had failed to deliver on the houses they promised to build when receiving their letters of plot ownership. This was exercised especially where those who had promised to build in stone failed to do so (Bæckström 1923: 29). Similar practices was in place during the regulation of Falun as well (Sahlström 1961: 32)

It was possible to get some measure of reimbursement from the council for those who had to dismantle and move their houses from Stockholm city centre to the outskirts along newly laid-out, regularised streets and plots. Those who had to dismantle or change their burgage plot to align with the new regularised plan were also eligible for economic relief. Finally, there were special cases who warranted attention (Forsberg 2001: 175; Råberg 1987: 91). The poor, the sickly and those with many children were considered, and some money was put aside to help this category, during the reordering of Stockholm in the 17th century (Forsberg 2001: 168, 173). When comparing the regularising of Stockholm with its old city plan and the newly developed urban districts, with the town relocation or rather a relocation of the citizens of Nya Lödöse to the new town of Gothenburg in 1621, a difference in strategies can be seen. Noblemen who previously owned plots in Nya Lödöse were given new plots in Gothenburg chosen to their satisfaction, while the rest of the townspeople received their plots through a lottery. The Dutch burghers of Gothenburg could choose their plots themselves, something perceived by the burghers from Nya Lödöse as deeply unfair (Almquist 1929: 61, 65). The people in Nya Lödöse were expected to dismantle their houses before the winter of 1621, and move them to the newly founded Gothenburg, however with some leniency regarding special cases (Almquist 1929: 66). There was even talk of burning the town if the citizens did not move (Almquist 1929: 64). The town charters of Nya Lödöse would lapse and be transferred to Gothenburg by June of 1621, while the old town land of Nya Lödöse would become farmland for Dutch farmers with immediate effect. Yet, in 1624, there were still some insurgent burghers left on the old town land conducting commerce, apparently being a nuisance to the Dutch farmers. The recalcitrant burghers had the choice of moving or having their houses torn down by force (Bæckström 1923: 69). Thus, the tactics for making people move seem somewhat rougher in Nya Lödöse/Gothenburg, than those used in Stockholm, some 30-odd years later.

Wooden houses i.e. log timber buildings and post and plank buildings were deemed movable, while timber-framed buildings and stone houses were seen as immovable. Even though both stone and brick could be re-used (Forsberg 2001: 168). For a timber-framed building to be classed as a stone house the façade should be covered with brick, something stated and restated by King Johan III in 1570, 1573 and in 1587 (Forsberg 2001: 161).[4] Then in 1636, a ban was enacted, forbidding the erection of timber-framed buildings on Stadsholmen (Old town Stockholm) (Forsberg 2001: 165–66).

Most areas where houses were built in wood, and labelled as movable property, were on rented plots, situated on *Malmarna*, in Stockholm. However, the loss of assets of such immovables as vaulted cellars and wells, was not initially reimbursed. The dispute regarding movable and immovable property on rented land was eventually resolved (Forsberg 2001: 168).

There was not a lot of money changing hands due to the plot reordering in Stockholm. There was a principal of one plot exchanged for another. If the new plot was valued higher than the former then the difference was set at a certain price/square ell, payable by the plot owner. If the new plot was smaller than the former, the plot owner got the difference reimbursed from the council (Forsberg 2001: 167).

It was possible to receive economic relief from the council or crown in connection to the reordering in Stockholm, through building materials i.e. plaster and wood sills. The city wall was due for demolition thus stone and brick from the wall became property of the new plot owner to be used as building materials in an effort by the council to help economically (Forsberg 2001: 165). The city council also helped through assisting with a workforce to dismantle, move and reassemble the houses for some plot holders. Timbermen, soldiers and sailors worked for the council with the reordering, and journeymen assisted where needed. If the plot owner saw the work through on their own, reimbursement was paid out by the council (Forsberg 2001: 174, 181). Some people were unlucky enough to have to move their houses twice during the regularisation of the city plan (Forsberg 2001: 179). As discussed earlier in this work, a burgage plot held several buildings and all had to be dismantled, moved and assembled anew, and sometimes be reconstructed to fit with the measurements and the form of the new plot.

Most importantly, Forsberg (2001: 182–83) concludes that fair reimbursements were paid and everybody got something in return for cooperating to create the grid regulation of Stockholm, which took about 20 years to accomplish. The fairness of the reimbursements are corroborated by Råberg (1987: 91). The question of compensation was also relevant for the contemporary reordering of Uppsala during the reign of Queen Kristina I (Nilsen 2013: 62–68). There was a focus on rearranging the street system to a regular grid in Uppsala, while the inner blocks and burgage plots were left largely intact (Nilsen 2013: 83). Karlstad and Jönköping settled for much smaller towns than initially planned, and the street grid received more attention than the plot system, similar to the reordering's of Uppsala (Nilsen 2013: 73, 78; Pettersson 2018: 473–504).

The founding fathers and mothers –the monarchy's influence on the urban

Some Swedish early modern monarchs had a great influence on town formations and there was often correspondence with the magistrate of a given town

[4] The sources used by Forsberg: The statute of King Johan III for Stockholm, the 10th of March 1570, item 22 and 41, PRFSS III:88. A letter by Johan III of the 18th of February 1573, PRFSS III:135, and another letter by Johan III of the 19th of October 1587, PRFSS III:380.

with instructions and sometimes town plans. These royal directives say something about how the urban fabric, in the sense of how the ideal and the actual, came into realization. The 17th century was the era of utopian ideas of town creations and town restructuring in Sweden; in order to capture somewhat the *zeitgeist* here follow some quotes and instructions on town management. It is conversely difficult to know exactly how hands-on and engaged the monarchs actually were (Ahlberg 2005: 253), but we must accept this at face value for the time being.

> *'[...] in a rigorous and systematic fashion to the everyday life of the society that produced that logic. This could be done by showing how that logic might have functioned as an ideology, as a system of ideas that legitimated and reproduced the existing social order, and thus by relating it to unequal social relationships within and between households'* (Johnson 1993: 37).

Johnson in his paper 'Rethinking the Great Rebuilding'(1993) discusses the transition of the early modern British building culture and some of the mechanisms involved and the ideology that followed; these selfsame practices can also be recognized within the Swedish contemporary setting.

The following instructions regards the reordering of Falun issued by Queen Kristina I in 1646.

> *'They (who) because of their fortunes are expected to build 'best and most substantial' are allotted plots 'by the most principal streets and places' which 'renders the city beauty, that they build their substantial houses on the most noble of places' while those 'who wish to build with less means and humbler structures' should have their plots 'aside by the crossroads'* (Sahlström 1961: 30).[5]

This statement shows how social differentiation was created as a sort of side effect to the wish to build an aesthetically pleasing town. In order to ensure a level of grandeur and importance to Falun, more substantial elite buildings were placed by the main streets and squares i.e. the more prominent places while ordinary people were half-hidden on the less auspicious streets. The building committee enforced similar instructions on the populace of the newly founded city of Gothenburg in 1621, placing small residential wooden houses on the back streets. Nevertheless, there were also instructions to build with regular features in regard of size and building materials (Bæckström 1923: 11). Comparable ideas were mentioned again regarding the built environment in Gothenburg by Sigfrid Sirenius in 1737 (Scheele and Simonsen 1999: 24).

Another topic of issue between the monarchy and the newly formed town governments was unauthorized changes to the ideal town plans, which created points of friction. Almost immediately after the first houses and plots were purchased and developed the owners started to sell and buy property and join plots to make them bigger. There were often attempts to make private streets and alleyways. All of the changes to the original town plan in Gothenburg caused the regency of Queen Kristina to protest in 1636. The original town plan formulated by King Gustav II Adolf was apparently lost, but that did not stop the regency implementing harsh punishments for those who transgressed the missing plan. Meanwhile, the Gothenburg magistrate had granted several private streets and many plot mergers, thus finding themselves in a sticky spot trying to withdraw all those agreements. The magistrate claimed not to have known about the prohibition on changes (Almquist 1929: 332, 335). This was therefore a very real clash between the ideal and the actual. The idea that it was indeed possible to live in an ideal space/model and never change anything reflects on the one hand a utopian mind-set from the regency's part (probably related to them being far away from the realities of actual town government) and the real life problem solving on the magistrate's part (Öbrink, Williams, and Nilsen 2018). The same argument came up in Stockholm in 1634 in the council minutes:

> *'12. About buildings. To build according to one's own will. And to take plots without the council's knowledge. is forbidden for the sake of such unorderliness be abolished'* (Råberg 1987: 80).[6]

The city plan, once approved by the late Gustav II Adolf, was reaffirmed in 1636 to be implemented without any changes,[7] meaning nothing could be changed or rearranged in the old plan. Nonetheless, the week after, a commission was submitted for a new design of the street grid of Malmarna even though the council had just approved the opposite (Råberg 1987: 81).[8] Hence, this is another example of the clash between the ideal and the real.

Jönköping was subject to an early attempt at forming an early modern town plan and fortification moving the devastated town to the marshes east of the former town location. With the move came the necessity to create more solid ground for development of the

[5] *'de pga förmögenhet kunna väntas bygga 'bäst och anseenligest' tilldelas tomter 'widh de principaleste gator och orter' eftersom 'staden till prydnad och sirat länder, att de fornembste platser wääl och medh anseenlige huus blifwa bebyggde' medan de 'som af ringare medel ähre eller ringe huus willia upsättia' skulle få sina gårdar förlagda 'affsijdes widh twärgaturne'* (Sahlström 1961: 30).

[6] Koncepttänkeboken 8/12 1634. SSA. *'12. Om bygningear. Att en part byggia efter sin egen huf. Och taa in tompter Rådet owetterligit. förbjudes för den schulld at sådan oordning afskaffas'* (Råberg 1987: 80).

[7] Sources used by Råberg 1987:81: Kammarkollegiets protokoll 12/8 1636 (page 83)

[8] Sources used by Råberg 1987:81: SRP 26/8 1636 (VI page 565)

town. The problem was that the only dry land within the town limits was the narrow string of sand between Lake Vättern and Lake Munksjö, and that area was the first to be occupied. The rest of the expanse designated for habitation had to be prepared with a system of box revetments filled with sand and fir twigs to create a dry enough surface to build houses and streets on. This was attempted repeatedly but water and even waves came through the ground and undermined the soleplates, the buildings and fireplaces. Everything was destabilized and the wood soon began to rot. It was neither a welcoming nor a particularly nice place to live for the mostly foreign workforce in the factories (Pettersson, Nordman, and Heimdahl 2010: 14–15). There was a royal command on formation of the city, on the movement of the city, along with the establishment of the factory. However, it was up to the citizens to make the order become reality, and it was also up to them to actually build, live and work in these new environments. It must be emphasised how much labour it took to create a solid foundation on marshland for an entire town with only manual labour and horsepower, see Chapter 4.

King Gustav II Adolf, best known internationally perhaps as a leading figure in the Thirty Years War, showed a deep interest in town development and wanted the cities of Sweden to reflect the country's new position as a European superpower. Even so, there was a lot of work to be done to achieve that goal. He took a detailed interest in all things related to town formation and their fortifications. Unfortunately, the war-effort consumed both manpower and the financial means (Ahlberg 2014: 40; Forsberg 2001: 16) intended for the restructuring of urban Sweden and only Gothenburg came to be 'completed' according to his instructions during his lifetime. Yet, the royal instructions lived on and were implemented to a much greater scale after his death under the regency of his daughter Queen Kristina (1632-1644) and by the queen herself after she came to power (1644-1654) (Råberg 1987: 77). Gustav II Adolf commenced regularising the urban grid in Stockholm, and the ongoing flow of people settling in the capital created a need to incorporate areas earlier deemed peripheral into the city. Stadsholmen (Old Town Stockholm) suffered a devastating fire in 1625, which left a large number of houses in ruins (Råberg 1987: 68). The situation, while sad and problematic, led to the possibility of making changes to the city plan and street grid, this was thus the moment when the great reordering of Stockholm began. The instructions are quite detailed with demands on submissions of the designs of facades, facing the main streets and squares from the magistrates for their approval (Råberg 1987: 68, 124), similar to the procedure in Gothenburg a century later (Scheele and Simonsen 1999: 24; Bæckström 1923: 178).

It was prohibited to build houses in log timber or timber-framing technique on Stadsholmen. If the plot owner could not afford to build in stone they had to sell the plot to someone who could (Råberg 1987: 79; Forsberg 2001: 189). The same sort of instructions were also implemented in Gothenburg (1923: 25).

The regularisation of Riddarholmen then followed, starting in 1638, where the unregularised building stock was dismantled and moved away to make room for vast lakeside plots for the town palaces of the nobility in an ordered street and plot grid. A large portion of the land was already owned by the crown, which facilitated the implementation, yet, it was not done overnight and not without protest (Råberg 1987: 74). The lower parts of Norrmalm was also under scrutiny, and while there were plans for regularisation, it is nevertheless unclear how far they got. The settlement on Malmarna continued to be irregular and ever growing, meaning that eventually big changes had to be made to the town government and administration to quash the recidivism and bring order into the city development.

The regency of Queen Kristina then started on a much more comprehensive reordering of Stockholm and of Swedish towns in general with little regard to earlier town grids, plot systems or the older building stock. Stone houses were meant to be constructed on all the undeveloped plots in the city. It would seem that reimbursements were paid out to the affected plot and home owners, in the sense that everyone got something even though some differentiations were made (Forsberg 2001, 162–83; Råberg 1987, 83). Similar measures were put in place for Uppsala, Karlstad and Jönköping (Nilsen 2013) and Falun (Sahlström 1961: 76).

Another way of tracing the Monarchy's interest in Swedish town planning is through the city names often named after the king himself or his close family i.e. Karlstad (Karl IX), Mariestad and Mariefred (after Karl IX's wife Queen Maria af Pfalz), Filipstad (Karl IX's son prince Karl Filip), Kristinehamn (Queen Kristina I). Evidently, Karl IX was exceptionally active in town formation and leaving towns as legacies after himself and his family and his dynasty.

Threats to the city

There were a number of threats to the early modern city, some affecting economic matters and some threatening at an individual level or in respect of living facilities. The city walls gave some protection against enemy attacks but there were other threats lurking within the urban structure.

Fires

The main civilian threat to the cities were, without any doubt, city fires. Large devastating fires as much as small confined fires were equally common all round. Of preserved early modern Swedish wooden townscapes, to the greater part untouched by 16th- and 17th-century fires Säter, in the province of Dalarna, and Eksjö, in Småland, are the only examples. Apart from these two instances, all other towns and cities have to some extent, or repeatedly, been hit by fires leaving large parts of the populace homeless and the town in ruins. Gothenburg introduced its first fire prevention act after a large fire in 1639, forbidding haystacks and barns adjacent to chimneys, as well as open fires in houses without chimneys. Furthermore, stipulations in the act instructed how chimneys should be constructed in wooden buildings and that all chimneys must be swept four times a year by a chimney sweep. Finally, that all turf roofs by the big and small harbours should be replaced with tile (Bæckström 1923: 29).

During the fire of 1625, in Stockholm, one problem was crumbling timber-framed buildings which caused people to be injured by falling bricks (Forsberg 2001: 36), thus later bringing into question the idea that timber-framing was more fire proof than other wooden constructions. Nonetheless, memory seem short, and after the fire of 1721, in Gothenburg, the burghers were encouraged to build in stone or timber-framing technique, all the while people still mostly built in log timber technique (Bæckström 1923: 50).

Over time as has been demonstrated throughout this study, multi-unit structures increased in number, probably in part, because after fires people could be housed more quickly with occupation in multiple flats in a single building. The multi-unit structures also provided room for the growing populace as more and more people came in from the countryside. Perhaps this led to fewer houses causing homelessness to more people when the city was hit by fire. As discussed earlier urban fire was something, everyone in society had to relate to and find strategies to deal with. Such fire services as existed were not sufficient to handle fires of larger scale. The citizens had to have water, ladders, hooks and buckets ready to hand but these were usually insufficient measures to quell the fires.[9] Domestic, as well as professional use, of fire within the city walls was regulated, through time schedules and fire wardens posted at night to keep an eye on the town.[10] A further measure to fight fire was of course, as earlier mentioned, to build in stone or in timber-framing technique rather than in an all-wood technique; whether that would have had an actual outcome of preventing fire is, however, hard to tell.

Widening streets was an important part of the various fire prevention plans (Råberg 1987:110). The canals in Gothenburg can also be interpreted as part of the fire prevention strategy working both as a water-source and as a 'firewall'.

Before the big fire in Falun of 1761, there was only one stone building in the entire town. The devastation was total after the fire got loose in the dense wooden settlement and two-thirds of the building stock was lost. Plans were implemented regarding wider streets in the city centre and stone houses only, for fire safety reasons, whereas the outskirts of town were to be re-erected with neither changes to the city plan nor any new safety measures at all, leaving the major part of the citizens to rebuild in wood again (Sahlström 1961: 48–49). In the centre, wide cross-roads were created to prevent fire and enable easy access for water collection from the river during fires (Sahlström 1961: 49–50). Only a handful of stone houses were built after the fire, thus timber buildings were still prevalent in both the city centre and the outskirts. Most people rebuilt their houses as quickly as they could reusing old cellars and sill stones, thus obstructing the introduction of the city plan (Sahlström 1961: 50). Nonetheless, there were problems re-erecting the town after the fire: people had lost everything and did not get enough financial relief, while many got into debt and lost their homes again through foreclosure (Sahlström 1961: 52). Returns from the mine were not as before thus creating further troubles for the populace. Many of the vacant plots were still not occupied as late as the 1830s (Sahlström 1961: 52). Perhaps this example from Falun illustrates well the problems of implementing new city plans in connection with urban fires.

There was thus a complicated relationship between town regulation and urban fires, which was not as straightforward as is sometimes assumed (Eimer 1961: 35), where it is believed that urban devastation was used as a means to regularise the street and plot grid. It can be difficult to achieve this because regulations take time to organize, drawing up a new city plan, getting royal approval, then surveying, organising and implementing the project, while during this same time a large number of people are homeless and perhaps jobless due to the fire (Ahlberg 2005: 247).

In this work, a number of different scenarios regarding urban fire have been discussed. Old (West) Jönköping was burned to the ground to prevent enemies using it for provisions and as base camp (Nordman, Nordström, and Pettersson 2014). As a result, the building stock had to be recreated and the town governance took the opportunity to move the town to a nearby plot of land more easily defended forming (East) Jönköping. When Gothenburg was formed the population of Nya

[9] The fire insurance records detail how prepared the plot owners were in case of fire.

[10] A detailed description, of how a fire broke out in Gothenburg on the 29th of November in 1757, how it was dealt with and accounts of the events, could be found in the magistrates records. Kv Domprosten plot 4.39 www.gbgtomter.se Olga Dahl's database.

Lödöse was presented with both carrots and sticks to incentivise them to dismantle their houses and move the building stock to the new town. If they did as told and followed the official time plan then they could enter the plot lottery, if not their houses would be either torn down by force or burned down by representatives of the crown (Almquist 1929: 64, 69), as mentioned earlier. Two districts one inside the city walls of Gothenburg, the outcrops Big Otterhällan and Little Otterhällan (a.k.a. Kvarnberget) (Cederbourg 1739: 27) as well as the suburb Haga (Cederbourg 1739: 77) right outside the city walls were used as temporary settlements in peacetime. If the enemy should appear, then the building stock would be burned down by the city to make space for the defences. Indeed, the settlement in Haga was torn down twice, once in 1676-77 when the crown needed a clear line of sight with enemies approaching. The second time, in 1689, the fortification demanded open contact with the fortlet or sconce, *Skansen Kronan*, situated in Haga. Yet, the area was soon populated again since space within the fortified city of Gothenburg was cramped (Bæckström 1923: 44).

In these areas, the movable and burnable wooden building was deemed ideal for provisional living space. Thus, urban fires were used as a threat, or a tool when needed, at both Swedish citizens and enemy armies while also posing a threat in its unplanned state when the fire accidentally broke loose in dense urban wooden settlements. Fire could also be used as a weapon by the attacking enemy, as evidenced by the Russian assault on Norrköping in the Great Northern War in 1719 (Helmfrid et al. 1968: 41–48)

Pollution

Unfortunately, environmental pollution in Falun had an effect on the social landscape. In the case of Falun one major factor dividing the town were environmental issues relating to the mine. The heavy smoke of rust was described by Carl von Linné, who on his travels to Dalarna in 1734, noticed the impact the smoke had on the environment while also causing health issues to the population. The smoke was detrimental to the air and people's lungs especially in the area closest to the mine. While the smoke prevented anything from growing in the vicinity, which left the ground barren (Hülphers 1762: 266; Linné 1984: 7) it also went some way to conserving the buildings with a characteristic rust-colour (Linné 1984: 11–12; Sahlström 1961). Another problematic issue was water access. Many parts of Falun were built on 2.7-5m of slag as part of the construction of the foundations, which made it almost impossible to dig wells. The water from the streams, which originated from the mines, was heavily polluted with salts and of no use for drinking, while the main stream, Faluån, that passed through the town, often dried up during the summer months (Sahlström 1961: 66–67). Richer townsfolk could choose plots further from the mine and the dangerous smoke, which in turn enabled them to grow their own vegetables (Linné 1984: 13) and breathe cleaner air than the poorer citizens who ended up living closer to the mine. The smoke thus affected the social landscape in Falun. It is also interesting to note that the architect behind the ideal space formed by the city plan had not taken the smoke from the real space into account in his plan. The underpinning (Lefebvre 1991: 403–4) of Falun in many aspects takes its starting point in the mine as a source of income but also through side effects like the never-ending accumulation of slag and the poisonous smoke affecting all citizens but on different terms and with different effect.

Changes to the demography

Lilja (2000: 366) describes the demographic change in urban Sweden between 1550-1800 as dramatic but not linear. It was wave-like in its character with a steep increase in the 17th century gradually spreading outside of the toll fence to more peripheral areas. Generally, the population increase slowed down towards the end of the 18th century, as seen in Stockholm for example (Lilja 2000: 366; Hallén 2018). However, suburbs such as Majorna, outside Gothenburg, did the opposite and underwent enormous demographic expansion (Hallén 2018). Lilja (2000: 366) views the period from 1680-1830 as a time of urban stagnation, which he interprets as a reaction to the expansionist urban politics of the 17th century and the relative stagnation during the 18th century. The stagnation could perhaps be linked to periods of relative disinterest, on the part of the monarch, regarding urban matters as of little interest. This was the case during the rules of the absentee Karl XII (1697-1718), his successor Queen Ulrika Eleonora (1718-1720) and subsequently her husband Fredrik I (1720-1751). Throughout the regency of under-age monarchs (as with the regency of Queen Kristina (1632-1644), or Karl XI (1660-1672)) the council showed limited interest in urban development (Ahlberg 2005; Anderson 1996). The period 1718-1772 is called *Frihetstiden*, or in English 'the time of Liberty, marking the end of the Swedish Empire and the autocratic rule of Swedish absolutist rulers. What followed was an era of relative freedom with parliament in charge and the monarch almost stripped of their power. This was a time when matters other than city organization and development were prioritized. Urban demographic growth during the 18th century was greater than during the 17th century but the relative growth was lower (Lilja 2000: 366) and so was the aggregation of new town developments. Lilja (2000: 366) also stresses the cyclical character of the mechanisms of urbanisation, perhaps as mentioned earlier linked to some degree with a high level of activity and political engagement during the rules of some monarchs in contrast to relative inaction during periods of regency and similar situations of others

(Anderson 1996). One single cause and effect cannot explain the success or failure of a city; there are many factors to consider: for instance, the vicinity to major places of production i.e. iron, wood or copper; the level of regional or national importance; rights to import and to export; or else the town's geographical location in terms of road networks and waterways. A further aspect to bear in mind were rival town developments (regardless if they are inside or outside the national borders). All these factors drive people in or out of cities and have an impact upon the demographics. Lilja (2000: 367), also emphasises the individual as an active agent, that is, the person deciding to move in or out of a town. While the individual can be part of a wider structure, they still need to play an active part, never in essence entirely free or forced. There is thus a balancing act between weak and strong actors or free agents versus social structures, all of which bring different weights to bear at different times on the process. Falun saw a Klondike-like rise and fall in demography, which followed the estimated value of copper on the national and international markets (Sahlström 1961). Jönköping had a similar experience due to the peace treaty with Denmark in a sense 'transporting' the border town to an inland location at the stroke of a pen but which slowly gained ground subsequently as a place of production and administration (Nordman, Nordström, and Pettersson 2014). Gothenburg, but perhaps foremost its suburb Majorna saw a large impact on the population from 1750 to the beginning of the 19th century. The harbour, being the focus of attention and gateway for the shipping industry, the navy, the herring fleet and the colonial and other international merchant fleet, needed and attracted a workforce from the regional countryside in addition to foreign personnel. All these people needed a place to live and Gothenburg within its fortifications had only limited means of accommodating everybody. Thus, the population of the suburb Majorna grew from 66 persons in 1715, 818 in 1775 to about 7000 by 1815 (Hallén 2018: 203). This will probably not show in a census for Gothenburg since Majorna, with its port not three kilometres from the city gate, was not yet part of the town. Local, regional, national and even international reasons and effects were thus pivotal and intertwined in relation to the size of the population and the success of the Swedish towns.

There were also cyclical changes to crowdedness. At first, the city would fill up its building stock slowly, and then it would hit a first physical limit due to natural or constructed boundaries. Either the town could expand vertically with higher buildings or a denser city plan or it could expand beyond the confines. Times of war and conflict could make the populace flee the town causing town abandonment, while some chose to stay under the new rule. This situation could then cause overcrowding, or at least a change in the demographics, in the place of refuge (Hjertman et al. 2018) for a short or longer period of time. After larger fires, parts of the city became empty and abandoned while the rest of the building stock temporarily overcrowded before the rebuilding was complete.

Using space – centre and periphery

City lands or property can entail many things - there is the close periphery and the distant periphery to consider placing the urban in the scale of the landscape. The city could not survive on what the land could provide within the city walls/perimeters, even though urban farming on the burgage plots were common in Sweden (Nordman, Nordström, and Pettersson 2014). Some farming took place just outside the city walls by the townspeople themselves but there were also larger farming estates, *landerier*, in the surrounding area with production aimed at consumption by the city populace (Enhörning 2006; Fischer 1923). There were likewise places for space-consuming productions as well as polluting productions on the outskirts of towns e.g. brick making, iron foundries, saw-yards, glassworks and medico-social institutions like the poorhouse, and similar, at a safe distance to the town. This also applied to marine activities like mast production, wharfs and shipyards for the navy, merchant ships as well as for the fishing industry, as demonstrated in these two maps from 1782 and 1809 (Figure 4).

Thus, activities directly related to the economic platform of the city were placed outside its perimeters. There was also a co-dependency between the city and the more distant hinterland. Taking Gothenburg as an example, since the town functioned as a staple town and international harbour all production from the surrounding provinces aimed at an international market had to pass through its ports. That meant that the iron produced in the province of Värmland came through the iron weighing station at Brunnsparken in Gothenburg before it could be exported. The timber also came from the provinces of Värmland, Dalsland and Västergötland through log-driving on the river Göta (Almquist 1929: 70; Cederbourg 1739: 131). Other important produce were stockbreeding and farming products from Västergötland (Cederbourg 1739: 132–33). The town thus functioned as a hub for commerce and transportation in and out of the country and at the same time as a tax collector for the entire region (Cornell et al. 2018). Production in various forms in the hinterlands was a good source of work and the population in these areas expanded. Sweden was, by and large, an agrarian country with the majority of its citizens living in the countryside up until the end of the 20th century. While the metal production of iron and copper was the most profitable part of the Swedish economy (Cederbourg 1739: 139) and vital for its development into an absolutist state (Anderson 1996: 194–95). The wooden building was without doubt the

Figure 4 The top map depicts Masthugget and Majorna outside Gothenburg with the near hinterland and its productions in 1809. While the bottom map shows Gothenburg and Majorna with the near hinterland and its productions from 1782. By Christ. Hillerström.

most common building type for all levels of society in the cities as well as in the countryside which included housing workers and landlords, peasants and industrial workers as well as burgeoning middle classes as much as merchant-princes, in truth housing the Swedish social fabric.

The peripheral landscape with its building stock and various forms of production along with the people who inhabited it usually only appear schematically – in the margins on maps and on plans as informally planned environments. However, the importance of these environments cannot be emphasised enough when it comes to the sustainability of the urban.

Economic framework – commerce, production, trade networks and communication

Sweden had an aggressive foreign policy during most of the 17th century and early 18th century, conquering, for example, Estonia and Livonia, as well as parts of Pommerania. (Anderson 1996: 188–89; Lundkvist 1999; Unkown 1780). Through the almost continuous wars with Denmark, the provinces of Skåne, Halland, Blekinge, Bohuslän and Jämtland-Härjedalen were won and incorporated into the Swedish realm. The succession of wars took its toll on the Swedish people (and a few others as well) both in economic terms but also in manpower (Huhtamies and Lind 2006). The

Swedish crown and government continued to conduct belligerent actions to establish itself as a superpower (Ericson Wolke 1998; Anderson 1974). Many Swedish towns were heavily fortified during the 17th and 18th centuries, especially those on the coast, which followed the latest in Dutch and Italian architectural fortification strategies (Ahlberg 2005).

Swedes knew the world through texts and maps or travel, for reasons of war, colonialism, or discovery and to some extent research (Linné 1957) [1747], but also through commerce and foreign encounters at home and abroad. 'Swedish' and 'Sweden' are relative terms for the most part of the early modern period; more commonly, people referred to more local attachment such as province, or even more locally parish, rather than relating to the idea of nationality. Sweden's national borders were changed several times during the early modern era through a series of wars and peace treaties (Hjertman et al. 2018; Nauman 2017). Evidenced by, for example, Jönköping, which changed from being a border town to an inland town, after the peace treaty of Roskilde in 1658 (Nordman, Nordström, and Pettersson 2014).

The Swedish town falls within a few important categories introduced in 1610. Staple towns (often situated by the coast) had the right to import and export goods and functioned as 'gateways' for international trade. Most other towns were called hinterland towns and were only allowed to conduct domestic commerce and exploit internal water networks including communications between as distant towns as Stockholm and Gothenburg. All rural produce had to be sold in these towns; this was, conversely, a utopian idea, difficult to control. There were always going to be local temporary markets on the countryside as well. Some of the produce from the hinterland towns was transported to the staple towns to be exported abroad. The main function of these towns was aimed at ensuring proper taxation on all goods for the government (Lilja 1995: 65–66; 2000).

The five towns discussed in this work also fall into these categories. Nya Lödöse, Gothenburg and Stockholm were all staple towns in coastal regions with the harbour as a key feature. Jönköping was a hinterland town, or a factory town (pre-industrial factories). Falun could count as a hinterland town, but had one main function as a mining town. Stockholm was of course also the capital, and started to function as such with the power amassed within its perimeters as the seat of monarchy and of government during the 17th century (Sandberg 1991).

Wood construction – the practice of space

Social space was built and organized quite differently in all the Nordic countries - Sweden, Norway, Denmark, Finland and Iceland – due to vast differences in topography, climate and tradition.

Sweden has an urban history of diversity when it comes to building. Some few examples of log timber buildings side by side with wattle and daub houses and post and plank constructions made up the early medieval townscape, c. 1050-1200 (Lagerstedt 2019; Nilsen 2011; Rosberg 2009). From around the 13th century the makeup of the building stock changed, and the log house became more prominent accompanied by an undetermined introduction of timber-framing technique (this is a preliminary timeline, and an under-researched topic, thus these findings might change in the future). Ecclesiastical buildings and elite constructions saw an increase in the use of brick and stone as construction materials (Anund 2001). The wooden construction methods then persisted into the early modern age with only some slow and few changes in layouts and interior fittings. This study has shown that mixing construction techniques in one building was very common as was having buildings in different techniques on one burgage plot.

Norway's urban history is very much linked to log timber construction. From the town formation of Trondheim/Nidaros (Christophersen and Nordeide 1994; Ekroll, Krokstad, and Søreide 1995) in the 10th century, the log timber construction dominated. Some houses were constructed in post and plank technique, but they soon became almost obsolete. A similar building history can be found in Oslo (Andersson, Hansen, and Øye 2008; Schia 1987; 1988), Tønsberg (Brendalsmo 1994) and Bergen (Hansen 2005; Helle 1982; 2006). The timber-framing technique was introduced relatively late from a European perspective, in the 16th or early 17th century (Roede 2001). Medieval stone structures such as Nidaros Cathedral (Ekroll 1997; 2015) are of course important to consider, while Ragnhildsholmen the castle opposite the town Kongahälla in the Norwegan-Swedish borderland was one of the first Norwegian fortifications built in stone and brick, in the 13th century (Berg 1883; Hansson 2011; Nilsson Schönborg 1992).

Denmark had a much stronger connection with timber-framing (Kayser 1985; Lassen 2014) and brick structures than the rest of the Nordic countries. While log timber building has had sporadic importance, earthbound post and plank construction (Clemmensen 1937) had a prominent role up until the 14th century (Thaastrup-Leth 2014) when timber-framing became prevalent. Looking at the case of Aalborg, 42 timber buildings from 1050-1600 were exposed through intervention (Klinge 2014: 211). Very little has been discussed about the actual building techniques used in the excavated remains but the location of the hearths seems less regulated than in the Swedish data where hearths are almost exclusively in the corner as argued in sections 5.2 and 6.1. The houses had the gables towards the street. Two timber-framed houses from the 15th-

16th centuries in Aalborg, were studied before being demolished. They both had first floors largely identical with the ground floors, with a large room towards the street heated by a cast iron stove fired from an adjacent room. A small room with an open fireplace was situated to the back. The larger rooms have been interpreted as storage rooms while the small rooms seem to have functioned as dwellings (Klinge 2014: 216). In preserved timber-framed houses from the 16th century, the front room was often arranged like a kind of entrance hall (vestibule) where commerce and crafts were practiced (Klinge 2014: 221). This does sound similar to the set up with shops in the front room in Nya Lödöse (Öbrink and Rosén 2017).

Finland has seen a dominance of log timber construction throughout the medieval period and into the early modern era (Seppänen 2002; 2012). However, Turku for example also had a vast building stock in brick and stone mainly associated with the Church and city administrative operatives (Seppänen 2014; Taavistainen 2008). Timber-framing was never introduced in Finland.

Iceland has had a very different urban development to the rest of the Nordic countries. Up until the 19th century, even Reykjavík was hardly more than a small village with only a few houses. Those houses were mainly public institutions such as the cathedral, the courthouse and residential houses for the staff of various institutions. There were several types of permanent or seasonal places taking on a number of urban characteristics and functions for the community (Róbertsdóttir 2018). The traditional building stock was in turf, stone and some wood in the gables, as well as for internal fittings. Almost all the wood material had to be imported, and sometimes, whole buildings came as prefabricated units from Denmark or Norway, some of which can be seen today in Siglufjörður, for example, which in part has left a mark on the building culture (Stefánsson 2003).

Close contact with foreign countries both inside and outside Europe creates a need to address the Swedish vernacular building stock in a broader perspective rather than seeing it as part of a Nordic 'vacuum'. The houses presented in this work have had a range of similarities with the building culture in west, central and eastern Europe both externally and internally. They exist in city plans originating from Italian and Dutch ideas and often built by Dutch, German and Scottish people. Colonial contacts have helped furnish the houses with furniture, artworks, artefacts and consumer habits from around the globe. Greek and Roman influences can also be seen in the architecture of manor houses, courthouses and formal gardens in increasing numbers, but also in the living culture of the bourgeoisie. Not least, the Nordic wooden houses were introduced to North America through colonial endeavours, and are now a much beloved and common feature of American building history and tradition (Vollmer 1978).

Making a life in the houses - city institutions and the administration of the state

The early modern period saw an increase in administrative functions and government control starting when Gustav I (1523-1560) took the throne but became ever more sophisticated and effective under Gustav II Adolf (1611-1632), orchestrated foremost by chancellor (Sw. *rikskansler*) Axel Oxenstierna.[11] The new administrative departments needed competent and highly educated staff, which forced the Swedish universities to produce officials at a rapid rate and at the same time increase the level of professionalization (Anderson 1996: 188).

Apart from helping the crown to get a firmer grip on governing the state these departments also assisted in strengthening the control over Swedish towns that up until then had enjoyed a high level of autonomy (Ahlberg 2005: 53; Lilja 2000: 266). The change in religion during the 16th century (Anderson 1996: 184) from Catholicism to Protestantism changed the position of the church and tied it much closer to the state and crown. The religious shift to Protestantism did not come overnight, there were in fact a number of different religious factions pulling in various directions over an extended period (Malmstedt 1999; 2002; Zachrisson 2017),demonstrated vividly within the royal family itself by Sigismund (1592-1599), a prominent Catholic, followed some years later by his uncle Karl IX (1604-1611) a Calvinist. Perhaps most famously was Queen Kristina's conversion to Catholicism in 1655 and subsequent abdication from the throne. This was a most shocking turn of events, since her own father Gustav II Adolf had been a leading figure in the Thirty Years War for the Protestant cause. The church was put in charge of the census, recording all births and deaths but also movements of people both in terms of inter- as well as extra- regional travel. The state and the church thus worked together imposing a much more in-depth control of the Swedish population through an ever more detailed administration. Together, state and church administrations laid the foundation for our modern society. The ecclesiastical, built urban landscape subsequently changed to fit the new paradigms, most visibly in the internal spatial practice in the churches, the statues of saints were removed and often the biblical scenes depicted on the ceilings were whitewashed, among other features related to Catholicism. Convents,

[11] Axel Oxenstierna was an interesting and powerful political figure holding, among other positions, the post as *rikskansler* 1612-1654, serving under three monarchs during his lifetime Karl IX, Gustav II Adolf and Kristina I. He had thus the unprecedented opportunity for long-term planning within government.

priories and other religious houses were closed and with monks' and nuns' medicinal knowledge lost, many hospitals closed down. Therese Zachrisson (2017: 21–23) discusses the change in society and the material culture connected to post-reformation Sweden. There were not one but many possible protestant belief systems evolving during the 16th and 17th centuries and it took a while to establish which form would prevail as representative for the crown and state, only finally being established in 1686 through the Church Act (Holmquist and Pleijel 1935: 114). The religious factions sometimes worshiped in private homes, for example Herrnhutism (Sw. *Evangeliska brödraförsamlingen*), or *Unitas fratrum*, an evangelical independent church that gained followers in the second half of the 18th century in Gothenburg (Pleijel 1925; Scheele and Simonsen 1999: 142–44). Similar practices of private worship could be found in Amsterdam *Ons' Lieve Heer op Solder* (Our Lord in the Attic) a semi-secret Catholic Church built in a private building. The church was built in 1663, the authorities in turning a blind eye showing a glimmer of tolerance.[12]

The official presence of the State was expressed increasingly through buildings and architecture. Cederbourg (1739: 41) lists three major areas for the public in Gothenburg; buildings to facilitate church services as well as churchyards, education for the youth, in addition to the magistrate. More specifically he mentions; the cathedral and the *Christinae* church (for the German population) as well as the *Kronhus* congregation and churchyard belonging to the Artillery, the Fortification and the Garrison (Cederbourg 1739: 55–56). In 1630 *Trivial skolan*, a primary school, was built aimed at the youth. Pupils were accepted from the surrounding countryside as well. A *Gymnasium* was built in 1640, which might be interpreted as Upper Secondary School or Senior High School. There was in addition a Cathedral school.

Cederbourg (1739: 63) also mentions court buildings: the town hall, the magistrate, the Corps de Guardie, the archive and the jail, all of which were depicted on the cover of this book. A building called at once the King's House as well as the Governor's House in English and *Torstenssonska palatset* in Swedish - three names for one house - was used for official representation, besides housing the monarch when they came for visits. In contrast to Stockholm, Gothenburg had very few noble houses and no royal castle but more representation from the upper levels of the bourgeoisie. Furthermore Cederbourg points to other public buildings such as the arsenal, the crown storehouse and the crown bakery in his inventory (Cederbourg 1739: 65–66); Sirenius (1737) had previously added the lock mills and the iron-weighing station to the public buildings (Scheele and Simonsen 1999: 32).

The bailiff certainly undertook an important town function collecting toll fees for rural produce aimed at the urban market as well as controlling imports and exports at the harbours. Further public facilities included inns or pubs, and coffee houses fulfilling public demand. Many of these building categories were often built in wood.

Habermas (1991: 1:33) discusses new semi-public, informal arenas outside of the early modern royal courts through the introduction of coffee houses. These social gatherings opened up possibilities for debate and social networking beyond the reach of the absolutist state and across the social divide of class (Habermas 1991: 1:35). These gatherings looked somewhat different as Habermas exemplifies it: the *Salon* in France was under largely female supervision whereas the *coffeehouse* in England and *Tischgesellschaften* in Germany were all-male affairs. These social spaces were used to forward ideas, politics, art and literature. The intellectuals of all levels of society, yet, perhaps foremost the bourgeoisie, found common ground to meet and discuss matters of the world or more directly related to local aims. Public discussions were thus undertaken in private spaces for rather small circles of members. Secret societies, such as the freemasons were another common phenomenon during this time of strong and pervasive monarchies.[13] The coffeehouses and the salons, on the other hand, had an openness about them and proclaimed publicly rather than hiding away (Habermas 1991: 1:35–44). Sweden, too, evidences the strong link between social networking and colonial hot drinks such as tea and coffee (Lundqvist 2016). In Gothenburg, the Bachelors' Club started in 1769 as a private billiards club for unmarried men working in commerce. This club had strong British ties with eleven Scottish and one Englishman of 33 members initially (Scheele and Simonsen 1999: 144). Their motto was 'pleasure, unity and friendship' and the club operated under its own system of codes, laws and moral conduct. Membership could enhance the chances of rising through the ranks i.e. a class voyage. The elite could thus distinguish themselves above the rest of society through a growing social and economic advantage. One could only become a member if suggested by a sitting member, consequently reinforcing the importance of networks of friends, family and colleagues. On the one hand these types of clubs claimed to be working for 'fraternity and equality' (clearly at a disadvantage of women), thus forming a socio-cultural sphere outside the norms of class society and hierarchy, while at the same time gaining royal approval and subsequently

[12] Museum Ons' Lieve Heer op Solder https://www.opsolder.nl/en/about/about-museum (viewed 2020-04-28), Amsterdam

[13] The Freemasons house in Gothenburg was built in 1807, situated by the big harbour canal.

renaming their society the Royal Bachelors' Club (Scheele and Simonsen 1999: 144–48). Again, on the one hand these clubs and societies helped form compounds and associations organised in a parliamentarian way advocating democracy, thus schooling a political mindset opposed to the absolutist state, while at the same time operating in closed-off secret societies with corrupt networks working for economic gains for their members.

One pleasure and aim for the Royal Bachelors' Club was playing billiards, a kind of practice and space mentioned in the fire insurance records from Gothenburg, in section 6.2, as a room in the theatre. Perhaps, a hangout for these merry young men of commerce.

Conclusions

The social production of space is a crucial part of the built environment (Lefebvre 1991: 8). The study of social practices demands a multi sectional approach combining structural, physical, sociological, topographical as well as political and financial aspects of urban formation and living milieus.

The royal city planners treated the early modern city almost as a theatre stage, where the 'Swedish' was to be displayed and acted for foreign dignitaries. What happened or what it looked like behind that stage i.e. the back streets, was of less concern. Yet, there were many voices in the process of city planning and development i.e. the monarch, the government, the architect, the magistrate, the city council, the surveyor of the street grid, the contractor, the plot owner, and the tenant. Someone had an idea that thus needed implementation in the *châine opératoire* (Leroi-Gourhan 1993). Was it feasible and functional; were there sufficient financial means, building materials and so on? Who was to do the actual building? If the house was to be moved, who was to organize and effect that? Was it even possible for everyone? Some might ignore the instructions, and some had to move their houses several times due to a drawn out or ill-thought through initial plan. Uniformity, repetition and functionality were sought after features in connection to the ideal city plan and were mostly but not always the result of design. The movable wooden building stock played an important role in the enactment of the ideal, while at the same time not comporting to those intentions.

A measure of incentives both hard and soft were implemented to compel the populace to move their houses to enable regularisations of city grids or the move to a newly formed town. At least in the case of the regularisation of Stockholm, reimbursements seem to have been relatively fair for putting the citizens through the trouble. The reordering engaged almost everyone in town in one way or other, in various stages of the process, which would make city formations and town re-orderings very much a communal achievement rather than a monarch directing and a town emerging, as so often simplified in textbooks. The urban redevelopment projects did however demand professional officials; as a result, several government departments formed during the early modern period to deal with these questions among others, have continued in existence and form the basis of the Swedish state today. The role of the monarch in town development changed from monarch to monarch. Some put great interest and investments into town projects while others showed barely any interest at all, especially those regencies of underage monarchs, which focused on other questions than reshaping urban space.

The early modern period was a time of national aggression and expansion, thus a certain amount of preparedness for return-attacks was called for. There were planned fortifications for a large number of Swedish towns, but only a handful actually had the fortifications realized. A great number never had any intended defence; those which had defences, were in different stages of repair and quality: some with advanced defence systems and some in very bad shape. Frequently there was a plan but seldom an execution. Several of the Swedish early modern defences, which were actually built, were of high standard with very thick walls and elaborate moats and abatements. The citizen was both locked in and locked out, following the opening hours of the city gates, which would have had a significant effect on life in the city. When the fortifications and city walls eventually were torn down, the urban landscape changed unequivocally and marked the end of the early modern era. Urban spaces are complex living environments that are affected by a number of factors i.e. large-scale fires, pollution or changes in demographics; other such factors can be a city's financial or political importance as well as its geographical location. All these aspects would eventually have an effect on the built environment and living spaces.

Wooden houses appear all over the city plan although social differentiation might have determined the placement, quality, type or size of the buildings. They were associated with all social strata, which would become even clearer if the building stock of the countryside had been included. Buildings on the urban periphery were largely of the same makeup as buildings in the city centre, just less rigidly organized. The multi-unit structure and the storied house becomes ever more prevalent during the course of the early modern period, reflecting to some extent the influx of people to the urban centres. The traditional Swedish wooden building stock did not exist in vacuum but contained similarities in both building techniques, contemporary designs and technical developments with other European building traits and culture at the time. Of course, there was a Swedish building tradition, but it was part of a larger context, and as such, slightly different from the traditions of the other Nordic countries. The love-hate relationship the Swedish population and Swedish government have had concerning the wooden building stock have both enabled a far-reaching demolition while also ensuring its prevalence. The aesthetic value of the wooden buildings has been discussed back and forth over time, where its uniform size and construction have been praised as positive traits.

Chapter 8

Wood, people and society: the case studies combined

The three previous chapters dealt with five different empirical data sets from urban settings over a quite wide period. This chapter is aimed at analysis of the sample from the micro-studies to look for any tendencies in the material structure when put together, expanding the value of the studies by combining them. The main scope of this work is the early modern period, 1470-1800. Yet, the studies undertaken have sometimes had material from both before and after this period, in a sense studying the *'the long early modern period'* which is applicable on certain matters related to build form. This could entail buildings in long term use, or new constructions built with old vernacular layouts and methods, thus upholding and continuing ideas of how to build and live.

To start off the discussion, Lefebvre's (1991) theories on the production of space and the problematic of space were taken as stepping stones. Spatial practice is empirically observable i.e. the built environment, city planning or the urban form. The study so far has been based on Bedal's (1995: 19) approach the historic buildings and building remains using categories of room and space, building construction, social structure and functions to sort out the impressions of the building stock. The social practice comes forward in the way these spaces/rooms have been used i.e. function and activities. Thus, the production of space entails how the urban plots were physically filled with constructions and organized, but it also gives indications of certain sensory experiences such as warm and cold rooms, or draughty or insulated spaces. Lit by windows or dark, smoke-filled or clean, are other such rather sensory experiences.

Giddens' ideas of structuration (1989: 25) and his discussion on routine actions in social life can be combined with the concept of serial collectivity (Sartre 1960; Cornell and Fahlander 2002: 15). Thus, when people form seriality through habits or routines in everyday life i.e. how wooden houses are built and used in urban society. A serial collective practice could be found behind 'typical' ways of constructing buildings, organizing the internal layout and regarding repetitive practices. We should look closer on informal transformation on how 'things' should be or work within building practices.

Social realities are formed from spatial relations to build form, therefore the buildings bear cultural and social information in their structure and design (Kühltreiber 2014: 40). Unwin (1997: 27) likens architecture to how a symphony is described in musicology where the 'architecture' of the symphony is the conceptual organization of its parts into a whole, calling it its intellectual structure. Unwin (1997: 28–29) says '*place is to architecture,..., as meaning is to language*', and that architecture was a product of life, before it became anything else. He thus emphasizes the user as well as the designer; however, perhaps the builder should be recognized in this context as well. Unwin (1997: 37) refers to the basic elements of architecture as ground, space, gravity, light and time – to be experienced through discovery, entry, exploration and memory. He points out that architecture rarely stays whole forever and thus will be experienced in different stages or repair. Rapoport (1990: 13; 1982: 88) claims that built environments contain three elements. The fixed feature elements: architectural form thus, buildings, floors and walls; semi-fixed feature elements: furnishings both inside and outside; and non-fixed feature elements: human and animal activities and behaviour (Schmid 2014: 55),all of which are possible to find through archaeological methodology.

This study has focused on buildings, however there are of course other kinds of materials that could contribute to the discussion such as artefacts from the archaeological or historical sources. Future work could develop systematic combined studies looking at these different aspects.

Spatial and social practice on the burgage plots 1470-1800

To cut through the material the data will be sorted by time rather than construction technique to identify any changes in how the urban plot was organized with the use of archaeological and historical sources combined with information on preserved buildings or documented buildings from Chapters 5.2-4 and 6.1-2.

The reader should remember that the present analysis corresponds to a limited sample from five core towns with added samples from other places. Thus, the building count from the micro studies says very little about the representation of the individual technique in each town. It does, however, give some indication of the presence or absence of the building techniques and to what extent they were used.

The rows of houses have been split up, according to function, in the lists. The count of buildings includes both detached houses and rows of houses, thus in accordance with the building description in the database. It can be difficult to positively identify an exact number of buildings within a row of houses based solely on the archaeological material. The databases in Appendices 3-10 and 11-12, however, give additional information regarding the combination of functions of rows of houses e.g. dwelling/woodshed/cart shed/ privy, or dwelling/shop, or workshop/warehouse/ dwelling, which also bears relevance to the discussion.

13th century

The through tenon from Söderköping, is the only trace of timber-framing that has been registered from the 13th century, in this study. The use of log timber buildings and post and plank constructions, is already well established in research concerning the medieval period (Lagerstedt 2019; Pettersson 2014; Broberg 1978).

14th century

Two dwellings and one building of undocumented function constructed in timber-framing from the 14th century were included in the study. Two of the buildings rested on pad stones.

15th century

Table 1 Functions in 15th century houses based on archaeological evidence and photos of preserved timber-framed buildings.

Function/ use 15th century	Log timber	Timber-framing	Post and plank
Residence	II	IIII	
Bakery/ brewery		(I)	(I)
Shop	I	III	
Smithy		I	
Workshop		I	
Byre	I		I
Stable	I		
Pigsty	I		
Unknown function		II	

The fourteen buildings from the 15th century show a mix of residences and workshops of various kinds (Table 1). From this dataset, timber-framing has the highest number of dwellings. The building technique of the supposedly used for as a bakery/brewery has not been fully established. It could have been constructed in either post and plank or timber-framing but should only be counted once.

The rooms belonging to the residence in the 15th century are the parlour, the larder and the vestibule. Some of the houses had an added storage room or a chamber with a separate entrance (perhaps a servant's quarter?). Most of the cooking and sleeping arrangements took place in the parlours. All the rooms were placed in a single file (although sometimes divided into two spaces/rooms). One residence was reused, as a byre. Two houses only had the one room, functioning as outbuildings. The rest of the rooms/buildings belonged to outbuildings such as byres, storage rooms or privets and work-related spaces like the bakery/ brewery, shop or workshop etc.

Window glass was found as early as the 15th century in Nya Lödöse in two log timber buildings, one (possibly two) timber-framed buildings and in one building with mixed technique. From a Swedish perspective, it is very early to see window glass introduced in vernacular, non-ecclesiastical or non-elite, environments. The large amount of window glass (some houses are believed to have had several windows, (Öbrink and Rosén 2017: 89–91)) and the fact that they were found in connection with four to five buildings makes a strong case regarding this issue. The material from the 15th century does not reveal anything about the introduction of chimneys; it would seem that windows were introduced before the chimney in Nya Lödöse. There were only corner fireplaces in this material, hence fireplaces located in the corner of the room/parlour *(Sw. stuga),* usually on the same gable as the entrance from the vestibule.

Table 2 The use of pad stones in the 15th century based on archaeological source material.

Pad stones, 15th century	Yes	No	Undocumented
Log timber	III		I
Timber-framing	IIIII	I	III
Post and plank	I	I	

The use of pad stones/sill stones were sporadic all through the period of the 990s-1400s in (Linscott and Nilsen 2018). (Table 2) shows a stable use of pad stones in the 15th century. Pad stones were used to a greater extent for residences than for other types of buildings. Their use was probably also strongly connected to the type of ground, whether wet or dry subsoil, that prevailed on site. The documentation about six buildings did not contain information about whether pad stones were used or not.

The log timber buildings measure from 35.4-90m^2, the one timber-framed building 16m^2 and the post and plank buildings ranked from 13.5 to 30.1m^2 in size. For individual measurements of buildings read *Appendices 4-10 and 11-12*. The widths of the buildings were more fixed in size than the length.

Two building remains had remains that might belong to a storeyed house (Table 3). The ground floor is on the other hand a certainty in the archaeological material.

Table 3 Number of storeys of houses from the 15th century based on archaeological source material.

15th century	1 storey	2 storey
Log timber	III	(I)
Timber-framing	IIIII III	(I)
Post and plank	II	

16th century

Table 4 Table over functions in 16th century houses based on archaeological sources as well as from photos and preserved buildings.

Function 16th century	wLog timber	Timber-framing	Post and plank
Residence	III	IIII	
Workshop	II	I	
Byre	II		
Kitchen		I	
Shed		I	
Bakery/brewery		I	
Shop		II	
Inner wall		II	
City gate		I	
Warehouse			I

Fourteen buildings in the sample were dated to the 16th century (Table 4). The dwellings were mainly built in timber-framing technique and log timber. There are workshops and byres built in log timber while the variability of functions connected to timber-framing is noticeable. The inner walls constructed in timber-framing is an indication of the practice of mixing building techniques in one building, in this case from Kalmar castle and Linköpings *slott* (a royal house), thus both elite milieus.

The same pattern to the residential rooms from the 15th century can be seen in the buildings from the 16th century. The parlour, larder and vestibule were still the core of the dwelling. Some houses only had the one room, seemingly used as workshops or similar functions. Other functions/ spaces were added to the row of houses, or else they were built as separate buildings. There were also possible traces of a two-storey building, which of course would imply additional spaces/ rooms and functions.

Again, Nya Lödöse provides examples of one log timber building as well as one or possibly two timber-framed buildings with window glass. The 16th century is still considered early for the introduction of window glass, and what we see here is a continued use of it. Chimneys also seem to come into use at this time in Nya Lödöse, with two examples from the archaeological material (four additional buildings from the 16th century had chimneys in the report from Nya Lödöse (Öbrink and Rosén 2017) are not included in this study).

Table 5 The use of pad stones from the 16th century based on archaeological evidence and photos of preserved timber-framed buildings.

Pad stones, 16th century	Yes	No	Undocumented
Log timber	I	III	
Timber-framing	IIIII I	III	II
Post and plank	I		

Table 5 indicates that it was still common to place the buildings directly on the ground in the 16th century.

The log timber houses from this period measured 37.8-98.5m^2, the one timber-framed building measured 15.48m^2, while the post and plank building from the 16th century was 55m^2 in size.

Table 6 Number of storeys of houses from the 16th century based on archaeological evidence and photos of preserved timber-framed buildings.

16th century	1 storey	2 storey
Log timber	IIII	
Timber-framing	IIIII III	III
Post and plank	I	

Timber-framed houses as demonstrated in *Table 6* were more frequently built in two storeys in the 16th century.

17th century

Table 7 Functions in 17th century houses based on archaeological evidence and photos of preserved timber-framed buildings.

Function 17th century	Log timber	Timber-framing	Post and plank
Residence	IIIII IIIII II (IIIII III)	IIIII IIIII I	
Workshop	I (III)	I	
Byre	III (IIIII I)		I
Kitchen	II		
Shed		I	
Shop		IIIII	
Inner wall		I	
Storage/larder	I		
Privy	I		I
Smithy	I		
Public house	I	I	
Castle		I	
Town hall		I	
Church		I	
Custody		I	
Warehouse		II	
Weighhouse		I	
Customs house		I	
Unknown function	II		

The function of individual rooms are more detailed than function related to entire buildings in *Table 7*. It is clear that the log timber building is relatively common in the archaeological dataset perhaps partly due to better conservation properties. Still the residence, workshop and byre were the most important and widespread functions. This table also shows that animal husbandry was an important part of city living. However, the town hall, which included one of the public houses, the church, the custody, a warehouse, a weighhouse as well as the customs house can exemplify both the multi-functional building but also the political, fiscal and communal presence in urban environments. The shops and perhaps the kitchens point towards other aspects of public life in the town. The standalone kitchens are houses perhaps aimed at feeding a workforce, rather than as part of a private residence. The privies seem to be constructed in post and plank or log-timber technique. The sheds are surprisingly few in number. A timber-framed castle on the outskirts of Stockholm shows how the higher strata of society used the building technique as well. The timber-framed inner wall from Kalmar castle is part of another such elite milieu.

The residence still preserved the former layout with parlour, larder and vestibule in a file. The chamber was more frequently added to the residence and sometimes the hall. Ceramic stoves enter into the data at this point, heating more rooms than just the parlour. The archaeological data concerning the layout of the residences represent log timber buildings. The timber-framing and post and plank material were not detailed enough to add to the discussion on layouts.

Four layouts of the eighteen examples (Table 8), from the 17th century, are taken from preserved buildings in Eksjö presented in the Chapter 6.1. The rest of the buildings come from archaeological reports of log timber buildings, see Appendices 3 a, and 3b. The most common layout is by far the corner fireplace and the single row layout. Those are also present in all the preserved buildings from Eksjö. The reason the central fireplace/ chimney stack and the double row layout are found in some of the same buildings is almost certainly connected to new building parts or modules being added in the 18th and 19th centuries. The central fireplace of the 18th century should not be confused with central fireplaces say in the late Iron Age, thus an open fireplace placed centrally in the room. The 18th century central fireplace had a chimney, or several fireplaces/ heat sources were linked to a stack located in the centre of the house (not in the centre of the room).

Four log timber buildings had windows, with an additional four with unclear evidence. There was one (perhaps two) house constructed in mixed techniques with windows but none recorded within the post and plank and timber-framing data. One, possibly two, examples of log timber buildings with chimneys were detailed.

The sample of *Table 9* is based on archaeological data, photos of preserved buildings and shows tendencies towards how pad stones were used in the 17th century. Quite a large portion of predominantly log timber buildings lack information about use of pad stones.

Table 8 Layouts and corner or central fireplaces in the 17th century based on preserved buildings from Göteborg, Jönköping and Eksjö.

Town	Date 17th century	House	Corner fireplace	Central fireplace	Single row	Double row
Eksjö	Late 17th century	Krusagården	X	X	X	X
Eksjö	1688/89, 1831/32	Boktryckaren 9-10	X	X	X	
Eksjö	17th- mid 18th century	Fornminnesgården	X	X	X	
Eksjö	1655/1770/1830	Forssellska gården	X	X?	X	X
Nya Lödöse	1570-1624	4:8:1	X		X	
Göteborg	1621-1645	Kv. Teatern, house 1	X		X	
Göteborg	1645-1669	Kv. Teatern, house 2	X		X	
Göteborg	1620-1630s	Kv. Sparbanken, A4	X		X	
Göteborg	1650-1699	Kv. Polismästaren, 1985	X		X	
Göteborg	1620-1650	Kv. Polismästaren, plot B/ phase 1	X		X	
Göteborg	1669-1730?	Kv. Polismästaren, plot E/ phase 3	X		X	
Göteborg	17th century	Kv. Enigheten, house West	X		X	
Göteborg	17th century	Kv. Enigheten, house East	X		X	
Göteborg	17th century	Kv. Enigheten, house East 2	X		X	
Falun	1670-	Kv. Dalpilen 1996, A8	X		X	
Jönköping	1630s-early 1700s	Kv. Dovhjorten, KG 24	X		X	
Falun	1600-	Västra Falun, Northern house	X		X	
Falun	1600-	Västra Falun, Southern house	X		X	

Table 9 The use of pad stones from the 17th century based on archaeological data, photos of preserved buildings.

Pad stones, 17th century	Yes	No	Undocumented
Log timber	IIIII IIIII IIIII IIII	I	IIIII I
Timber-framing	IIIII IIII	III	I
Post and plank	I	I	

The log timber buildings from the 17th century measured 5-102m^2. However, the measurement includes both detached houses and rows of houses and thus the measurements are therefore difficult to interpret. There were no timber-framed buildings with full measurements for the 1600s. The post and plank buildings spanned from 20-64.5m^2.

Table 10 Number of storeys of houses from the 17th century based on archaeological data, historical records and photos of preserved buildings.

17th century	1 storey	2 storey
Log timber	IIIII IIIII IIIII IIIII IIII IIIII	(IIIII)
Timber-framing	IIIII III	IIIII I
Post and plank	II	

The number of studied buildings increase for the 17th century, which comes through clearly in the log timber building stock (Table 10). There are five buildings interpreted as possibly having had a first floor. However, six timber-framed buildings definitely had two storeys. None have been found in post and plank technique.

18th century

The probate inventory from Gothenburg, 1795, does not state what building technique the houses were made of but five and a half residences were mentioned with added functions such as shoemaker, a rope-makers, a bakery, a shop and a smithy. The main reason for the higher level of detail in (Table 11) regarding function than the former table, is due to the use of historical records, in this case fire insurance records, in addition to the archaeological material. There is again a lot of evidence for animal husbandry, perhaps the addition of the building stock in peripheral Majorna tipped the scale a little bit in that direction. The wide variety of the sheds suggests that their functions are a challenge to pinpoint archaeologically since this level of detail has not been achieved in the data from the earlier centuries. This material shows a majority of

Table 11. Functions connected to the 18th century building stock based on archaeological data, photos of preserved buildings and historical records.

Function 18th century	Log timber	Timber-framing	Post and plank	Undocumented technique
Residence	IIIII IIIII IIIII (I)	IIIII	I	I
Storage/ warehouse		I	I	
Privy	II	I	I	I
Woodshed	I	II	II	
Shed	III	IIIII IIIII III	II	
Sheep shed			I	
Cow shed		I		
Cartshed		I		
Cornshed		I		
Stable	I	III		
Byre	I	I	I	
Pigsty				I
Slaughterhouse		I		
Inner wall		II		
Brewery	I			I
Tannery	I			
Shop	I			
Feed room		I		
Barn		I		
Church		I		
Henhouse		I		
Tool shed		I		
Workshop		I		
Hay mo		I		
Glassworks		I		
Dyehouse		I		
Laundry for wool		I		
Unknown function	II	III	I	

Table 12 Layouts and corner or central fireplaces in the 18th century based in preserved buildings.

Town	Date 18th century	House	Corner fireplace	Central fireplace	Single row	Double row
Eksjö	17th- mid 18th century	Fornminnesgården	X	X	X	
Eksjö	1655/1770/1830	Forssellska gården	X	X?	X	X
Göteborg	1744/45	Gatenhielmska huset		X		X
Göteborg	1740/42	Dahlströmska huset	X		X	
Göteborg	1760/61	Jedeurska huset		X		X
Göteborg	1752, 1769/70	Kullen	X	X	X	X
Göteborg	1759/60	Hälleberget A		X		X
Jönköping	1730	Ulfsparregatan 2				
Stockholm	1731	MPg2, phase 1, Svanken	X		X	
Stockholm	1774	MPg2, phase 2, Svanken	X		X	
Stockholm	1774	MPg2, phase 1, Verkstan	X		X	
Göteborg	1730	Kv. Polismästaren 1983 plot E phase 3-4	X		X	
Jönköping	1730s	Kv. Dovhjorten/ KG 23	X		X	
Visby	1700-1745	Torsmanska huset	X	X	X	X
Visby	1700s ?	Mellangatan 35	X	X	X	X
Visby	1700s ?	Mellangatan 4	X		X	
Visby	1700s	Biskopsgatan 1		X	X	X

log timber residences and of timber-framed sheds, yet, all the building techniques are used for a wide range of functions and are deeply embedded in the urban townscape.

The six preserved post and plank buildings from Visby have not been dated (or I have not found any information on it) but let us assume they were built somewhere in the 17th-19th century. Then it is possible to add three residences, one bailiff's office/tavern, one warehouse and one byre to the table of functions.

After including the buildings presented in the Chapter 6.1 there were seventeen buildings from the 18th century that had layouts that were detailed enough to be discussed (Table 12). Eleven of the houses had a corner fireplace and eight had a central fireplace. Twelve houses had the rooms built in a single file/row, and seven houses had the rooms in a double file/row. The corner fireplaces correspond with the single row layout. The central fireplaces correspond, in all but one case, with the double row layout. In some cases, both these layouts and the locations of the fireplaces are present in the same buildings, which seems to match with houses that had major restructuring, frequently confirmed through the dendrochronological dates. Thus, these could be interpreted as modernisations while keeping some of the old layout as well. It does not seem to be a straightforward case of new houses having the new double row layout, rather it is a display of variability. Consequently, both a mix of layouts and a parallel use of the two types of plans, with the older type not immediately being abandoned.

Forssellska gården in Eksjö has a question mark in the table for the central fireplace due to difficulty interpreting the plan, which contains many modernizations. If there were indeed a central fireplace within the part of the building that had the double row layout, then it would correspond to a dendrochronological date of the 1830s.

The major difference of the two ways of placing the fireplace is that the corner fireplace had the back of its chimney towards an outer wall thus losing some, or not preserving all, the heat in the house. The centrally placed stack, on the other hand, had a much more fortuitous location where all the heat was retained within the house and where a multitude of rooms benefited from the same chimney with connected fireplaces or ceramic stoves. Storeyed buildings could make the most of the central chimney from a vertical point.

Some of the preserved buildings presented in section 6.1 and in the table above, had the hall, the formal drawing room and the urban front garden. Even big luscious back gardens that were very much the latest trend for the upper bourgeoisie in the 18th century. However, most of the buildings discussed in this survey came from other levels of society where the traditional parlour, chamber, vestibule and larder still prevailed. Another important change to the inner layout is the numerous multi-unit structures that have emerged from the material, thus living in flats becomes more common. At times with individual cooking facilities and sometimes with shared kitchens. The kitchen was gradually becoming

Table 13 The use of pad stones from the 18th century is based on archaeological data, preserved buildings, photographs and fire insurance records.

Pad stones, 18th century	Yes	No	Undocumented
Log timber	IIIII IIIII IIIII IIIII IIIII IIIII		III
Timber-framing	IIIII IIII	II	IIII
Post and plank	IIIII II		IIIII IIIII I

Table 14 Number of storeys of houses from the 18th century is based on archaeological data, preserved buildings, photographs and fire insurance records.

18th century	1 storey	2 storey	3 storey	4 storey
Log timber	IIIII IIIII IIIII III	IIIII III (III)		
Timber-framing	IIIII IIIII III	IIIII	I	I
Post and plank	IIIII IIIII	II		

a separate room divided from the parlour. This was a slow process were the multifunctional parlour still held fort. Another novelty was the gradual division of the dwelling from the outhouses. All the functions were still present on the burgage plot but more often divided into separate building units, thus splitting up the row of houses.

At times, the dwelling was placed with the gable towards the street in a straight row of houses, or with the front along the street thus forming an L-shape with the rest of the units in the row of houses. These sort of shifts within the city plan and within the burgage plot happened very slowly, perhaps in connection to rebuilding after an urban fire or when constructing a new house. This mix of orientations is visible among the preserved building stock still in situ, i.e. *Gatenhielmska reservatet* in Gothenburg.

The number of windows and chimneys in the data from the 18th century is rather small compared to what one would expect. Three log timber buildings with windows and three log timber houses with chimneys, none recorded from the other construction techniques. This does not reflect the actual number of windows and chimneys within the 18th century townscape of course. The numbers have been influenced by what information the data source gave. Most of the archaeological and historical data as well as plans/ layouts have produced information on the existence of fireplaces and ceramic stoves but not on the chimneys, it should be possible to assume that there must have been a chimney if there was a ceramic stove. In most cases, it would also be possible to assume there was a stack for the fireplaces as well. Given that the number of heating sources multiplied in the 18th century so would the chimneys. A cheaper and an easier production process of window making resulted in an increase in numbers but it also enabled a production of larger windows than before.

Pad stones seem to be used throughout the building stock (Table 13); however, there is also a large number of undocumented cases, which do not inform on use.

In the sample discussed, the log timber buildings measured 19.2-146.3m^2, the timber-framed buildings 3.2-119.6 m^2 and the post and plank buildings 18.8-25m^2 in the 18th century.

In the 18th century, there were storeyed houses of all sorts (Table 14). The timber-framed buildings in three and even four storeys would have stood out within the townscape. There is also evidence of two storey post and plank buildings.

19th century

Forty-nine buildings from the 19th century have been included in the study even though being outside the general aim of the work (Table 15). Again, this level of detail concerning function has been achieved largely due to historical sources. Often there were many functions within one building. It can be tricky to distinguish between rooms and functions; thus, I have in this table made the residence equal parlour, hall, chambers, larder and porch/vestibule.

This list should be seen as an indication of the variation of functions that could be found on an urban plot and as an inspiration to seek further understanding of the older material, which cannot be connected to as detailed written sources.

There were also two stone houses/ residences within the data. A stone and timber-framed building, thus a mix of techniques, containing an office, a ticket office and a billiard room, dressing rooms, an orchestra, as well as an amphitheatre with 32 padded benches for the audience, which formed part of the burgage plot with the theatre.[1]

[1] Dahl 7.60, 1803. Restaurant keeper C J Crohn in Gothenburg found in Appendix 12.

Table 15 Functions in the 19th century building stock based on archaeological data, photos of preserved buildings and historical records.

Function 19th century	Log timber	Timber-framing	Post and plank	Undocumented technique
Residence	IIIII IIII	IIIII IIIII IIIII I	I	(I)
Storage/ warehouse	III	IIII		
Privy	I	I	III	
Woodshed	I	II	III	
Shed	III	IIIII II	II	I
Brewery	I	III		
Bakery	II	I		
Stable		III	I	
Byre			II	
Shop	IIII			
Cartshed	I	IIII	I	
Salt shed	I			
Barn			I	
Mangle shed			I	
Granary	IIIII IIIII			
Smithy		I		
Workshop		II		
Theatre		I		
Unknown function		I		

Table 16 Layouts and corner or central fireplaces in the 19th century based on preserved buildings.

Town	Date 19th century	House	Corner fireplace	Central fireplace	Single row	Double row
Eksjö	1688/89, 1831/32	Boktryckaren 9-10	X	X	X	
Eksjö	1848	Vinskänken	X	X	X	X
Eksjö	1655/1770/1830	Forssellska gården	X	X?	X	X
Jönköping	1807-1817	Smedjegatan 22	X		X	
Stockholm	1812	MPg8b	X		X	
Stockholm	1889	MPg2, phase 3	X		X	
Stockholm	1860	MPg8b	X		X	
Stockholm	1889	MPg2, phase 2, Verkstan	X		X	(X)

The three building techniques studied were all still in use in the 19th century largely for the same kind of functions even if some techniques might have been used slightly more than others. The residences were frequently built in log timber, but the timber-framed dwellings seem to keep a steady position, and the sheds were often constructed in timber-framing. It is impossible to detect a relation between the building technique and the function and vice versa. To state it more clearly the technique used for any particular function was not predefined but rather actively chosen in relation to particular situations.

Table 16 shows that preserved buildings from the 19th century still have a majority of corner fireplaces and single file layouts. Some exceptions can be seen from Eksjö, reflecting remodelled houses, which had an older core in part of the buildings. The content of the table is foremost a reflection of the sampling but also indicates the presence of, among other things, a large working class in the urbanized areas that saw an increase in small wooden cabins in the centre as well as the outskirts of town, as exemplified in the sample from *Vita Bergen* in Stockholm. There was a demographic boom during the 19th century that contributed to people from the countryside moving in large numbers into the cities for work. Moreover, it does show how the prolongation/ iteration of a building tradition with roots in the late Iron Age still had relevance in the 19th century.

When it comes to windows and chimneys those were abundant within the 19th-century material (although some people dwelled in cellar flats or mud huts, those have not been part of this study). Since the main scope of this work is the early modern period and in this case concerning the introduction of windows and chimneys, I have chosen to not specify window data for the 19th century.

Table 17 is based on preserved buildings, photos and fire insurance records. Pad stones seem to be the norm for log timber and timber-framed buildings yet post and plank constructions do not follow the same pattern. Most of the information comes from fire insurance records and they clearly state the use of pad stones for the log timber and timber-framed houses. Yet, the use of stone was not detailed as often in relation the post and plank buildings, perhaps because they were typically outbuildings and as such placed directly on the ground or perhaps not recorded as meticulously.

The building stock from the 19th century shows log timber buildings of 17.3-178m^2 in size, timber-framed buildings of 12.1-423.2m^2 and post and plank constructions measuring 6.7-97.9m^2. The largest buildings thus relate to the timber-framed houses while the smallest building (usually the privy) is the post and plank buildings leaving the log timber buildings in the middle range when it comes to houses. Some of these houses were even bigger when including the square meterage of the rest of the floor levels in the storeyed house.

The 19th-century townscape still included houses of one to three storey houses in wood (Table 18). Considering that most of the urban one-storey buildings were gone by the 20th century it is important to note their presence in the decades before. The three storeyed timber-framed buildings were still a thing, but the storeyed houses built in post and plank technique seem to have had a short manifestation.

A thematic discussion on the built environment

The buildings and datasets from the sample have thus been analysed for wooden building features, construction as well as function. In order to better understand these features, construction and functions they will be included in a thematic discussion contextualising building practices of the early modern society.

How to build - choosing construction method

When building a house there are several choices to think through regarding properties of the construction method. Considerations could be given to function, aesthetics, tradition, insulation, skill, influence, modernity, time consumption for construction or fire safety among other things.

Log timber – is a technique with a naturally good insulation and where warm indoor temperatures could be reached. An important property in an urban setting came from being easy to assemble if prefabricated; otherwise, it could take quite some time to complete. It was also relatively easy to disassemble and move.

Skilled carpenters could assemble even storeyed timber-framed houses in speed (Roede 2001: 224). Timber-framing was sometimes seen as more fireproof than other wood constructions although not as good as building in stone. Timber-framing was banned in Gothenburg in 1760, but after yet another big fire the ban was lifted again (Bæckström 1923: 50, 100–101). Funny enough they were simultaneously seen as unsafe for fire safety reasons in Copenhagen, in 1728, where the people were urged to build in stone after the big city fire (Kayser 1985: 11). Timber-framing could be made to look like stone construction, which was another property much sought after, through reefed facades.

Post and plank construction is yet another building technique that was comparatively easy to assemble, disassemble and move. It was also good for larger open spaces indoors such as barns, byres or storehouses. A negative for dwelling purposes was that it was not as insulated as, say, log timber constructions.

Table 17 The use of pad stones from the 19th century based on archaeological data, photos of preserved buildings and historical records.

Pad stones, 19th century	Yes	No	Undocumented
Log timber	IIIII IIIII III		I
Timber-framing	IIIII IIIII II	II	III
Post and plank	II		IIIII II

Table 18 Number of storeys of houses from the 19th century based on archaeological data, photos of preserved buildings and historical records.

19th century	1 storey	2 storey	3 storey
Log timber	IIII	IIIII I	
Timber-framing	IIIII IIIII II	IIIII IIIII I	II
Post and plank	IIIII IIII		

Thus, by choosing a mix of techniques in the construction, the properties of each individual section might be optimized and used to the owner's full advantage.

Internal structure, variability and the production of space

Archaeological remains of a building usually consist of a foundation, some pad stones and possibly some remaining part of the lower walls, which is not the same as a house. The most relevant properties of a house are the framing i.e. the walls and the roof, which are also the parts most often missing from the archaeological context in Scandinavian settings. This poses limitations and creates a need for interpretation, a part of which are estimations or pure imagination. Preserved buildings on the other hand have usually gone through alterations of some sort through restoring or remodelling etc.. It can be difficult to capture a specific moment in the past to compare the preserved building with the archaeological remains, which might be considered as frozen in time. Johnson (1993: 14) points to the importance of treating buildings as social constructs of divergent and conflicting interests and ideas with some communal properties. Another aspect is that mobile elements and alteration in practices within a room can be changed and form new settings, thus identifying use can be complicated (Schmid 2014: 55). The link between architecture and use is often not commonsensical (Schmid 2014: 55). Some building conservation projects focus intensely on the original form of the building. To my understanding, there is an important difference in capturing the architect's intent often in the form a blueprint, a plan drawing or what the house looked like the moment before the first resident put the key in the keyhole, and the study of the life of the building. My aim has been to understand more about the production of space, but there is also a production in the use and meaning of space, not just in the initial moments of the 'lifespan' of the building, but over time.

To sort out where these data sources can meet and what they gain from each other all materials have been studied with the same aim and questions.

Function

The practice of making and uses of space is a good way of looking at function. The level of detail seems to depend a lot on what kind of sources that were used in the study, and from what period. The historical sources have given a high level of detail from the 18th century onwards, unfortunately, that level was harder to achieve for earlier periods, but perhaps other historical sources could be explored. The function can reveal a great deal on what practices or activities went on within the burgage plots in terms of how the spaces

Apothekare	2.	Linwäfware	9.
Barberare eller Chirurgi. en af dem är Stadsens; en Artilleriets; en Guarnizonens; en Ammiralitetets	4.	Logarfware	1.
Boktryckare	2.	Målare	7.
Bildthuggare	2.	Mässingzslagare	1.
Bokbindare	5.	Murmästare	5.
Buntmakare eller Skinnare	2.	Perouquemakare	12.
Blåckmakare	3.	Repslagare	3.
Bläckslagare	2.	Sadelmakare och Remsnidare	8.
Bagare	8.	Såckerbagare	1.
Bryggare	14.	Scherslipare	1.
Guldsmeder och Jouvelerare	14.	Segelsömmare	2.
Gordelmakare	2.	Skin- och Fällberedare	3.
Glasmästare	5.	Skomakare	27.
Handskemakare	7.	Skräddare	36.
Hattemakare	6.	Slacktare	5.
Hofslagare och Grofsmeder	5.	Snickare	12.
Klensmeder	9.	Snörmakare	1.
Knappenålsmakare	1.	Spåremakare	1.
Kopperslagare	4.	Swerdfägare	2.
Klädemakare	11.	Swarfware	1.
Klåckgiutare	2.	Tapetmakare	2.
Kruk- eller Påttmakare	3.	Tengiutare	3.
Kardewantzmakare och Lädertågare	3.	Tunnebindare	15.
Knifsmeder	2.	Urmakare	2.
		Wagnmakare	3.
		Winskiänckare	6.
		Åkare och Formän	8.

Förutan Dähldragare, Jernbärare och Upsättare, Klampare, Saltmätare, Strömbåte- och hemförare-gillet, med andre flere af det ringare Borgerskapet, som på hwarjehanda sätt bruka sin lofliga näring. De öfriga drifwa sin handel och kiöpenskap, efter en af Magistraten wäl förordnad och nrättad Oeconomie. Hwilka alla med deras hustrur, barn och tienstehion, anledning af Stadsens skattnings-längder giöra ett antahl af 12761. Siälar.

Figure 1 Occupations in Gothenburg in 1739 (Cederbourg 1739: 72). Apologies for a list in Swedish.

were used and organized. They give some insight into the human activities and presence on a spatial level (Bedal 1995) concerning special attributes connected to said activities i.e. fireplace, booths for animals, water accessibility etc. The functions could also have an impact on how the room/house was built and where it was placed within the plot. Rooms experience life cycles just as objects, through construction and use, abandonment and redundancy (Schmid 2014: 54). Important processes are conversion and adaptation as well as economic and work-related factors. Some people have no or very little say so in how their living accommodation is designed, the quality of the construction or regarding how it functions in their everyday life in relation to being rented, physical ability or poverty etc. If the structure is not conducive to conversion, it might lose its usefulness or relevance (Schmid 2014: 54).

The occupations listed by Cederbourg (1739: 72–73) in (Figure 1) confirms some of the functions that have been identified in this work, but also highlights many occupations whose functions or practices go unnoticed in most the archaeological data. Maybe deep studies of the material culture and practices of individual occupations need more attention within historical archaeological studies. Nonetheless, it also needs pointing out that function does not equal occupation; function is more closely related to practice which revolves around all activity of everyday life and not confined to a place of work. Cederbourg (1739: 73) also adds all the soldiers and their families stationed for the city defence to the list, which would entail a whole new range of occupations within the armed forces.

Tagesson (2019: 145) points to the importance of including archaeobotany sampling in the analysis before determining for example if a room was used as a kitchen or not, it is not enough with a fireplace he argues. The complicated relation between kitchen and residence discussed in section 6.4 should strengthen that view.

From a social perspective there might be a difference between a common function (found in most or all burgage plots) i.e. the privy or the residence, or a special function serving a wider section of society as part of a business i.e. shop, smithy or tannery. Specialised functions like the tannery or the slaughterhouse were often placed on the outskirts of town near running water, partly due to large water consumption and partly bad smells from production, while contamination of drinking water was also a real concern.

Another reason for placing a particular function on the periphery could be due to fire hazards, which included everyone who used fire, whether to bake, brew or burn e.g. smithies, potters, tanners or founders. Yet, also those who used fire in the streets such as coopers while carpenters, wheelmakers, timbermen or woodturners who spread flammable materials around needed to be careful. Tradespeople who dealt in flax, hemp, tar and so on needed to ensure fire safety (Bæckström 1923: 89). The production of space in relation to function can thus be connected to spatial and constructional reasons as well as social ones. It would also indicate how far, approximately, a person would have to walk/travel to find different functions in relation to the city plan. Some would be near or within the home environment while other functions would be rarer or perhaps spread out within or outside the town centre. Structural practices such as the aim for which a building originally was built, could change over time. One of the residences in Nya Lödöse had for instance been re-structured as a byre, thus gaining a new purpose and use. A critical point is the problem of knowing if the intended function actually took place in the space in question and if a certain practice was structured in the same way everywhere (Johnson 1993: 11). Archaeobotanical sampling can sometimes help with determining this but not always. Tagesson (2019: 146) has made a very useful list of how to identify different types of functions like workshops and storage rooms through a number of different archaeological methods and building remains. Among these, he mentions '*metalworks - with big fireplaces, sand-filled casting-pits and waste identifiable within the archaeobotanical samples, as well as the presence of slag*'. It is also important to point out that very few preserved outhouses remain within the early modern Swedish building stock. Those that still stand have largely been overlooked by research and are rarely dated, documented or actively protected against alterations or from demolition. Tagesson (2019: 145) also identifies rooms called *kontor* in Swedish as possible utility rooms. In modern Swedish the word means office. In this study, the word has popped up in some fire insurance records. Looking back some of them could possibly have been utility rooms, judging from their location within the layout of the buildings but some definitely would have been offices i.e. the ticket office.

Public functions such as the town hall, the poorhouse or the jail also had designated spots within or outside the city walls much related to whether the function should be displayed and accessible, or hidden and peripheral. The poorhouse was one function that might be placed differently according to the political or religious climate. If the poor were considered a nuisance, the poorhouse would ideally be placed out of sight beyond the city gates where the building and living conditions might be in poor condition. However, if the poorhouse as an institution was seen as a display of the goodwill and generosity of the elite, it might logically be placed in the centre for everyone to see, in a substantial building with prominent facades.

Layout

It has been possible to distance the discussion from the methodology of typology from previous research, which was connected to the *Kulturkreislehre* and diffusionism. In Sweden, it was famously advocated by Erik Lundberg (1971; 1945; 1935), a Swedish architect who believed all cultural development came from the Mediterranean cultures. Sigurd Erixon (1938; 1982) on the other hand renamed or transformed this idea of diffusionism to become a question of *tradition* i.e. traditional building techniques connected to specific geographical contexts but within a broad shared defined macro-culture. Another strategy has been suggested by the use of structural grammatical transformation (Chomsky 1965) as an analytical tool when examining the building stock. The typology had some use in identifying similarities, but the differences were often downplayed to make the buildings fit the pattern/theory. Neither the mapping nor the typology fits this material particularly well, there is a core of similarities but at the same time, this study has revealed an abundance of variability as well as a wider geographical spread of individual building techniques. Binford (1962) wrote on this topic when he advocated for research on variability, rather than on typology and similarities. Layouts as well as function and building techniques have cultural meanings attached to them by society, Johnson (1993: 12) points to the change of these meanings over time.

The variability also comes forward in the houses built in a mix of building techniques. Those do not conform well to typologies even if they fit the pattern of layouts and functions to some degree.

Structural grammatical transformation entails a set of predetermined building blocks or units. These can then be attached or detached at will much in the same way the grammar of a language works (Glassie 1975). The medieval – early modern log timber residence can in many respects be likened with a square or rectangular box, containing either a single room with a corner fireplace or a room with a corner fireplace and a vestibule, sometimes divided into an entrance and a larder. This can be seen as a basic unit, and this unit was constructed as one body, meaning that the same timbers formed the sidewall in the parlour as well as in the vestibule.

Other modules/units could be added to the basic unit, for example another basic unit that looked the same as the first one. The two units could be attached through joining the vestibules thus creating a building with two parlours and one larger central vestibule. The seam/joint in which the two units met would be less water- or windproof. Thus, the vestibule was rarely a heated space. However, this study has shown that measures were often taken to improve on insulation in the vestibule. Another way of attaching another basic unit is to place it on top of the other, thus creating a two-storey building (Sjömar 1988: 43, 55).

Other units with separate entrances were frequently added, such as outhouses of various kinds, byres, shops and workshops. There seem to be a correlation between the entrances through a vestibule to residences, while other spaces/functions had direct entry to the rooms/buildings from the outside. Conversely, variability within the building stock could well mean that there were deviations from this rule, especially when structured practices had been altered i.e. the building or room had been given a new function.

These units represented different bodies of buildings that often were placed close together forming a row of buildings. They could also be detached and placed at a distance within the burgage plot. One pivotal advantage of building with wood i.e. log timber technique and post and plank technique, was that they were easy to both assemble and disassemble. The key point was the movability of the buildings. Thus, parts of buildings could be replaced or whole bodies could be moved and assembled anew with another building. These changes and possibilities caused a meeting between the old and the new, and as a consequence creating rather unique setups.

One reason why the measurements (specifically the width) of buildings kept rather steady over time could be that it facilitated moving buildings and connecting them to new contexts. Plot sizes could also have relevance to the discussion, although not studied in this work. Another reason clearly relates the steady width to the use of the single file layout as opposed to the double file layout that literally also double the width of the buildings.

The particular practice of making and using space, seem to have been repeated over and over again, within the building stock. This repetition of function, technique, layout and measurements could give a planned impression, but it can also be seen as a serial collective practice. However, the idea of what a house should look like, how big it should be and what it should contain did change over time yet slowly in a process of iteration.

The row of buildings also usually signified a single file layout and those have been the most common by far within this study. The shift to the double file (Tagesson 2019: 142) (circular) layout seem to have made a slow entry within the Swedish building stock during the 18th century and existed side by side in a transitional phase (Johnson 1993: 15) with the single file layout until the end of the 19th century. The separate kitchen also seems to be connected to the double file layout and the 18th century, i.e. the split of the multi-functional parlour.

The double file layout has been used within households of the upper bourgeoisie within this study, those houses often also had more rooms with new types of functions such as the formal drawing room and the hall for entertainment, more bedchambers and gardens. These houses were often detached, and thus not part of a row of houses and placed with the sidewall towards the street.

Conversely, the double file layout had likewise been adapted to the multi-unit structures where many flats and rooms thus could make use of the same stack. Still with the same set of rooms as the basic unit – parlour, vestibule and the occasional added chamber/bedroom and sometimes with an added kitchen. It fitted with the shift in social and spatial practices of the late 18th century when a large body of people started to move into the towns and the multi-unit structures became ever more standard. It was to an extent a novel way of organizing dwellings and living environments, thus a new way of producing space (Lefebvre 1991).

Climate and comfort - strategies and social practice

This section has a focus on general issues that are closer connected to living in a house than the construction itself. It reflects issues that had an impact on all buildings regardless of the technique. The period referred to as the little Ice-Age is most relevant to the discussion on built environment and living conditions. Northern Europe experienced extended periods of drops in temperature of about 2 degrees lower than today with colder and longer winters and wetter summers (Eriksdotter 2013: 25–26). Before the introduction of central heating, it was a constant struggle to keep a level heating of the house concerning wood consumption and accessibility to fuel, especially in regard to the open fireplace without a chimney. The early modern period brought with it a range of strategies for conserving the warmth and some of those have come through in this study. When the use of windows, chimneys and the inner ceiling were introduced, it also created an opportunity to better seal the building in relation to draught and loss of heat. All these solutions helped with energy efficiency and made living conditions more comfortable and with it followed new social practices (Eriksdotter 2013: 28). The spatial organization in early modern buildings reveals several modes of insulation. Clearly, there were differences in function comparing insulated and uninsulated spaces. There was also a connection between insulated and heated spaces. A discussion will follow on how the climate influenced the spatial organisation and interior design of the early modern building stock with inspiration taken from Eriksdotter's studies of elite milieus (2013).

Glass windows were a good indication of modernity in the 15th century, which can be compared to the introduction of glass in Turku, Finland at about the same time (Seppänen 2014: 26–27). Broken pieces of glass are tangible evidence of the former presence of a window. However, most windows in the 15th century did not have glass. They were openings for light, or fresh air, or for allowing smoke from the fire to exit the house. Often functions like the inlet of light and the exit of smoke were kept apart, the window having one function while a hatch had another, which can be seen, for example, in the use of skylights that opened and closed, by a long rod. Sometimes a hatch could shut them, or other types of coverings were used in the windows instead of glass such as skin, fabric, parchment, mineral or paper. It could also be an opening/hatch for a shop/mini tavern (Hazelius-Berg 1962: 6, 10; Qviström 2019: 30, 51). Qviström has identified a wide set of variability in her material concerning the use of windows and chimneys. It is not as easy as saying; first, there was the introduction of the chimney then came the glass windows, the first floor or inner ceilings. There was a mix of skylights, wall mounted glass windows and fireplaces with or without a chimney, thus the introduction of the chimney and the glass window came with new possibilities and a wider range of variability rather than a set of new rules (Qviström 2019: 34–35). Qviström (2019: 36) also found that the window tax, introduced in 1743 in Sweden, shows that windows could be seen as standard in residences by the 1740s.

Tiled fireplaces have been found from as early as 1320-1350 in *Storkyrkobrinken* in Stockholm (Söderlund 2012: 27), but nothing was mentioned about a chimney in the report. The presence of ceramic tile stoves has been most evident in the preserved buildings and the historical documentation i.e. fire insurance records from the 18th century. There have been a few pieces of ceramic tiles mentioned in some of the archaeological reports, still often not with sufficient evidence to identify whether or not the building actually contained a tile stove. The tiles within the cultural layers are often from secondary or tertiary sources (Tagesson and Jeppsson 2015: 112). Sometimes foundations for tile stoves can be found within the layout of the building remains, which is clearer proof, but then often with no actual tiles to indicate what type of stove/tiles in question. There have also been a few cases of traces of the use of cast-iron stoves. The ceramic stoves made up from a large number of individual tiles is another material that lends well to assembly and disassembly, as well as for use and re-use. A tile stove that once formed part of an elite milieu can be found archaeologically in a completely different setting due to re-use and a perhaps even a second-hand market (Tagesson and Jeppsson 2015: 115).

As discussed previously in section 5.2., methods of insulating the floors with the use of pad stones, clay, sea sand, dirt, sand, peat, gravel or wood chips often combined with birch bark prevented the damp and draught from rising through the floor boards and at the same time it stopped the heat from seeping out the same way. The ceilings were insulated much the same way, with birch bark and sand. This way the floors and the ceiling where sealed, leaving the walls, windows and doors to be taken care of. Windows were a concern when it came to draughts. In the 18th century, however, putty was introduced which improved the insulation a bit. One-glass windows were never well insulated; subsequently, the two-glass window was introduced in Sweden at the end of the 1720s. A cheap way of dealing with glare and excess light was by using window shutters (Qviström 2019: 79). Front doors became much more sealed through a similar change, after developing better types of hinges and frames, from previously being draughty constructions (more on this in Sjömar 1988). The walls themselves were secured using house moss, ragged pieces of cloth between the logs or by the use of panelling, wallpaper or hanging tapestries indoors, or externally through panelling, or plaster. Another method of insulation was through using the vestibule as an airlock between the outside cold and the indoor warmth. Doors were used to this purpose throughout the house between every room so that either room could be sealed off and heated or not heated by choice. Textiles started to be used more and more, curtains were used to dampen draughts for most inner doors, they were also used around beds, or, instead, beds could be built as boxes with doors. Window drapes/curtains were introduced during the early modern period (Hazelius-

Berg 1962). When rugs/carpets came into general use is not clear, but it was evidently another way to tackle draughts. Other methods were designated bed clothes such as nightcaps, shawls, robes and socks combined with materialities, like heated tiles or warming pans. Of course, as mentioned earlier the ceramic stove, the cast iron stove a well as the chamber stove changed the indoor climate considerably. The new heating sources made it possible to make use of more rooms in the winter months changing the social practice of living, working, sleeping and socializing in groups to dividing these practices into more private settings.

Another aspect was overheating; in some rooms, heat could cause a problem such as the small dwelling, kitchens and smithies. There seem to have been a fear of draught and of losing heat that sometimes made people take the conservation of heat too far creating almost unbearable indoor environments with excessive heat and sometimes suffocating smoke (Nilsson 1982; Qviström 2019: 34). This also demonstrates the difficulty of keeping a level temperature indicating a very important problematic of space during the early modern period. Eriksdotter (2013) made her study of climate change and the built environment on elite milieus. This study shows that similar strategies for heat conservation and the battle against draughts had an equivalent in the lower ranks of society as well. It influenced every part of the building culture and inspired a range of innovations clearly affordable to most members of society.

Building practice and the external of the early modern wooden house

A lot has been written about the aesthetics of monumental stone houses from the early modern period, while the aesthetics of wooden houses have been less discussed. This paragraph will focus on external features of the urban wooden houses.

House measurements

The measurements of the buildings stock, within this study, span, from the smallest log timber building of the 17th century, 5m^2 and the largest, in the 19th century, which was 178 m^2. The smallest timber-framed building was from the 18th century only 3.2m^2 in comparison with the largest from the 19th century measuring 423.2m^2. The smallest post and plank building dated from the 19th century was 6.7m^2, and the largest, also from the same century, was 97.9m^2 in size. The conclusion to be drawn is that all the building techniques were used for all kinds of construction work be it big or small and that it is not straightforward to assume an increase in size over time but a much stronger connection between size and function. To exemplify; the 19th century saw a great increase in very small houses and living spaces, while simultaneously very big houses were progressively common with other social classes.

Number of storeys

Over the course of time, the introduction of the storeyed house and the slow decrease of the single storey buildings changed the urban townscape between the 15th and the 20th century. This study shows the prevalence of the storeyed house and that undeniably it was a part of the cityscape. Multi-story units were another part of the storeyed house but of course, the affluent single household could also inhabit an entire two-storey building. Section 6.1 highlights the possibility of adding a first floor when the budget allowed. Some houses were built with two or three storeys at once, while some had it done while restorations were undertaken. The introduction of the storeyed house was probably a reaction to some sort of causality (Johnson 1993: 16) going on in relation to a wider social change or population increase, an urgent need of living quarters after devastating urban fires or simply for more room and storage. The one-storey building on the other hand went from being the most commonplace to almost disappearing completely from Swedish inner townscapes.

It is important to mention again that the height of the pad stones, or how substantial they are is a poor reflection on how many storeys a building might have had or how heavy it might have been as shown in sections 5.4, 6.1 and 6.2. Sometimes a tiny wooden building rested on incredibly high and robust pad stones or indeed a cellar.

Sometimes it was the other way around and a large building in several storeys rested on just four corner pad stones (Figure 2). The point being that pad stones, in themselves, are not a good indicator to rest an argument of storeyed buildings on.

It is equally difficult, if not near impossible, to determine what building technique that had been used by simply studying the pad stones. If there is nothing let of the wood construction, the pad stones themselves cannot determine technique. Nonetheless, it is possible to discuss the layout, the location of the fireplace and sometimes entries and doorways as pointed out by Anund (2001). Another aspect is the common occurrence of mixing building techniques, which also makes the interpretation process for archaeologists challenging.

Cellar and attic storage

On the note of spaces for storage, those could be found in a number of places within the burgage plot. I have not done a systematic account of cellars within this study, but they

Figure 2 As an example, see this small wooden building on top of a substantial cellar. Gatenhielmska reservatet Gothenburg. Photo: A. Nilsen.

are there in abundance in the archaeological record and the historical sources as well as in the preserved buildings. Sometimes, there was more than one cellar per house: for instance, the cellars in *Gamla stan* in Stockholm were often expanded and extended under the streets and beyond the area of the individual plots.[2] The attics have at times been furnished and used as living quarters. Yet the wheel and axle just beneath the roof, as seen on many preserved buildings (in for instance Kalmar), indicates a use for storing goods. The preserved buildings in this survey often had open attics used partly for storage but often also for drying clothes on lines.

Covered passageway

One way of utilizing space while conserving accessibility and entryways was by constructing covered passageways to the burgage plots. It could be done with two-storey buildings, by extending the first floor, but also with one-storey buildings by extending the attic, over the void between two houses. The storeyed buildings thus gained an extra room per floor level over the covered passageway. Examples of this can be found in Kullen (Gothenburg), Smedjegatan (Jönköping) though the covered passageway had at some point been remodelled, sealed and integrated into the building. The covered passageways were ideally wide enough to let through a horse and carriage.

Fornminnesgården, Forssellska gården, Vaxblekaren 13 and Krusagården in Eksjö, they all have covered passageways, to two-storey buildings. There was often a gate to close off the entry from the street (Figure 3).

Another way to produce more space can be seen in for example Visby and Stockholm where frequently two buildings were joined over alleyways gaining some extra space (Figure 4).

[2] Pers. comm. from Kerstin Söderberg, archaeologist at the City Museum in Stockholm.

Figure 3 A covered passageway with living quarters on top, Forssellska gården, in Eksjö, before the fire. Photo A. Nilsen.

Figure 4 A covered passageway to an alley, Stockholm. Photo by A. Nilsen.

The covered passageways were foremost constructed in log timber technique or timber-framing technique, apart from stone- and brick buildings.

Balconies and external stairs

When storeyed houses came into use, there was also a need to find good solutions on how to access the upper floor levels. As long as all the rooms were constructed in a file, internal stairs where not used, but entry to the house was through a balcony. If there were several doors leading into the row of houses one set of stairs, to the balcony, was enough. This practice also indicates the lack of internal doors between rooms. This type of construction was repeated if there were more floor levels. Roede (2001: 254) points to the common use of balconies for the ground floor in Christiania (Oslo, Norway) in the early modern period.

Some balconies were held up by extending the timber in the house construction such as in Krusagården and Forssellska gården in Eksjö, such are naturally impossible to recover from archaeological building remains. Another way of constructing the balcony was through the use of earth-bound posts, which are easier to find archaeologically. Most balconies had roofs, which prevented them from rotting. The balconies can be seen as, roads of access and communication, and spaces for social interactions. Clothes could be dried, under the protection of the roof, and other chores could be done in shelter from rainfall or the sun, than in the open courtyard and with better light than inside the house. At times, the balconies were built in/covered which made a more useful space in the wintertime, free of snow. Kullen (Gothenburg) is probably an example of an open balcony that was closed off and made into an unheated space with walls.

The Swedish word for balcony is *svalgång*, which translates to a 'cool passage' indicating an un-heated and often un-insulated space. The vestibule could be called *svale,* which is another play on the word cool, indicating an un-heated space.

External stairs could also be constructed inside a specially designed structure often with a spiral stair (Roede 2001: 253).

Internal stairs came into use along with the double/circular layout, thus with the greater width of the house. This logic can be observed in the study of the preserved buildings with examples from *Kullen, Hälleberget A* and *Gatenhielmska huset* in Gothenburg, from *Bokhållaren*, and *Vinskänken* in Eksjö, as well as in *Ulfsparregatan 2* in Jönköping, who all had the combination of double row layout and internal stairs.

Direct access, entry door, from the street have only been observed in the preserved building stock in the houses in *Ulfsparregatan 2,* Jönköping, *Gatenhielmska huset* and *Härberget A* in Gothenburg, and finally in *Bokhållaren* in Eksjö. These houses were all residences, yet usually the direct entry from the street was connected to some sort of enterprise/shop front as in *Smedjegatan 22*, Jönköping. Thus, the gate at the tunnel-entry frequently had a stronger relation to the street than the residence, and several points of entry had to be passed and approved before access was given to the private sphere of the house.

Jetties

Jetties were a common feature of the early modern house throughout Europe. There was a wider use of jetties on log timber buildings and timber-framed constructions than on post and plank buildings. The only example of a jettied post and plank building within this data, is the building *Apoteket 5* in Visby. It is a building with a ground floor constructed in stone and a first floor in post and plank, which protrudes from the ground floor in a jettie-like way. It does seem as jetties were foremost used for residential houses. Examples of the practice can be found in *Kullen* in Gothenburg as well as in *Vaxblekaren 13* and *Fornminnesgården* in Eksjö, all of which are log timber buildings. The photographic evidence of timber-frame buildings also has many examples such as the *Burmeisterska* timber-framed house in Visby or *Burmeisterska huset* for that matter, which is a building with mixed techniques with a jettied


Figure 5 Jettied timber-framed buildings with shopfronts with bay windows in Lincoln and York, UK. Photo: A. Nilsen

first floor. Jetties are a bit odd as a phenomena and the aims and origins behind them have not been fully determined. However, Roede (2001: 346) has managed to put together a useful list of more or less credible theories that have been in circulation within research.

Another feature that Roede has found to be relevant to the early modern townscape of Christiania, are bay windows. To my knowledge, those have not been addressed to any extent in Swedish research. In Christiania, bay windows were often used towards the street front and they were often felt to be intruding on public space, consequently they were banned in 1745 (Berg 1965: 34; Roede 2001: 84). Apparently similar practices were at play in Denmark (Kayser 1985) as well as in England as seen here in York for example.

It would be interesting for the future to take a closer look at the Swedish building stock in regard of bay windows; they have not come through this material so far (Figure 5).

Bislag is a Swedish word that comes from the German medieval word *Bisclagh* and means a gable ended wooden bench placed by the entrance to a house. Later they became permanent features built in stone, the oldest found in Sweden is from Malmö from 1525 (although the town belonged to Denmark at that time). The use then spread to Swedish towns; Stockholm, Visby, Kalmar and Nyköping (Svahnström 1972). In time the construction altered to include *bislag* completely made in wood, usually two benches on either side of the entrance with a superstructure and a roof, this sort of construction would be understood as a porch in English *Figure 6*. The version in all wood seem to be the one referred to in the magistrates accounts from Gothenburg in 1670.[3] A number of drunken youths went berserk with swords destroying or cutting eight bislag[4] on Södra Hamngatan, suggesting that it might have been a common feature in the town. The presence of bislag is corroborated in the block *Gamla Teatern* (Jeffrey 1984) on the west side of the big harbour canal in Gothenburg, which dates from the period 1669-1755. Archaeological remains of four logs, two of those forming a right angle with a square pole in the corner. The outer measurements were 1.8×1.2 metres. The northern log had been hewn and placed on its side and had the character of a threshold. The log in the north-south direction was hewn on the western side but fitted with the northern sill beam, of House 2 (previously described in Appendix 3). However, there were no signs of fire on the construction, while House 2 had burned down in the big fire of 1669, thus it was interpreted as belonging to the house that succeeded House 2. The construction had the appearance of a *bislag*, an open porch of sorts or possibly an attached room for storage (Jeffrey 1984).

Paint and other forms of decor

The early modern townscape was full of examples of decorated buildings and living environments in external features as well as internal.

The use of panelling was one way of making the building look good and uniform. Perhaps the building had been constructed in more than one technique, faulty bits had to be replaced or under-par building parts had to be used; maybe an unskilled carpenter had worked on

[3] Kungl. Maj:t (Ba:2)

[4] Olga Dahl www.gbgtomter.se 5.23 the youths in the account also tipped over 20 barrels of water intended for fire protection on the same drunken sprawl.

Figure 6 Bislag or porch i.e. a covered superstructure often including a bench to sit on, either side of the entrance. Photo A. Nilsen

the house; whatever the reason, many flaws could be hidden with a good panel.

Another novelty of the early modern age was house paint; this study has shown examples of the use of tar or red paint (the red paint was a side product from the copper works in Falun) and the fashionable oil-based yellow paint. The timber-framed buildings were sometimes whitewashed, or the whitewash was coloured red or yellow.

> *'[...]proper and neat wooden buildings two storeys high with panels on the outside, ornate and painted with oil-based colour in the best way. [...]'* (Scheele and Simonsen 1999: 24).

The quotation from the words of Sigfrid Sirenius (also referred to in Chapter 6.1), published in 1737 refers to Gothenburg at that time. Von Scheele and Simonsen discovered the text in the archives and republished it with comments in 1999. Sirenius addresses several aesthetic features concerning the external facades.

The houses are referred to as two-storey panelled and painted wooden buildings. Those with facades towards public streets must have written permission from the magistrate before building or before changes were made. A certain aesthetic level was sought after, and regularity in form was deemed positive.

Another example of external facades that needs to be mentioned is for example *Jedeurska huset*, painted white towards the street and the common red towards the inner courtyard giving quite different impressions depending on angular view. However, it is impossible to know if this way of painting the facades, of this particular house, was in place 200 years ago. Yet, this was a normal display in the early modern period, as the quotation above indicates it was only the outer facades towards the street that were of concern to the magistrate, what the house looked like on the back was a private matter for the owner. *Gatenhielmska huset* in Gothenburg has a facade that conforms to the idea of regularity and the centrally placed entry doorway and steps signals a desire to resemble stone architecture with lots of windows, an elaborately carved portal and ten pilasters. Similar ideas would appear to be at work in the design of the facade of the more moderately sized post and plank building on *Biskopsgatan* 1 in Visby, Gotland. *Torsmanska huset* in Visby, Gotland is another building with an interesting early modern facade with the volute shaped, or Dutch, gable. These volute shapes were common all across western Europe as well as in the colonies, such as the West Indies, at that time. Given the large number of Dutch merchants in Gothenburg particularly in the first century after the founding of the city, it is likely that some of the more affluent houses had similar facades.

The internal features of early modern buildings were also subject to aesthetic works. *Jedeurska huset* in Gothenburg had a model example of the typical hall in the Gustavian architectural style (1785-1810). *Gatenhielmska huset* (Gothenburg) has tapestries as well as wall paintings depicting nature, Greek mythology and social scenes. *Vaxblekaren* 13 in Eksjö had medallions depicting the five senses painted on the walls. *Vinskänken* 2, in Eksjö has ceilings painted with images of Biblical stories as well as Greek mythology (Nilsen 2014). Another property with a beautifully painted ceiling and partially painted walls is *Smedjegatan* 22 in Jönköping.

Chapter 9

General conclusions and summary

The focus of this study is Swedish urban wooden housing from the 1470s to 1850. The data consists of a sample of archaeological remains, preserved houses, as well as of contemporary images and written records. The work in its entirety should be seen as exploratory. The different sources have been combined, compared and evaluated in order to find out what materials could benefit from joint investigations. The data have primarily focused on five case studies through various aspects of the built environment in Gothenburg, Nya Lödöse and Stockholm as well as from Jönköping and Falun.

The early modern wooden building stock has been heavily reduced due to historic fires and extensive demolition in Sweden during the 20th and 21st centuries. The 'commonplace' i.e. the wooden building was demolished in favour of the 'unusual' or the 'atypical' but foremost in support of the 'modern'. Today, the preserved, early modern wooden building has become the 'atypical' or even 'unusual' and should be regarded as a feature that we know less and less about. This is why the wooden building has become increasingly important as an archaeological material object.

Theorizing the production and transformation of the urban

This study has benefitted from using a multi-disciplinary approach to the built environment with several kinds of sources and using empirical urban theory i.e. a combination of high level, mid-level and low-level theories. The high-level theories such as 'structuration' and 'serial collectivity' has given the study an overall frame. The early modern period was certainly an era of intense focus on strategies and planning, visible for instance in ideal town plans with their regulated streets and plots. Yet, it is also apparent in the development of the professionalized departments of government that were established at the time. The practice of the serial collective comes through in the less planned urban areas or in the way the form of buildings was repeated, tending to look alike or at least similar on a general level. The human element and 'social dimensions' are important when discussing built form, since the houses have been built, inhabited and used by people. The human-material aspect thus stands at the heart of this work. Without the people connected to the built space, the buildings and environments lose meaning and purpose. The human-material characteristics are also the foundation of archaeology as a discipline. In the early modern period, there was a drive towards planned, organized and ideal spaces. There was a parallel dislike of less planned environments, understood as beauty blemishes. The urban, however, was dependent on production placed at some distance from the town for its sustenance i.e. harbours, tanners, brickworks, iron-founders. A large amount of people lived on the outskirts of urban centres and they too organized their lives according to their needs, yet outside of the official agenda. Thus, the regulations of street grids, the plot systems and the meticulous interest in details of aesthetics were part of the social structure but so, too, were the production and residential areas on the periphery. The particular urban buildings studied in this work have belonged to either one or other of these urban landscapes and their individual contexts and social relations have influenced the built form.

In order to examine what components the wooden built environment held, mid-level concepts like 'the production of space' has provided an identifiable pattern to work with, since all buildings and town plans have been produced from a set of ideas, meaning and material. Thus, new spaces were created within the town plan through squares, regulated street grids and plot systems, not to forget equally produced living spaces outside the regulated town plan. A space does not need to be regulated to have been purposely produced, but rather linked to different requirements or interests.

Again, empirical urban theory connects well with low-level theory like micro studies that investigates the empirical data in scales to explain a limited range or phenomena in a discussion of the cityscape. This work has been exploratory to examine what the building stock looked like, on usage and how it was organized in particular cases and places. The samples reveal information on particularities of function, construction method, insulation and location all pertaining to the production and use of space. Thus, if similar practices can be found in several samples those practices can reveal something of general patterns. While other cases reveal a variation of particularities and practices more specific to a certain case and place, thus not quantifiable or not *as* quantifiable as something identified as a general pattern.

Following the thesis on what components the wooden built environment held, wood should be seen as an immensely important material during the early modern era and its use was ubiquitous in the built environment as houses, bridges, wharfs and box revetments. It was also the main material for transport i.e. boats, carts and wagons. Wood was an important component in tools and tableware either in all wood or as a combination of metal and wood, as well as also being used in the production of containers of various kind. Major parts of most machinery were constructed in wood e.g. mills, locks, cranes, while firewood was imperative in everyday life. The omnipresence of wood in early modern society makes it an important topic for research. The buildings are thus only one part of the early modern wooden production of space. Wood is a biological and perishable material and thus sometimes missing from archaeological settings, in those cases it is imperative to recognize its absence from the archaeological record. On other archaeological sites, it can be a bulk-find due to optimal conditions of preservation, then not to be over-interpreted as unusual for the context but rather as representative of what most sites could have looked like. In further instances buildings or other wooden constructions, i.e. box revetments were mass-produced, which is important when contemplating reasons behind uniformity or regularity.

Instead of being constrained through studying predetermined 'types' the buildings have been investigated through studying the house divided into modules in line with 'structural grammatical transformation'. A house can be created through producing one or several modules, detached thus standing by itself or attached creating a pair of modules, a row of houses, or a storeyed building. Another way of studying structural grammatical transformation is through the layouts. The Swedish early modern wooden house had two typical layouts connected to these modules. It was either a single room deep layout, which dates back to the late Iron Age or early medieval period, where additional modules were organized in a line or row. The main room or parlour had a corner fireplace with its chimney connected to an outer wall. The row of houses also followed the single file layout, containing several individual buildings/modules attached in a row, with separate entrances without the 'airlock' discussed for the dwellings. The single row layout did not have room for internal stairs, thus storeyed buildings of this character had external stairs, often leading into a gallery or open balcony. Even the ground floor often had access through an open gallery, which is important for archaeologists to keep in mind in their analysis.

The second layout was the double file or central layout, introduced in the 17th century, which was two rooms deep and with a fireplace and chimneystack placed centrally in the house, thus heating more than one room at a time and even on several floors simultaneously. It was usually possible to walk from one room to the next, going round the chimneystack in a circular direction. This kind of layout sometimes had a separate kitchen and can be connected to the introduction of internal stairs. These two kinds of layouts can be found in most Swedish wooden houses during the period and are also part of several 'house forms' in variation, thus part of a general pattern within the building stock and in parallel use.

The multi-unit structure, thus with more than one flat under one roof, could entail both these layouts. The single file layout could have two modules attached through a vestibule with one flat on each side. Alternatively, as a storeyed single file building with one identical flat on top of the other. A further option was constructing the multi-unit in a double-file layout in one or more stories.

The individual components of the built environment

An overall question regarded building techniques and modes of construction as well as function, use and internal comforts. The wooden building stock has foremost been constructed in three building techniques i.e. log timber, timber-framing and post and plank or a in mix of these techniques. The investigation has been focused on what kind of building technique was used, what it could have looked like, how the building was placed within the plot and what function the building had in relation to the social dimensions.

Buildings constructed in log timber technique have generally been the most well-preserved archaeologically within this study. Therefore, the layouts were also the most distinguishable of the three construction techniques and divided into two categories as discussed above. The archaeological remains of log timber constructions were possible to study for insulation and heated/unheated spaces. One conclusion being that the heated parlour was 'protected' through an airlock from the cold outside i.e. two doors had to be entered, one to the vestibule and another to the parlour. The vestibule was usually not heated but often insulated, perhaps to further protect the heated part of the house. Direct entry from outside was given to outhouses, workshops, shops and other spaces not primarily used for dwelling purposes. The introduction of the ceramic oven and chamber stoves further changed the indoor environment making more rooms inhabitable during the colder part of the year. Chimneys appear in this dataset around 1500. Insulation was obtained through a number of materials used to obstruct cold air seeping through floorboards and ceilings i.e. sand, clay, dirt, peat, wood chips, birch bark and gravel. While log walls were insulated through the use of cloth and moss, windows with glass (from the

18th century, double glazed) and putty and the doors with better types of hinges and door frames. There are remains of window glass from the earliest phase and these continue to be found sporadically in the later phases; a variety of rooms potentially had windows i.e. the parlour, the shops and one storage room. There is thus a surprisingly early use of windows in ordinary people's residences in Nya Lödöse. Could multiple floor levels/surfaces, one on top of the other with sand in between, also be another insulating strategy rather than evidence of remodelling? Insulation was clearly affordable to most people since it could be found in most log timbered buildings within this study, albeit dependent on whether or not modes of insulation had been recorded in the archaeological reports. The floors themselves were also a subject for investigation. The log timber buildings had floors constructed from wood, dirt, tile and stone but also clay and sand. Corner-notching is very good for keeping the warmth in and the cold out; it does not necessarily require architects for construction and skilled carpenters were the most prominent contributors to both the preservation of a traditional way of building but also in going with the times and building houses that fitted the European urban concepts.

Residential use was the most common function for log timber buildings; however, the construction technique was used for a wide range of practices. The diverse practices have sometimes been distinguishable in the archaeological record; however, they were much more detailed in the historical sources. Knowledge of the material culture connected to different types of function or occupations is something identified as wanting and demands further in-depth studies. Log timber buildings were constructed in up to two and a half storeys often with a jettied first floor. There are examples of three-storeyed, log timber buildings, but they are rare. The movability of the log timber house was deemed a valuable property, which was useful for town relocations, for mass-production and after town fires.

There has been a general understanding within archaeology that timber-framing technique mainly belong to the provinces of Skåne and Halland (areas that were part of Denmark until 1658) and Stockholm due to German merchant influence. Yet, traces of timber-framing were found both in Gothenburg and Nya Lödöse. The section on timber-framing in this work started as a micro study and a quest to find out if timber-framing could be found elsewhere in Sweden through investigating archaeological data, preserved buildings, photos and drawings as well as historical records of the technique. Nine provinces were studied and all of them had either a lot, or some, evidence of timber-framing, which changes the mapping of this technique. Further comprehensive studies of each region or town need to be conducted for statistical evidence of timber-framing, in terms of actual numbers of buildings. Rather than follow the deciduous forests as previously suggested, this study supports an overlap of the two regions of deciduous and coniferous forests with a northern limit just north of the two great lakes Vänern and Vättern. The micro study on timber-framing included evidence from both urban settings and from the countryside. An important finding was the wide use of timber-framing in society, the long list of functions is quite revealing in this capacity and its use by all social strata from the simplest shed to elite constructions makes it an integrated 'commonplace' part of the Swedish urban and rural landscape. A range of infill has been used in Swedish timber-framing i.e. brick, stone, logs and clay, wattle and daub as well as lime stone limestone sometimes combined in various constellations. Timber-framing has proven hard to find archaeologically, often badly preserved in the ground, which in turn has given less information on layouts, insulation and the location of the fireplace to compare with log timber buildings. A reason why the timber-framing building stock has been largely forgotten is probably linked to houses being lost in historic urban fires and large-scale demolitions during the 20th century. They can also often be hard to find as preserved buildings due to the technique being hidden today behind plaster or panelling. Hence, covering the building technique from sight might have affected our memory, reflections on identity and understanding of the Swedish timber-framing culture. There is a lot left to learn on timber-framing regarding, layouts, statistics, and construction, this study has only initiated the discussion.

The archaeological record did bring some data regarding the floors in timber-framed buildings i.e. clay, wood or cobbled floor, but also a combination of either a wooden floor and a clay floor or cobble and brick flooring. Learning more about insulating properties, cost, use or other qualities related to infill might lead archaeologists to identify more building remains in timber-framing henceforth. It is possible to see influences principally from Danish and German timber-framing traditions, but there are also examples of British half-timber technique. The 'creole' type of timber-framing similar to what can be found in Christiania (Norway) has likewise been found within the sample, a fusion of sorts i.e. timber-framing done by carpenters more used to log timber construction or with a variation of infill and construction methods in line with 'use what is at hand' sentiments. Timber-framed buildings were not considered movable, even though the brick infill could be reused. Yet the technique is quick and relatively easy for skilled carpenters to assemble, even in multiple stories. The preserved timber-framed buildings are often storeyed buildings, at times with a jettied first floor. The historical sources also evidence timber-framed buildings with up to four stories. Opinions regarding the fireproof or fire-hazard properties have been argued back and forth during the course of the early modern period. The technique has been deemed more fire-proof than log timber buildings yet less so than stone houses. However, problems with falling bricks during urban fires connected to timber-framed houses were also addressed.

Post and plank is the third construction technique that has been studied in the urban environment. This is another movable construction technique. Post and plank construction lends itself well to open layouts, often used in barns, byres, stables and warehouses. Yet, the sample also gave examples of dwellings constructed in post and plank technique, as well as a number of other functions. The technique is thus not of peripheral importance and use, but a relevant and omnipresent type of construction. The use of planted posts in connection to this type of construction are known from the Iron Age onwards and documented as late as the 1650s in both Falun and Jönköping, within this micro study. Yet, historical records are good sources of information and can reveal something about the prevalence of the construction technique. Perhaps the lack of evidence of the use of pad stones in the fire insurance records from Majorna could indicate that planted posts were still in use in 1795. Interestingly, there were no examples of post and plank constructions in the sources from Gothenburg; if that is connected to the sampling or if it shows a difference between the centre and the periphery remains to be seen through future studies. However, there seems to be a mixed use, either comparing the evidence from the five towns, of planted posts or resting the post and plank construction on pad stones. This construction technique has proven difficult to find archaeologically, it does not seem to preserve well in the ground. One wooden floor and two insulated floors were mentioned from the investigations in Nya Lödöse, while the fire insurance records revealed the use of wooden floors in Majorna. It was hard to find archaeological reports detailed enough for a thorough discussion. Preserved buildings and historical records have yielded evidence of buildings in post and plank up to two-and-a-half storeys high. The technique was in use well into the 19th century.

After discussing the three wooden building techniques separately, it is important to acknowledge the high number of buildings built in a mix of techniques sometimes in combination with stone construction or brickworks. The mixing can take almost any form imaginable e.g. a log timber building with gables in timber-framing, a post and plank building with a vestibule in timber-framing, or a timber-framed house with a gable in post and plank technique. A stone building could have inner walls in timber-framing technique, or a house with a ground floor constructed in log timber, and post and plank technique in the first floor, with timber-framed gables is likewise a possibility. Another way of mixing is in the variety of material infill in timber-framing techniques i.e. wattle and daub, brick, or from bricks made from sundried clay and straw, logs and stone found within the sample.

When comparing the three wooden construction techniques this pattern appeared from the sample. The use of pad stones for log timber buildings sees a steady increase from the 15th century onwards, and so too with the timber-framed buildings while post and plank constructions only sporadically seem to be placed on pad stones, although the practice may well have been less documented.

Regarding the size of the buildings, it has to be taken into account that some houses have been rows of houses and sometimes it has been difficult to assess the measurements of individual buildings in the row from the reports. The most comparable measurement is the width of the house. However, assessing the square meterage, the dimensions within this sample of log timber buildings ranged from 35.4-90 m^2 in the 15th century with similar sizes in the 16th century. Yet in the 17th century the log constructions oscillated from 5-102 m^2, thus from tiny sheds or privies to large buildings. In the 18th century the sample shows even larger constructions 19.2-146.3 m^2 and again 17.3-178 m^2 in the 19th century. Hence, the technique was used for both small and large builds. The timber-framed building stock from the same period gave the following result from the 15th and 16th centuries when there was only one building each, measuring 16 m^2 and 15.48 m^2. There was no example of measurements of timber-framed buildings from the 17th century within this sample while they measured 3.2-119.9 m^2 in the 18th century and 12.1-423.2 m^2 in the 19th century. Again, these building dimensions regard both large and small constructions. The post and plank building stock ranged from 13.5-30.1 m^2 in the 15th century, 55 m^2 in the 16th century and 20-64.5 m^2 in the 17th century. Then it diminishes to 18.8-25 m^2 in the 18th century while the post and plank buildings ranged between 6.7-97 m^2 in the 19th century in the sample. Thus, the post and plank buildings seem to keep to similar dimensions in the small-scale buildings as the other techniques, while the larger buildings are generally smaller than log timber buildings and timber-framed constructions.

A comparison between the number of storeys has been made connected to the three building techniques. One-storey buildings were common for all the techniques, two examples of two storeys could possibly (not fully confirmed) be found from the 15th century, one in log timber and one in timber-framing technique. There were three timber-framed buildings from the 16th century while there were five log timbered two-storeys and six timber-framed houses from the 17th century. There is a further increase with eight, possibly eleven, log timber buildings, five timber-framed and two post and plank buildings in two-storeys in the 18th century, as well as one timber-framed building in three-storeys and another one in four storeys. Finally, in the 19th century there were six log timber buildings, eleven timber-framed buildings and two post and plank constructions in two-storeys and two additional three-storey timber-framed building within the sample. These numbers are not to be viewed as statistical data, since the sample originates from several places. Instead, the data should be read as tendencies within the urban environment.

Organizing the wooden building stock

Storeyed buildings have been given their own chapter in this work to emphasize the importance of incorporating their presence within the early modern townscape into the archaeological discussion on urban society. Buildings with one to two-and-a-half storeys were the most common, but three to four-storey buildings, often built in timber-framing technique, did occur occasionally in the townscape. As an example, there were seven or eight three-storey buildings in Gothenburg in 1782, in 1800 there were one or two four-storey buildings (Bæckström 1923: 174). Towns started to densify during the course of the 17th century, which had implications for the organisation of living space, an increasing rental market and a growing number of multi-unit structures. Some individuals did very well economically i.e. the bourgeoisie elite who built town houses of more than one storey scattered across the town centre as well as outside the city confines. The urban plots went through spatial change; houses began to surround courtyards. One-storey buildings often had a first floor added with entrances to the courtyard and buildings through covered passageways where additional space was created by connecting buildings.

Variability has been a key feature in this study, but it can be found side by side with uniformity, regularity and repetitive or iterated practices applied both to the city plan but foremost to its building stock. When placing buildings of the same technique, size and shape next to each other it creates a regular pattern of uniformity, either if it is planned or not. While within this repetitive pattern, there is still variability to the building stock as a whole. The city plan was often deliberately organized to place certain types of houses in certain locations i.e. around the squares for stone houses, front streets for more substantial timber buildings while the back streets housed the 'commonplace' buildings in wood.

Typology rests on ideas of uniformity, and similarities. I am not stating that regularity in house-form does not exist, it clearly does. Patterns of repetitive practices from serial collective ways of organizing built form have created house types. Yet, this work has shown that a large part of the building stock falls short on those qualities. There is mixing of techniques, there is mixing of infill within timber-framing constructions, a mix of wood species in many log timber buildings and spaces often switches in function over time through use or reconstructions i.e. gaining a first floor. Variability is more easily spotted if it is not considered a 'negative' result. It is exiting to find innovative ways of building, of organizing space and of using qualities and properties of each individual technique to its full advantage. In looking for and studying both similarities and diversities, rather than type, the building history should be considered. There have been many conservationist projects that have focused all efforts on the original state, or on one particular part of the building, somehow ignoring everything that happened to the building and its inhabitants after that specific and reconstructed historic date. Studies of similarities and diversities challenge our way of thinking about buildings, what they can be, or mean and importantly what they can be constructed from. The variety forces us to learn more about the possibilities of construction materials and building techniques. It also teaches us to be more humble towards on the one hand, people in the past making use of what they had at hand, or that one technique might be best suited for human habitation and another for animals, as an example, and on the other, what is to be considered aesthetic.

Centre and periphery

The same type of buildings is common inside the town of Gothenburg and in the suburb Majorna, outside of the city limits, both regarding buildings of the affluent as well as for those of lesser means. Although, more dwellings outside the city core could be describe as urban farms, in a way the suburb seem to have worked as a halfway station between the countryside and the city with a building culture that reflected both spaces and practices. One major difference between the two areas is that houses of seemingly similar standards are valued higher within the city than outside according to the fire insurance records. The plots include more buildings in Majorna than in Gothenburg, probably reflecting that the inner city had smaller size plots than the suburb, yet also that more buildings were related to farming in Majorna. When combining the information given by the fire insurance records and probate inventories in section 6.2, with the preserved storeyed buildings discussed from Majorna in section 6.1 the suburban building stock becomes more accessible and comprehensible. The mix of urban farms, small crofts, multi-unit structures and high-end bourgeoisie dwellings paints a vivid picture of a socially diverse and busy social fabric, and not that stigmatized, problematic and homogenous working-class area so often portraying Majorna. There were however a high number of people subleasing their homes, or else owning the buildings but renting the plot in Majorna. People living in Gothenburg were more likely to own their plots and properties, while a large rental market existed within the town as well. One interesting factor of difference seem to be the presence of post and plank buildings in Majorna, whereas none were found in the sample from inside the town. During the course of the 18th and 19th centuries both Majorna and Gothenburg saw a dramatic increase in population, which put a strain on the building stock both in terms of crowdedness i.e. more people than it was designed for lived on each property, and in terms of the quality of housing. A number of devastating fires in Gothenburg towards the end of the 18th century and beginning of the 19th century created a situation where part of the city was empty and the rest overcrowded. Perhaps Majorna was the better choice in terms of fire safety and less crowded than the town at that time.

Influences and change

Practices of building in wood were shared at all levels of society from simple back-street sheds to mansions and other buildings on elite estates. There were several innovations and changes incorporated into the general building stock at a slow pace, which existed side by side with an older way of organizing the living space. Certain modernities were introduced on a larger scale than ever before during the early modern period and this could entail certain features as Swedish, Scandinavian, European and indeed it could also include some parts of the European colonies, thus appearing global. Modernities could entail for instance foodstuffs i.e. the pineapple, nutmeg, hot drinks like tea, coffee or chocolate and a range of fruits, vegetables and spices. Indeed, new kinds of wood species from around the world came into use foremost in interior design. Yet, the built environment also saw innovations such as jetties, the introduction of chimneys and windows and to some extent in changing ideas of how to organize living space. The aesthetics displayed some particular features like the volute-shaped, Dutch gable, which could be seen all over Europe and the colonies. Another aesthetic exhibited, as both internal and external depictions of colonial encounters i.e. of the world's continents, their peoples, built environments and riches. These artworks came forth in residential and official environments. Public spaces such as ornamented wells in public squares with sculptures representing the 'four' continents with their individual riches in terms of foodstuff, metals, jems, cultures could also display this new worldview. The aesthetics followed rather strict ideas of regularity and function, which often comes through in the buildings, and other types of decorative elements. Perhaps best illustrated under the watch of the Gothenburg city engineer between 1775 and 1814, Carl Wilhelm Carlberg, who managed to create a feeling of uniformity within city blocks when it came to main features, while leaving room for a rich and masterly variation in details giving the proprietors a sense of uniqueness (Bæckström 1923: 168).

Change in the urban environment over time

Time is a factor when studying historic milieus, the towns and the urban plots went through spatial change over time. The row of houses and detached houses were part of the 15th-century plots. The dwellings had a central position within the plot while shops were placed in the street fronts and with workshops in the back of the plots. There was a slow introduction of windows and chimneys in ordinary burgage plots. There were several new town formations in Sweden at this time. In the 16th century, there were fewer new towns but those that were founded had town grids not yet fully symmetrical. The art of plotting was so far in its early stages and not fully developed. The storeyed house often with a jettied first floor becomes commonplace. The 17th century was a time of town reorganisation with ideas of the ideal space, and for some strategically located towns, with fortified town walls. The streets, squares and plot systems were rearranged and organized in a strict grid using right angles. The residential unit was now placed with the gable towards the street; the houses on the plot were mostly placed as rows of buildings. The double file layout is introduced, and with it the separate kitchen and a new location of the building with the sidewall towards the street. In the 18th century, as the towns grew denser new inhabitable spaces were created. A growing number of multi-unit structures were developed, covered passageways and storeyed houses became more common, thus a densifying of the plots with houses now often circling the courtyard. Glass windows were affordable for most people in the 18th century. Then finally, in the 19th century the single file layout and the double file layout are still in parallel use, the multi-unit structures are ubiquitous as the population grows. The large private residences with double file layouts holding affluent households increased, while small cabins with single file layouts and sometimes rows of houses multiplied in the urban outskirts as more people moved into the towns. The urban boundaries, sometimes manifested in solid walls, were torn down as they became irrelevant as defensive structures, changing the townscape irrevocably. Yet, boundaries can also be moved, or rather reflect fiscal, judicial or social lines of restriction. Thus, the early modern town went through some very great changes while at the same time retaining repetitive practices concerning the built environment, however slightly iterated and modified to work with new requirements and needs. The thesis that people in the pre-industrial town were divided as to placing the elite in the centre and 'common' people in the periphery is somewhat true on a general level while the division is a lot more complex on a local level. There are peripheral areas within the town that held mostly commoners, all the while affluent people were found in the suburbs as well, not to forget the 'middle class' which were present in both locations. Further aspects are the mixed households where people belonging to different social strata lived together, perhaps not on the same terms but still at the same address. Thus, the living environments both inside and outside the town limits were part of a vibrant and socially diverse social fabric.

The transformation of the urban form in terms of the regulation of the grid system, town relocations or town formations was possible partly due to a relatively good organisation but also because of negotiations between the project initiators and the people involved in realizing the project through labour or plot ownership. The negotiations were done through a mix of talks, letters and inducements such as tax cuts or free building materials and when that did not work; force and threats i.e. burning down or forcefully moving houses were used.

The analysis has shown that variability mixed with a certain level of uniformity, regularity and iteration were common practice within the early modern townscape. In this sample the three building techniques in wood were all commonplace and used for a variety of functions, conforming to a wider area both socially and geographically, than previous research has shown. The combination of sources of archaeological and historical origin as well as the preserved buildings helped in gaining a more comprehensive idea of the social complexities and somewhat elusive early modern Swedish townscape and its wooden building stock.

9.2 Summary

Wooden houses were major components of the early modern Swedish townscape. Yet, today these buildings have largely disappeared due to fires, demolition, and modernity. They were built in turbulent times of urban transformation; both disdained for their sometimes-rural look and for the fire hazard they represented, but at the same time appreciated for being warm, affordable and movable. The wooden house has played a fundamental part in forming what it is to be urban in Sweden, and in forming Swedish history.

The early modern wooden house is becoming more widespread as archaeological remains and less prominent as preserved buildings every year, thus the examination and comparison of the two distinct data sources combined with historical records was important. The combination of sources helped piece together a puzzle. The early modern wooden building stock has been investigated through five case studies focused on the towns of Nya Lödöse, Gothenburg, Stockholm, Jönköping and Falun.

The wooden building stock was ubiquitous in the early modern Swedish townscape; log timber was the preferred construction technique for dwelling purposes, yet timber-framing and post and plank buildings were also used to that end. All three construction techniques were used for a wide range of functions in both central and peripheral locations and within all strata of society: sometimes with buildings in a mix of techniques, or as buildings constructed in different techniques mixed within the burgage plot.

Timber-framing was common as a building practice and well-integrated within society, in addition to being spread over a much vaster geographical area than previous research has acknowledged. The little Ice Age influenced new strategies for creating warm housing, clearly affordable to the populace. Changes in, as well as continuity of layouts, featured simultaneously within the building stock, while the storeyed house attributed to evolution of the multi-unit structure.

Despite the destructive results of recurring urban fires, the population kept on building in wood continuously producing houses of a similar form, that form was repeated in the majority of the building stock creating a sense of uniformity. Yet, within that, repetitive form small changes and modernities were iterated, which contributed to alteration and variation over time.

Wooden buildings housed the bulk of the urban population. The wooden building stock was particularly apt for mass-production and moving, which helped realise the idea of the ideal town plan in the comprehensive Swedish transformation of urban space. The regulated form of urban spaces with street grids, and in the case of Gothenburg, the canals and the moat are features of the early modern that linger today; all the while, the pivotal masses of wooden houses, that housed the people that, used, enjoyed, lived and died in those urban spaces, are missing and largely forgotten.

Appendices

IntrasisId	Name	Class	Subclass	Fyndnummer	Sakord	Antal	Fragmenteringsgrad	Fyndstatus	Vikt
1000008	6	Fynd		6	Färla	1	Defekt	Konservering	0
1000043	40	Fynd		40	Näver	1	Defekt	Kastad	0
1001864	1208	Fynd		1208	Obestämt	1	Fragment	Konservering	4
1002651	1639	Fynd		1639	Föremål	1	Fragment	Kastad	0
1002653	1640	Fynd		1640	Näver	10	Fragment	Kastad	0
1002655	1641	Fynd		1641	Näver	8	Fragment	Kastad	0
1002659	1643	Fynd		1643	Näver	12	Fragment	Kastad	0
1002661	1644	Fynd		1644	Näver	9	Fragment	Kastad	0
1002663	1645	Fynd		1645	Näver	3	Fragment	Kastad	0
1002665	1646	Fynd		1646	Näver	3	Fragment	Konservering	0
1002671	1649	Fynd		1649	Föremål	1	Defekt	Konservering	0
1002686	1655	Fynd		1655	Handtag	1	Defekt	Konservering	0
1004907	3024	Fynd		3024	Näver	1	Fragment	Konservering	0
1004909	3025	Fynd		3025	Obestämt	1	Fragment	Konservering	0
1004911	3026	Fynd		3026	Näver	4	Fragment	Kastad	0
1004920	3030	Fynd		3030	Rep	1	Fragment	Konservering	0
1005014	3093	Fynd		3093	Pärla	33	Defekt	Konservering	0
1005020	3096	Fynd		3096	Föremål	1	Fragment	Förkommen	0
1005022	3097	Fynd		3097	Föremål	1	Defekt	Kastad	0
1005024	3098	Fynd		3098	Föremål	1	Fragment	Kastad	0
1005026	3099	Fynd		3099	Föremål	1	Fragment	Kastad	0
1005030	3102	Fynd		3102	Föremål	1	Fragment	Kastad	0
1005034	3105	Fynd		3105	Obestämt	1	Fragment	Kastad	0
1005037	3107	Fynd		3107	Obestämt	1	Fragment	Kastad	0
1005039	3109	Fynd		3109	Obestämt	1	Fragment	Kastad	0
1005043	3112	Fynd		3112	Föremål	1	Defekt	Konservering	0
1005046	3115	Fynd		3115	Obestämt	1	Fragment	Kastad	0
1005050	3119	Fynd		3119	Laggkärl	1	Fragment	Konservering	0
1005052	3120	Fynd		3120	Tränagel	1	Defekt	Konservering	0
1005055	3122	Fynd		3122	Tränagel	1	Defekt	Konservering	0
1005057	3123	Fynd		3123	Laggkärl	1	Fragment	Konservering	0
1005059	3124	Fynd		3124	Huggspån	1	Defekt	Kastad	0
1005061	3126	Fynd		3126	Obestämt	1	Fragment	Kastad	0

Beskrivning	Anmärkning	Längd mm	Bredd mm	Tjocklek mm	Antal fragment	Material	Diameter mm
Skaftet har dekorativa(?) markeringar, ev skulle den också kunna vara en måttstock. På den runda delen finns markeingar som skulle kunna vara ett bomärke, de ger dock ett något slumpartat intyryck. Färlan hittades ihop med ett risknippe (som är inlämnat för vedartsbestämning på SVK?). Kombinationen ris och färla är känd sedan tidigare i gravar från Nya Lödöse.	Färla, ev med bomärke				5	Trä	
	Näverrulle från grav		65	2	1	Organiskt material	
	Förmodligen vax				1	Organiskt material	
	Oidentifierat, ev bara ett träfragment	80	45		1	Trä	
	Näverfragment i olika storlekar				10	Organiskt material	
	Sjok av bränd näver, byggnadsmaterial?				8	Organiskt material	
	Små fragment av näver, byggnadsmaterial?				12	Organiskt material	
	Små näverfragment, byggnadsmaterial?				9	Organiskt material	
	Ihoprullade näverfragment				3	Organiskt material	
	Näverfragment delvis med rundade kanter				3	Organiskt material	
	Pinne/käpp	205		18	1	Trä	
	Ev handtag till träredskap, möbeldetalj?	100			1	Trä	
	Björk		28		1	Organiskt material	
	Djurhår, drev, ca 1 dl				1	Organiskt material	
	Små fragment				4	Organiskt material	
	Ev. hampa				2	Organiskt material	
utlämnad till GSM 2/6-2016	radband träpärlor, 15-20mm				33	Trä	15
	täljd pinne, oklar funktion, recent?	145			1	Trä	10
	huggspån med kvisthål	76	45	17	3	Trä	
	huggspån	35	20	4	1	Trä	
	ev längsgående hål, påtr i grav	78			2	Trä	11
	ev beslag - ev huggspån			3	1	Trä	14
	obearbetad träbit, ek				1	Trä	
	del av spetsad påle, björk	220			1	Trä	75
	huggen påle - spetsad i en ände, ek	260	80	40	1	Trä	
	väggkrok av naturlig gren, ek, planhuggen baksida	230	200		1	Trä	
	del av grov pinne men kvarsittande bark-björk	256			1	Trä	32
	5 laggar till laggkärl inv bottenspår - fur	245	75	12	5	Trä	
	tränagel huvud saknas, lövträd	208			1	Trä	20
	tränagel -pinne, lövträ	115	17	13	1	Trä	
	del av laggstav - huggspån?	185	75	8	1	Trä	
	fur	100	40	18	1	Trä	
	del av kvist, björk bark kvarsitter	176			1	Trä	30

IntrasisId	Name	Class	Subclass	Fyndnummer	Sakord	Antal	Fragmenteringsgrad	Fyndstatus	Vikt
1005063	3128	Fynd		3128	Kil	1	Defekt	Konservering	0
1005070	3132	Fynd		3132	Kil	1	Defekt	Konservering	0
1005074	3134	Fynd		3134	Avfall	1	Fragment	Kastad	0
1005076	3135	Fynd		3135	Obestämt	2	Fragment	Kastad	0
1005153	3145	Fynd		3145	Lock	1	Defekt	Konservering	0
1005155	3146	Fynd		3146	Träkärl	1	Defekt	Konservering	0
1005162	3150	Fynd		3150	Föremål	1	Defekt	Konservering	0
1005188	3159	Fynd		3159	Kärl	1	Fragment	Konservering	0
1005189	3160	Fynd		3160	Obestämt	1	Defekt	Konservering	0
1005201	3165	Fynd		3165	Kista	1	Komplett	Konservering	0
1005396	3257	Fynd		3257	Föremål	1	Defekt	Konservering	0
1009085	6258	Fynd		6258	Föremål	1	Defekt	Kastad	0
1009110	6277	Fynd		6277	Handtag	1	Defekt	Kastad	0
1009112	6279	Fynd		6279	Föremål	2	Defekt	Kastad	0
1009114	6280	Fynd		6280		2	Defekt		0
1009115	6281	Fynd		6281	Föremål	1	Fragment	Konservering	0
1009117	6282	Fynd		6282		1	Fragment	Kastad	0
1009118	6283	Fynd		6283		1	Fragment	Kastad	0
1009121	6285	Fynd		6285	Huggspån	1	Defekt	Kastad	0
1009122	6286	Fynd		6286	Föremål	1	Defekt	Konservering	0
1009123	6287	Fynd		6287	Föremål	1	Defekt	Kastad	0
1009132	6291	Fynd		6291		1	Defekt		0
1009133	6292	Fynd		6292	Tränagel	1	Fragment	Konservering	0
1009136	6294	Fynd		6294	Föremål	1	Fragment	Kastad	0
1009159	6313	Fynd		6313	Föremål	1	Fragment	Kastad	0
1009164	6317	Fynd		6317	Hasselnöt	12	Fragment		1
1009165	6318	Fynd		6318		5	Fragment	Kastad	0
1009167	6319	Fynd		6319	Obestämt	1	Intakt	Konservering	0
1009168	6320	Fynd		6320	Obestämt	1	Defekt	Kastad	0
1009176	6321	Fynd		6321	Föremål	1	Defekt	Kastad	0
1009178	6322	Fynd		6322	Tränagel	1	Defekt		0
1009179	6323	Fynd		6323	Föremål	1	Defekt	Kastad	0
1009180	6324	Fynd		6324	Föremål	1	Defekt	Kastad	0
1009181	6325	Fynd		6325	Laggkärl	2	Defekt	Kastad	0
1009182	6326	Fynd		6326	Föremål	1	Defekt	Kastad	0
1009184	6327	Fynd		6327	Föremål	1	Defekt	Kastad	0
1009185	6328	Fynd		6328	Föremål	1	Defekt	Konservering	0
1009187	6329	Fynd		6329	Kil	1	Defekt	Konservering	0
1009188	6330	Fynd		6330	Tränagel	1	Intakt	Konservering	0
1009191	6331	Fynd		6331	Föremål	1	Defekt	Kastad	0

Beskrivning	Anmärkning	Längd mm	Bredd mm	Tjocklek mm	Antal fragment	Material	Diameter mm
	byggnadsdelats, ek	285	60	32	1	Trä	
	byggnadsdeltalj, ek, spår av järnspik?	207	45	25	1	Trä	
	inget föremål, ek				1	Trä	
	2 st del av pinne delvis brända inget föremål				3	Trä	
	runt ngt koniskt lock med mitthål			150	1	Trä	550
	huvud avbrutet	245			1	Trä	25
	färla? med hål - halvfabrikat?	375		24	2	Trä	
	Svarvad tallrik m bomärke, flera fragment					Trä	
	Konformat föremål, ev ljusstake	90			1	Trä	85
	Kista från grav, på SVK					Trä	
	plugg avbruten	80			1	Trä	30
	Naturlig pinne	145			1	Trä	10
	dörrhandtag, furu, med järnnitar	220	52	22	1	Trä	
	ek, bearbetat trä, ej tunnlagg	65	60	13	3	Trä	
	ek				2	Trä	
	avlångt med borrhål, en	109	30	20	1	Trä	
	näverrulle, björk	60	35		2	Organiskt material	20
	obearbetat bränd pinne, björk				4	Trä	
		40	20		1	Trä	
	korvpinne, en	115	7	6	1	Trä	
	spetsad mot en ände, hårt barrträd?	120			1	Trä	15
sparad - ej konserverad	Ticka för fnöske	150	100	40	1	Organiskt material	
		150			1	Trä	35
	Kvist, ev naturligt	88			1	Trä	
	Träspade, delar av blad och skaft, foto finns	91	20		3	Trä	
					12	Organiskt material	
	björknäver				5	Organiskt material	
	Möbeldetalj med urtag 115 mm, dekorativa avslut	700	100	35	1	Trä	
Foto finns	Byggnadsdetalj m borrhål o urtag, kilformad, ek	455	55	50	1	Trä	
foto finns	Ek, fyrsidigt tvärsnitt	250	35	25	1	Trä	
sparad okonserverad - foto finns	Stor tränagel, facetterade sid, huvud diam 85, ek	150			1	Trä	45
	Skuren pinne, lövträd	135			1	Trä	45
	Spetsad pinne, fur	410	40	22	1	Trä	
4 foto finns	45mm bottenspår, 3 handtagslaggar, borrhål m plugg	350	110		7	Trä	
	Avbarkad stör, bruten i båda ändar, lövträ	280			1	Trä	50
	Spetsad pål-ände, ek	180			1	Trä	75
	ämne till tränagel, huvuddiam 30 mm	205			1	Trä	20
		70	23		1	Trä	23
	Nagel, vedart på kilen i nageln, huvud diam 34 mm	100			1	Trä	30
	Avskuren pinne, björk	70			1	Trä	18

IntrasisId	Name	Class	Subclass	Fyndnummer	Sakord	Antal	Fragmenteringsgrad	Fyndstatus	Vikt
1009193	6332	Fynd		6332	Föremål	1	Fragment	Konservering	0
1009194	6333	Fynd		6333	Laggkärl	1	Defekt	Kastad	0
1009201	6334	Fynd		6334	Föremål	1	Defekt	Konservering	0
1009322	6436	Fynd		6436	Kil	1	Defekt	Konservering	0
1009323	6437	Fynd		6437	Dymling	1	Intakt	Konservering	0
1009324	6438	Fynd		6438	Kärl	1	Fragment	Konservering	0
1009325	6439	Fynd		6439	Laggkärl	7	Fragment	Kastad	0
1009326	6440	Fynd		6440	Obestämt	1	Fragment	Konservering	0
1009327	6441	Fynd		6441	Obestämt	1	Fragment	Kastad	0
1009328	6442	Fynd		6442	Obestämt	4	Defekt	Kastad	0
1009329	6443	Fynd		6443	Beslag	1	Defekt	Konservering	0
1009330	6444	Fynd		6444	Dymling	1	Intakt	Kastad	0
1009331	6445	Fynd		6445	Dymling	1	Defekt	Kastad	0
1009332	6446	Fynd		6446	Kil	1	Defekt	Kastad	0
1009333	6447	Fynd		6447	Föremål	1	Fragment		0
1009334	6448	Fynd		6448	Obestämt	1	Defekt	Konservering	0
1009356	6458	Fynd		6458		3	Fragment	Kastad	0
1009360	6460	Fynd		6460	Näver	2	Fragment	Kastad	0
1009361	6461	Fynd		6461	Näver	2	Fragment	Kastad	0
1009565	6551	Fynd		6551		1	Defekt	Konservering	0
1009829	6735	Fynd		6735	Räfsa	1	Defekt	Konservering	0
1010244	7055	Fynd		7055	Dörr	1	Defekt	Konservering	0
1010349	7110	Fynd		7110	Föremål	1	Intakt	Konservering	0
1011097	7317	Fynd		7317	Näver	1	Fragment	Kastad	0
1011232	7358	Fynd		7358	Skål	1	Fragment	Konservering	0
1011233	7359	Fynd		7359	Föremål	1	Defekt	Konservering	0
1011235	7360	Fynd		7360	Föremål	1	Defekt	Konservering	0
1011236	7361	Fynd		7361	Föremål	1	Defekt	Konservering	0
1011237	7362	Fynd		7362	Kil	1	Defekt	Konservering	0
1011238	7363	Fynd		7363	Tränagel	1	Defekt	Konservering	0
1011239	7364	Fynd		7364	Föremål	1	Fragment	Konservering	0
1011240	7365	Fynd		7365	Föremål	1	Defekt	Konservering	0
1011256	7367	Fynd		7367	Föremål	1	Defekt	Konservering	0
1011257	7368	Fynd		7368	Föremål	1	Defekt	Konservering	0
1011261	7369	Fynd		7369	Föremål	1	Defekt	Konservering	0
1011262	7370	Fynd		7370	Dymling	1	Defekt	Konservering	0
1011263	7371	Fynd		7371	Svepkärl	1	Intakt	Konservering	0

Beskrivning	Anmärkning	Längd mm	Bredd mm	Tjocklek mm	Antal fragment	Material	Diameter mm
	Täljd pinne, lövträ	60			1	Trä	15
	Laggstav, bottenspår 25 mm upp, 15 mm brett	215	115		1	Trä	
	Träplatta/spade, borrhål 20 mm diam mitt på blad	400	210	14	1	Trä	
	Lövträd	52			1	Trä	21
		115			1	Trä	25
	Svarvat fat, bränd undersida, lövträd ev ask	100	45	12	2	Trä	
	Små fragment av laggstavar, lövtröd				7	Trä	
	Halv träkula, facetterad			50	1	Trä	70
	Täljd träpinne				1	Trä	20
	Täljda pinnar				4	Trä	20
	Vedart på denna	105	26	7	1	Trä	
	Kvadratiskt tvärsitt,	220	35	35	1	Trä	
	Kvadratiskt tvärsnitt, ek	240	40	40	1	Trä	
	Lövträd	92	35	20	1	Trä	
	Del av bräda, huggen (primärt), sågad (sekundärt)	155	235	35	1	Trä	
föremåler dok med foto	Byggn,detalj från ev fähus, urtag och borrhål foto	730	180	115	1	Trä	
	Små fragment, näver/ bark, ev sekundärbränt				3	Trä	
					2	Organiskt material	
	Björknäverfragment				2	Organiskt material	
Från en av gravarna i kyrkan, låg på höften.	Lacksigill m infattning av vax, pilgrimsmärke	75	48			Organiskt material	
	6 borrade hål 0,02 m diam, 2 pliggar kvar, spik	730	70	30	1	Trä	
Två hela plankor, tre saknas, fragmenterad.	2 beslag, 2 reglar (pluggade), lås se F7056	1400	520	20	4	Trä	
	Trissa m trekantigt hål o skåra för rep på kanten			28	1	Trä	205
	Björk				1	Organiskt material	
	Höjd 40 mm, bottendiam 70 mm, träslag ask			7	1	Trä	145
	Redskap ev besman, urtag i båda ändar, ek	615	30	12	1	Trä	
	Redskap ev besman, urtag i båda ändar, ek	580	30	12	2	Trä	
	Svarvkärna			50	1	Trä	60
	Ek	85		20	1	Trä	
	Tränagel m hål för sprint, hål 2x1 cm	160			1	Trä	20
	Konformat, björk	70			1	Trä	25
	Sprint, en	100		12	1	Trä	
	Besmanhandtag med avsats	195	23	12	1	Trä	
	Täljd pinne m en smalare resp tjockare halva, ek	300		20	1	Trä	
	Täljd pinne m rundad ändknopp	360			1	Trä	15
	Dymling med kil, ek	60			3	Trä	20
	Lock till svepask med bomärke, ek	193	105	7	1	Trä	

IntrasisId	Name	Class	Subclass	Fyndnummer	Sakord	Antal	Fragmenteringsgrad	Fyndstatus	Vikt
1011265	7372	Fynd		7372	Laggkärl	1	Fragment	Konservering	0
1011273	7374	Fynd		7374	Lock	1	Defekt	Konservering	0
1011275	7375	Fynd		7375	Laggkärl	1	Fragment	Konservering	0
1011286	7376	Fynd		7376	Föremål	1	Defekt	Kastad	0
1011289	7377	Fynd		7377	Föremål	1	Fragment	Konservering	0
1011291	7378	Fynd		7378	Föremål	1	Defekt	Konservering	0
1011293	7379	Fynd		7379	Föremål	1	Defekt	Konservering	0
1011294	7380	Fynd		7380	Föremål	1	Defekt	Konservering	0
1011296	7381	Fynd		7381	Föremål	1	Defekt	Konservering	0
1011298	7382	Fynd		7382	Föremål	1	Defekt	Konservering	0
1011300	7383	Fynd		7383	Kil	1	Intakt	Konservering	0
1011304	7385	Fynd		7385	Föremål	1	Defekt	Kastad	0
1011306	7386	Fynd		7386	Föremål	1	Defekt	Kastad	0
1011308	7387	Fynd		7387	Föremål	1	Defekt	Kastad	0
1011309	7388	Fynd		7388	Föremål	1	Defekt	Kastad	0
1011311	7389	Fynd		7389	Föremål	1	Defekt	Kastad	0
1011313	7390	Fynd		7390	Föremål	1	Defekt	Kastad	0
1011314	7391	Fynd		7391	Föremål	1	Defekt	Kastad	0
1011315	7392	Fynd		7392	Föremål	1	Defekt	Kastad	0
1011316	7393	Fynd		7393	Föremål	1	Defekt	Kastad	0
1011683	7466	Fynd		7466	Föremål	1	Defekt	Konservering	0
1011686	7467	Fynd		7467	Föremål	1	Defekt	Konservering	0
1011687	7468	Fynd		7468	Laggkärl	1	Fragment	Konservering	0
1011690	7469	Fynd		7469	Föremål	1	Defekt	Konservering	0
1011693	7471	Fynd		7471	Föremål	1	Fragment	Kastad	0
1011696	7472	Fynd		7472	Föremål	1	Defekt	Kastad	0
1011699	7473	Fynd		7473	Föremål	1	Defekt	Kastad	0
1011700	7474	Fynd		7474	Föremål	1	Defekt	Konservering	0
1011702	7475	Fynd		7475	Föremål	1	Defekt	Kastad	0
1014584	8519	Fynd		8519	Obestämt	1	Defekt	Konservering	0
1021638	11482	Fynd		11482	Pärla	3	Defekt	Konservering	0

Beskrivning	Anmärkning	Längd mm	Bredd mm	Tjocklek mm	Antal fragment	Material	Diameter mm
	Laggstav, skåra 6 mm, 1 5mm fr botten, ek	160	80	15	1	Trä	
	Ek?			11	1	Trä	173
	Laggstav, skåra 2mm, 34 mm fr botten	210	100	11	1	Trä	
	Gren, naturlig, delvis bearbetad?	75	40		1	Trä	
	Runt platt föremål med fyrkantigt hål, ev lock			22	2	Trä	
	Borrhål 8 mm, i ena hörn, urtag/ skåra ena kanten	105	65	16	1	Trä	
	Del av ok? Borrhål med plugg igenom i ena änden	60	42	35	1	Trä	
	Liknar tunnlagg, men saknar spår ev avbruten	420	65	12	1	Trä	
	LaggBöjd bräda m borrhål 18 mm resp 13 mm m plugg	350	120	15	1	Trä	
	Avsmalnande mot ena änden med borrhål 12 mm	195	105	30	2	Trä	
		265	27	23	1	Trä	
	Täljd pinne	208			1	Trä	15
	Spetsad pinne, ev gran?	270			1	Trä	30
	Spetsad stör, bränd	245	50	25	1	Trä	
	Spetsad pinne, bränd	290	40	27	1	Trä	
	Bearbetad gren, kilformad ena änden andra trubbig	20			1	Trä	70
	Spetsad stör	240			1	Trä	45
	Spetsad stör, kluven	320		37	1	Trä	
	Spetsad påle, kluven	290			1	Trä	70
	Spetsad pinne	360			1	Trä	30
	Bräda m 4 hål (25 mm), plan ena sid, välvd andra	700	100	35	1	Trä	
	Böjd, avsmalnande ändar, borrhål och urtag	870	105	25	1	Trä	
	Tunnlagg, avsmalnande ändar spår 3 mm breda, ek		115	12	1	Trä	
	Planhuggen 2 sidor, skadad i ena änden, ev gran	1660	65	50	1	Trä	
	flera delar, troligen flera föremål, oident, foto	1300	470		7	Trä	
fotodokumentation finns	Hyvelbänk, dendro sågat, urtag 10x10 cm med påle,	800	280	130	1	Trä	
fofodok finns	Arbetsbänk, dendro och stereofotad	800	300	110	1	Trä	
	Arbetsbänk, stock m gren, urtag, pluggar, dendr	760	300	70	1	Trä	
	Stock m bomärke, urtag 170 mm (intill dendroprov)	1160	240	220	1	Trä	
	Vidjeknut				1	Trä	
	tillhör kontextgrupp 773				3	Trä	12

IntrasisId	Name	Class	Subclass	Händelse	Källvärde	Undersökningsmetod	Källkritiska aspekter	Undersökt andel	Kommentar	Osteologianteckningar	Insamlingsteknik
40044		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	1	Maskin | Skärslev/skrapa		100			Preparat
40079	Planka	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa	Schaktningsövervakning	100	Plank. Ligger i vinkel med bränd stock S40084 som fortsätter in i schaktväggen.		
40084	Bränd stock	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa		100	Änden på en bränd stock som fortsätter in i schaktkant. Ligger i vinkel med planka S40079.		
40100	Planka/ ränna?	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa	Schaktningsövervakning	100	Planka med 'kant', kanske en ränna? Plankan ligger på ett lerlager som också finns på vardera sida om plankan. Ligger kvar under täckduk i händelse av fortsatt undersökning.		
40201		Stratigrafiskt objekt	Träkonstruktion		3	Hacka | Maskin | Skärslev/skrapa		100	Träbit, troligen naturlig. Ligger på naturligt svämlager där sand ligger varvat med förmultnat organiskt material.		
40202		Stratigrafiskt objekt	Träkonstruktion		3	Hacka | Maskin | Skärslev/skrapa		100	Träbit i schaktkant på naturligt svämlager (sand varvat med förmultnat organikst material). Träbiten är trekantig i tvärsnitt, verkar ej vara en del av konstruktion, men möjligen bearbetad.		
400000	Palissad	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Maskin | Skyffel/spade | Skärslev/skrapa	Tidspress	100	Pålar tillhörande palissad/pålverk. Pålarna är förmodligen nedsågade inför byggandet av spinneriet/betongfundament. Toppen av pålarna ligger på en nivå 0 möh och vid uppryckning av en var en påle 2 m lång med tillhuggen spetsig ände (den tillhuggna längden ca 0,4 m). Olika träslag, olika faser? Påle nedkörd till 'hälften' i palisad kan tyda på förbättring av den. Av de prover som skickats på analys visade det sig att palissaden verkar innehålla trä av ek och asp, proverna visade även en datering på 1528/29 då virket fällts. 15 PD tagna pd400506-Vinter 1564/65 lägre säkerhet pd400508-1527 :fällt maj1529 pd400509-1528 :fällt maj1529 pd400763-1528:Vinter1528/29 lägre säkerhet pd400764-1528:Vinter1528/29 pd401191-1529: fällt 1530 pd401192-1528: fälltVinter1528/29 pd401193-1528 early wood:Maj 1529 pd401194-1528 early wood: Maj 1529 pd401549-1528: vinter1528/29 pd401550-1528: vinter1528/29 pd401551-1528: vinter1528/29		Grävsked | Skyffel/hacka
400248	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Hacka | Maskin	tidsbrist	100	Trästock som är störd av recent nedgrävning där man fräst ner i stocken för att kunna lägga ett rör. Ingått i en konstruktion tillsammans med 400253+400260 and 401542, 2 hål för spärrning där vertikal stolpe med tapp som stod nerkilad. För sekundärt förstörd för att ta dendro på i den del som låg öppet vid undersökning. Stocken fortsätter in i västra profilen. KG?		
400253	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Maskin | Skärslev/skrapa	tidsbrist	100	Trästock norr om pallisad in mot staden + sten(ligger som 'spänn' mellan pallisad och vertikalt stående, rektangulära pålar (400 260) vertikalt troligen återanvänd stock, har urhugg. (släpstock). Låg under humösa lagret som 400330 som ligger mellan stock och palissad. ??ev på kulturlager 400312 som är inmägg som det äldsta fasen i norra slänten (se undre begränsning 35S400286.400312 (ev koda om i intrasis, inmätt i fel ordning och inte relaterad till 400312 i fält?? PS) Fortsätter in i nord/västra profilen. Östra delen avsågad för PD. PD401113 - 1526 Ytan n/v öppnad efter beslut av Länsstyrelsen v. 11 och konstruktionen undersöks mer grundligt under v. 12 och 13.		
400260	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Hacka | Maskin | Skyffel/spade	tidspress	100	12 stockar vertikalt lutande mot norr, kloss an 400253, och en rektangulär stolpe nedkörd i uthuggning av trästock som ligger på palissaden, De två som står längs i öst, paraellt med varandra hade även en relativt löst sittande skiva emellan sig som utgjorde en gräns till torven/rännan S400137. inga synliga nedgrävningar, ev nedspontade.		
400440		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	Träkostruktion bestående av träpålar nedkörda i marken ca 0,60 m om palissaden (inne i staden) och under(i kanten) 'ränna' 400137. Erosionsskydd för sandbank alternativt rest av äldre pålverk. Träpålarna följer samma linje/riktning som pallisaden, finns dock att på några ställen finns det fler än en träpåle 'grupperade' ihop, samt att flera träpålar verkar vara lutande in mot palissaden.		Grävsked
401095		Stratigrafiskt objekt	Träkonstruktion	Destruktion	Konstruktion	Maskin	tidsbrist	100	Stock under sandiga silten 400071 söder om 'västra palissaden'. Låg 'löst' och ev störd under silten. svårtolkat men kan vara en stormpåle som hamnat horisontellt.		
401382	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Skyffel/spade	Tidsbrist	100	Stock som ligger kvar i nordvästra hörnet av schaktet som avlutats inför spontarbeten, övertäckt. Sågad trästock med 2 urtag för fastpålning (ej inmätta).		Skyffel/ hacka
401387		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Skyffel/spade	Tidspress	100	Väldigt tunn planka, i träkonstruktioenes 'mittbox', som ligger på sand. Det kan ev röra sig om ett golv men tolkningen är osäker när vi endast har denna enda planka oh en liten strimma sand.		Skyffel/ hacka
401393	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	2	Skyffel/spade	Tidspress	100	stock / rustbädd i nord sydlig riktning med två hål/dymlingshål eller sekundäranvänd stock.		Grävsked
401397	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa	tidsbrist	100	Låsningsstolpar (tapp) nedkörda genom rustbädd.		Grävsked | Skyffel/ hacka
401423		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	vertikala ruttnade störar som är en sorts konstruktionsdetalj innom ramen som är rustbädd.		Grävsked
401542		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade		100	Trästock tillhörande träkonstruktion 'tornet'		Grävsked | Skyffel/ hacka
401607	Trädetalj med dymlingar	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skärslev/skrapa	Tidsbrist	100	Trädetalj med två stycken dymlingarca 3,5-4 cm tjocka och 15-20 cm långa. låg löstliggande. Hör troligen till 'tornet'.		Grävsked

Föremålsanteckningar	Provanteckningar	Dokumentationsstatus	Fas	3_ Längd	4_ Bredd	Anmärkning	Typ	5_ Höjd	1_ Placering	2_ Tvärsnitt	6_ Kondition	7_ Klyvning	8_ Verktygsspår	Sammanfogningsteknik	Tolkning
		Pågår	4. Nya Lödöse				Träkonstruktion		Horisontellt	Kvadratiskt	Intakt				Rustbädd
		Pågår	4. Nya Lödöse	0.7	0.15		Träkonstruktion	0.03	Horisontellt	Rektangulärt	Ruttnat	Sågat			Planka
		Pågår	4. Nya Lödöse	0.15	0.1		Träkonstruktion		Horisontellt	Runt	Bränt	Obestämbart			Stock
		Pågår	4. Nya Lödöse	2.5	0.25		Träkonstruktion	0.3	Horisontellt	Rektangulärt	Ruttnat	Sågat			Planka
		Pågår	4. Nya Lödöse												
		Pågår	4. Nya Lödöse												
		Klar	4. Nya Lödöse		60		Träkonstruktion	300	Vertikalt	Rektangulärt	Sekundärt destruerat	Hugget	Yxa	Annat	
		Klar	4. Nya Lödöse	400	32		Träkonstruktion	17	Horisontellt	Rektangulärt	Sekundärt destruerat	Sågat			Rustbädd
		Klar	4. Nya Lödöse	530	30		Träkonstruktion	20	Horisontellt	Rektangulärt	Intakt	Sågat	Yxa	Annat	Ej tolkad konstruktion
		Klar	4. Nya Lödöse				Stolpe		Vertikalt	Rektangulärt	Sekundärt destruerat	Obestämbart			Ej tolkad konstruktion
		Klar	4. Nya Lödöse				Träkonstruktion		Lutande						
		Klar	4. Nya Lödöse	80	13				Horisontellt	Runt	Sekundärt destruerat				Stock
		Klar	4. Nya Lödöse			Övertäck i västra profilen	Träkonstruktion	15	Horisontellt	Rektangulärt	Intakt	Sågat		Annat	Rustbädd
		Klar	4. Nya Lödöse	148	18		Träkonstruktion	0.3	Horisontellt	Rektangulärt	Ruttnat	Sågat			Planka
		Klar	4. Nya Lödöse	165	25		Träkonstruktion		Horisontellt	Rektangulärt	Intakt	Sågat		Annat	Rustbädd
		Klar	4. Nya Lödöse												
		Klar	4. Nya Lödöse	10	10		Stör		Vertikalt	Kvadratiskt	Ruttnat	Sågat			Ej tolkad konstruktion
		Klar	4. Nya Lödöse				Träkonstruktion								
		Klar	4. Nya Lödöse				Träkonstruktion				Sekundärt destruerat	Obestämbart		Dymling	Ej tolkad konstruktion

IntrasisId	Name	Class	Subclass	Händelse	Källvärde	Undersökningsmetod	Källkritiska aspekter	Undersökt andel	Kommentar	Osteologianteckningar	Insamlingsteknik
401624		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	plankrad i östvästlig riktning som är 245cm och nord sydlig kortsida som ar 70 cm. Ej färdigundersökt.		Grävsked
401779		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	'Spärrtapp' som sitter i rustbäddsstock som ligger i södra änden av konstruktionen. I den östra 'spärrtappen'stolpen satt en dymling som vi inte såg någon användning för, tolkas ev som det är en sekundärt använd stolpe. Dendro 401789 taget i den östra stolpen		Grävsked | Maskin
401797	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	stock i nord sydlig riktning som ligger kvar i västra profilen, ej helt framgrävd. I söder är det ett uthugg med stock med dymling 403800. Täckt av filt.		Grävsked | Skyffel/hacka
401821	stock m tapp	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka	Tidsbrist	100	Tre stockar varav de två längs i ost är ca 1.5 - 1.8 meter, tappen i väst sitter kvar i 401848 under duk. Urhuggningar för att passa hål i 401848, dessa urhuggningar var ca 0.87 meter långa. Tjockleken på stockarna var 0.26 meter. SFM finns på en av stockarna. PD 401847.		Skyffel/hacka
401848	spärrstock	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade	Tidsbrist	100	Grundstock/rustbädd ligger nedbäddad i 005. Fortsätter in i nord-västra profilen . PD 401860. Ligger -0,7 möh. Har tre hål i sig där 401821 stock med tapp går ned i . Ligger kvar under duk vid avslutad undersökning 11/-15.		
401852		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	tidsbrist	100	Relativt liten del av stock i nord ssydlig riktning.		Grävsked
402684		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa		100	Liggande (syll)stolpe tillhörande en träkonstruktion/byggnad. Troligen Nylösetid.		Skyffel/hacka
402691		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade	Tidsbrist	100	Stock/plank tillhörande ev trägolv liggande på lerlager.		Grävsked | Skyffel/hacka
402697		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade	Tidsbrist	100	Trästock (syll) tillhörande en träkonstruktion/byggnad. Nylösetid. Kluven på mitten. N-S riktning. Ligger en mindre sten under stocken som verkar fungerat som stötta.(Östlig placering vid övergången av 402705). PD		Skyffel/hacka
402705		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade	Tidsbrist	100	Trästock(syll) tillhörande en träkonstruktion\byggnad. troligen nylöse tid. dendro 1496!		Skyffel/hacka
402788	Planka	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skärslev/skrapa	Giftigyta	100	Planka som låg i sotigt sand/siltigt lager som kan vara brukningsspår, troligtvis landeri. Plankans funktion är oklar menkan vara stabiliserande i den fyllning som lagts över 400006 som fyllt ut vallgraven och det 'brofundament' in mot södra palissadkonstruktionen på södra sidan Säveån.		Skyffel/hacka
403080	trä n om brofund.	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa	kontaminering	100	Sammanlagt 3 träplank som ev varit sammanhängande (ev stört vid framschaktning) norr och under stenpackningen för broundamentet.		Grävsked | Maskin
403086	stock m tapp	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	kontaminerat	100	tre vertikala stockar i olika utformning men med samma funktion; fäster den horisontellt liggande 403316. En stock som spetsats med yxa står norr om spärrstocken, en stock med tapp sitter i spärrstocken och en flatsåga relativt rektangulär stock med spetsad tapp sitter kloss mot den östra kortsidan av spärrstocken. PD???		Grävsked | Maskin
403094		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	kontaminerat	100	Konstruktionsdetalj som med obestämbar funktion. Kan vara en stor trädetalj/skräp vid klyvning eller vara en del av konstruktionen som störts, oklart.		Grävsked
403135		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade	delvis stört av rio FU	100	Rest av ev träbinge. landeritid?		Grävsked | Skyffel/hacka
403210	Planka	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skärslev/skrapa	Kontaminerat	100	en bred planka i södra delen av brofundamenet i vallgraven. Oklar funktion mer än att den ev varit stabiliserande i konstruktinslaget. två större stenar vid bägga av träplankans sidor: stenarna ca mått 30 och 50cm i diameter.		Grävsked
403218	störar	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skärslev/skrapa	kontaminerat	100	två störar som ligger horisontellt utmed stenkonstruktionen i brofundamentet. Tolkas som typ rustbädd i konstruktionen. Liknande störar har funnits österut i vallgravssedimentet men där har de tolkats som stormpålar (ej inmätta då den var i störda lägen). foto 101-2420 till 101-2422		Grävsked | Maskin
403261		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	kontaminerat	100	Plankor som ligger relativt djupt i brofundamentets konstruktion. En av bitarna fortsätter in i den nordvästra slänten.		Grävsked | Maskin
403269		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade	Tidsbrist	100	Tre pålar nedkörda i vallgravlager 400066.		Skyffel/hacka
403315		Stratigrafiskt objekt	Träkonstruktion		Konstruktion	Maskin	kapat av spont, ev fortsätter den norrut. RIO FU.	100	Kapat av spont, ev fortsätter den norrut. Ligger i området för rio fu schakt.		Skyffel/hacka

Föremålsanteckningar	Provanteckningar	Dokumentationsstatus	Fas	3_ Längd	4_ Bredd	Anmärkning	Typ	5_ Höjd	1_ Placering	2_ Tvärsnitt	6_ Kondition	7_ Klyvning	8_ Verktygsspår	Sammanfogningsteknik	Tolkning
		Klar	4. Nya Lödöse	245	70		Träkonstruktion		Vertikalt	Rektangulärt	Ruttnat	Sågat			Bräda
		Klar	4. Nya Lödöse	12	8	dymling utan känd användning i stolpen	Stolpe	100	Vertikalt	Rektangulärt	Intakt	Sågat	Annat	Tapp	Rustbädd
		Klar	4. Nya Lödöse	100	33		Träkonstruktion		Horisontellt	Rektangulärt	Intakt	Obestämbart	Annat		Rustbädd
		Klar	4. Nya Lödöse			tappningsteknik	Stolpe		Vertikalt	Runt	Sekundärt destruerat	Sågat	Yxa	Tapp	Stock
		Klar	4. Nya Lödöse	0	30		Träkonstruktion	25	Horisontellt	Rektangulärt	Intakt	Sågat	Mejsel	Tapp	Rustbädd
		Klar	4. Nya Lödöse	52	35		Träkonstruktion	30	Horisontellt	Rektangulärt	Intakt				Rustbädd
		Klar	4. Nya Lödöse	260	11		Träkonstruktion	9	Horisontellt	Runt	Ruttnat				Stock
		Klar	4. Nya Lödöse	100	20		Träkonstruktion	2	Horisontellt						Stock
		Klar	4. Nya Lödöse	160	20		Träkonstruktion	8	Horisontellt						Stock
		Klar	4. Nya Lödöse	200	18		Träkonstruktion		Horisontellt						Stock
		Klar	3. Landeri	175	15		Träkonstruktion	4	Horisontellt	Rektangulärt	Ruttnat	Obestämbart		Annat	Planka
		Klar	4. Nya Lödöse	60	10		Träkonstruktion	3	Horisontellt	Rektangulärt	Ruttnat	Sågat		Annat	Planka
		Klar	4. Nya Lödöse	14	10	3 stockar som fäster en horisontell spärrstock, sågade och huggna	Stolpe	90	Vertikalt		Intakt		Yxa	Tapp	Stock
		Klar	4. Nya Lödöse	45	22		Träkonstruktion	20	Horisontellt	Rektangulärt	Sekundärt destruerat	Obestämbart		Annat	Rustbädd
		Klar	3. Landeri	120	60		Träkonstruktion	3	Horisontellt	Rektangulärt		Obestämbart			Bräda
		Klar	4. Nya Lödöse	113	30		Träkonstruktion	4	Horisontellt	Rektangulärt	Ruttnat	Obestämbart			Ej tolkad konstruktion
		Klar	4. Nya Lödöse	140	10	björknäver bevarat	Stör	10	Horisontellt	Runt	Intakt	Hugget	Yxa		Träläggning
		Klar	4. Nya Lödöse	80	30	fortsätter in i norra profilen	Träkonstruktion	5	Horisontellt	Rektangulärt	Sekundärt destruerat	Sågat	Såg		Bräda
		Klar	3. Landeri				Stolpe								
		Klar	4. Nya Lödöse	80	15		Stolpe	15	Horisontellt	Runt		Obestämbart			Stock

IntrasisId	Name	Class	Subclass	Händelse	Källvärde	Undersökningsmetod	Källkritiska aspekter	Undersökt andel	Kommentar	Osteologianteckningar	Insamlingsteknik
403316	spärrstock	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa	kontaminerad	100	Kraftig horisontellt liggande spärrstock som legar som rustbädd i botten på brofundamentet i vallgraven. Delen som framkom i avlastningsschaktet sågades av och lyftes medan den del som fortsätter n/v in släntkanten ligger kvar och kan avslöja konstruktionens fulla storlek. PD 403320.403316 9/6 utvidgades schaktet mot n/v så hela stocken framkom ochförlägningen mättes in . En till tapp framkom och mättes in med samma id som den första, 403086.		Maskin
403443		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade	Tidsbrist	100	Syllstock tillhörande en träkonstuktion. Hål för spärrstock.		Skyffel/hacka
403461		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skyffel/spade	Tidsbrist	100	syllstock tillhörande en träkonstruktion. Dendro tagen., 1489.		Skyffel/hacka
403482		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa	Tidsbrist	100	Påle genom 403443		Skyffel/hacka
403486		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa	Tidsbrist	100			Skyffel/hacka
403512		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa	Tidsbrist	100	Två (i början såg de ut som en stor) stora pålar ev sammanfogade och med en mindre träkil nedslagna i mellan dem. Tillhörande en träkonstruktion. En horisontellt liggande stock går igenom dessa två pålar.		
403523		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade		100	En bräda som sticker ut från profilen, kommer fram i samband med övrig träkonstruktion.		Skyffel/hacka
403527		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa		100	Vertikal stolpe/bräda torligen sågad. Ingår i 'portkonstrktionens' rustbädd som någon sorts stag-/spärrstolpe.		Grävsked | Skyffel/hacka
403668	störar	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skärslev/skrapa		100	tre kvadratiska och rektangulära störar som är nedslagna i fyllningen 403567. Oklar funktion i konstruktionen/ huset.		Skyffel/hacka
403682	stolpe	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skärslev/skrapa		100	stolpe med endast bottendelen kvar i marken. Tillhuggen i en spets vilket tyder på att den slagits ner i silten.		Grävsked
403715		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade		100	Återanvänd stock tillhörande en träkonstuktion, nylösetid. Går igenom två vertikalt stående stockar.		Skyffel/hacka
403770	träkonstr.	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa		100	Två grövre plankor son tolkas som rustbädd för stenpackningen över. Ligger i sand som stabiliserar dem. I södra kortsidan bröt vi sönder dem när det schaktatdes för avlstningsytan i yta B.		Grävsked | Maskin
403800	stock m tapp	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100	stock med dymling som går vertikalt igemom rustbädd 401797		Maskin | Skyffel/hacka
403852	stör	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa		100	Stör som ligger i brokonstruktionens rustbädd. oklar funktion.		Skyffel/hacka
403892	tapp	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin	kontaminerade massor på	100	Stock med tapp i en spärstock. Skadades vid framrensning av stocken så att endast delen som sitter i stocken fanns kvar, tolkades om två delar.		Grävsked | Skyffel/hacka
403901	spärrstock	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa		100	Vertikal stock som står nedgrävd mellan två horisontella spärrstockar.Ligger i giftiga massor! inget PD		Grävsked
403907	rustbädd	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100			
404137	brofäste	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Skärslev/skrapa		100	kraftig halvmåneformad stock som ligger på strandsidan, parallellt med vallgtaven och i linje med brofundmentet KG3008. Inhugg för att ha en stock med tapp i sig... kan även vara sekundärt använt material. Sekundärt genomskuren av en rec störning i öst. PD404206 - år 1503 1506		Skyffel/hacka
404141		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin		100	Nedslagna pålar för erosionsskydd eller staket? Pd-svar 404141.406244 - 1522 (1526 plusminus 3 404141.406245 - 1526 404141.406317 - 1495 yttersta ringen, beräknad fällningsår 1502, datering osäker 1520plusminus 15		
404272	stormpålar	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100	Rad av snedstälda pålar cirka 1 meter utanför vallgravens södra ytterkant. I och med att de är snedställda utåt tolkas dessa inledningsvis som såkallade stormpålar. Ett första/tillfälligt försvarshinder tillhörande befästningsverket/stadsmuren runt Nylöse(samman med vallgrav och palissaden). PD-svar År 1529 404272. 404598 - 1529 404272. 404599 - 1507 404272. 406246 - 1529 404272. 406566 - 12529 404272. 406567 - asp ej daterad 404272. 406568 - 1529 404272. 406571 - 1529s		
404649	stolpe i vallgrav	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100	Stolpe i vallgraven med oklar funktion, en av fler.		
404653	stolpe i vallgrav	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100	En av fler stolpar i vallgraven som har oklar funktion. PD406976		
404670	grov stolpe (ev rec.)	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa		100	stolpar med oklar funktion som står lite överallt i vallgraven. Osäkert 100000 eller landeri!		
404693	stolpe	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa		50	Nederdel av stolpe, mycket förmultnad.		
404808	stolpe	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa		50	Kraftigt förmultnad stolpe, 16cm i diameter.		

Föremålsanteckningar	Provanteckningar	Dokumentationsstatus	Fas	3_ Längd	4_ Bredd	Anmärkning	Typ	5_ Höjd	1_ Placering	2_ Tvärsnitt	6_ Kondition	7_ Klyvning	8_ Verktygsspår	Sammanfogningsteknik	Tolkning
		Klar	4. Nya Lödöse			forts in i norra slänt	Träkonstruktion		Horisontellt	Rektangulärt	Intakt	Sågat	Såg	Tapp	Rustbädd
		Klar	4. Nya Lödöse	200	40		Stolpe		Horisontellt						Syll
		Klar	4. Nya Lödöse	200	30		Stolpe		Horisontellt						Syll
		Klar	4. Nya Lödöse		10	Påle genom stock	Stolpe	8	Vertikalt	Kvadratiskt					
		Klar	4. Nya Lödöse	13	10		Stolpe		Vertikalt	Rektangulärt	Intakt	Hugget			
		Klar	4. Nya Lödöse		18		Stolpe		Vertikalt	Runt					
		Klar	4. Nya Lödöse	40	10	Brädan fortsätter in i profil.	Träkonstruktion	3	Horisontellt	Rektangulärt	Intakt	Sågat			Bräda
		Klar	4. Nya Lödöse	22	10		Träkonstruktion		Vertikalt	Rektangulärt					Bräda
		Klar	4. Nya Lödöse				Stör		Vertikalt	Rektangulärt	Sekundärt destruerat	Sågat			Ej tolkad konstruktion
		Klar	4. Nya Lödöse				Stolpe	50	Vertikalt	Runt	Ruttnat	Hugget	Yxa		Ej tolkad konstruktion
		Klar	4. Nya Lödöse	150	15	återanvänt material	Stolpe	12	Horisontellt	Runt	Intakt	Hugget	Yxa		Stock
		Klar	3. Landeri	240	12		Träkonstruktion	4	Horisontellt	Rektangulärt	Sekundärt destruerat	Obestämbart			Rustbädd
		Klar	4. Nya Lödöse				Träkonstruktion		Vertikalt	Runt	Ruttnat	Hugget	Yxa	Tapp	Stock
		Klar	4. Nya Lödöse	170	9		Stör	8	Horisontellt	Runt	Intakt	Hugget	Yxa		Ej tolkad konstruktion
		Klar	4. Nya Lödöse			skadad vid framrensning	Träkonstruktion		Vertikalt		Sekundärt destruerat	Hugget		Tapp	
		Klar	4. Nya Lödöse	23	11		Stolpe		Vertikalt	Rektangulärt	Ruttnat	Obestämbart			Rustbädd
		Klar	4. Nya Lödöse												
		Klar	4. Nya Lödöse	53	30		Träkonstruktion	10	Horisontellt		Sekundärt destruerat	Hugget	Yxa		Fundament
		Klar	4. Nya Lödöse	100	12		Stolpe		Vertikalt			Hugget	Yxa		
		Klar	4. Nya Lödöse	150	12	stormpålar	Stolpe		Lutande	Runt	Intakt	Hugget	Yxa		Stock
		Klar	3. Landeri		10		Stolpe		Vertikalt	Runt	Sekundärt destruerat				Ej tolkad konstruktion
		Klar	3. Landeri		12		Stolpe		Vertikalt	Runt	Sekundärt destruerat				Ej tolkad konstruktion
		Klar	3. Landeri	15	7.5		Stolpe		Vertikalt	Rektangulärt	Sekundärt destruerat	Hugget			Ej tolkad konstruktion
		Klar	4. Nya Lödöse	22			Stolpe		Vertikalt	Runt					Ej tolkad konstruktion
		Klar	4. Nya Lödöse	16			Stolpe	30	Vertikalt	Runt	Ruttnat				Ej tolkad konstruktion

IntrasisId	Name	Class	Subclass	Händelse	Källvärde	Undersökningsmetod	Källkritiska aspekter	Undersökt andel	Kommentar	Osteologianteckningar	Insamlingsteknik
405065	stockar	Stratigrafiskt objekt	Träkonstruktion	Destruktion	3	Hacka		100	Horisontella stockar som kan vara en markering för hur bred vallgraven minst skall vara, isf utlagda vid etableringsfas. Stockarna var ej fixerade i botten vid undersökning. Dess linjära placering är konstig och det känns inte som att de bara flytit dit.. För mjuka för att ta PD på.		Maskin
405098	påle	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa		50	Rest/nederdel av stolpe, spetsad. Omsatt i ett äldre stolphål. Ca 40 graders lutning mot S.		
405115	stolpe	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skyffel/spade | Skärslev/skrapa		100	Nederdel av stolpe/påle, spetsad i gott skick. PD405124.405115 PD resultatet gav en väldigt tidig datering på 1491-1497 men stolpen är dokumenterad att den kom innan svämsediment 406926 kom till ytan - vilken skiljer NL-tid från Landeritid. Stolpen kan vara återandvänd.		
406327	träränna	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skyffel/spade | Skärslev/skrapa		100	Träränna satt i blålera för vattenledning. Plan bräda/planka (tjocklek 3 cm) i botten sammanfogad (ej spik) med plankor/brädor som är snedställda och lutar utåt. Höjd: 17 cm på utsidan och 14 cm på insidan av rännan. Kvistar kvar. Trärännan har på minst ett ställe tidigare skadats och saknar delvis den snedställda plankan/brädan. Ej i skick för dendroprov. Oklart om trärännan varit täckt.		
406495	stolpar	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Troligen stolpar från landeritid. sekundärt avsågade torligen inför betongkonstruktionen ovan. Otolkade.		Maskin
406744	stolpe	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Skärslev/skrapa		100	Stolpe i dålig kondition. Lutande mot norr.		
406880		Stratigrafiskt objekt	Träkonstruktion	Destruktion	3	Maskin | Skyffel/spade		100	Löst liggande planka som ligger i ett område med svårtolkade stolphål, svämsand spår av spadstick och rännor som rutar in odlingsbäddar och små plättar med brukning/odlingsjord. Samtliga kontexter är svårtolkade och svårdateraded.		Skyffel/hacka
406977		Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion			100			
407119	VAschakt NL	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin	dokumenterades i samband med grovschaktning	100	Träkonstruktion, preliminärt tolkas som del av timmerkista alternativt träsyll tillhörande tiden för Nya Lödöse. Konstruktionen framkom 1.95 m under markytan där miljöprov togs och där 'brunnen' är tänkt att ligga, pga detta grävdes det djupare än 1.5 m här. (Endast en del av konstruktionen grävdes fram eftersom platsen senare kommer att slutundersökas.)		Grävsked | Maskin
408000	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408001	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408002	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408003	KG4002	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Ensamstående påle. Skiljer sig från den intillliggande pålraden både i placering och storlek. Ev samtida med timmerkistorna. dendro tagen.		Maskin
408005	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade		100	stock tillhörande timmerkista med både under och överhugg.		Maskin
408006	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade		100	Stock tillhörande timmerkista, ligger samman med stock 408005. Stocken fortsätter in i schaktväggen mot sydöst. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408007	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade		100	Stock tillhörande timmerkista. Ligger i V-Ö riktning, stocken fortsätter västerut in i västra schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408008	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade		100	Stock tillhörande timmerkista. Stocken ligger i V-Ö riktning och fortsätter västerut in i den västra schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin

Föremålsanteckningar	Provanteckningar	Dokumentationsstatus	Fas	3_ Längd	4_ Bredd	Anmärkning	Typ	5_ Höjd	1_ Placering	2_ Tvärsnitt	6_ Kondition	7_ Klyvning	8_ Verktygsspår	Sammanfogningsteknik	Tolkning
		Klar	4. Nya Lödöse			ev rasering	Träkonstruktion		Horisontellt	Runt	Ruttnat				Ej tolkad konstruktion
		Klar	4. Nya Lödöse	16			Stolpe	20	Lutande	Runt	Ruttnat	Obestämbart			
		Klar	4. Nya Lödöse		10		Stolpe	20	Vertikalt	Runt	Intakt	Hugget			Ej tolkad konstruktion
		Klar	3. Landeri		25		Träkonstruktion	17	Horisontellt	Kvadratiskt	Ruttnat				Träränna
		Klar	3. Landeri				Stolpe		Vertikalt	Runt	Sekundärt destruerat		Yxa		Ej tolkad konstruktion
		Klar	3. Landeri	12	12		Stolpe	30	Lutande	Runt	Ruttnat				Ej tolkad konstruktion
		Klar	3. Landeri	180	0.15			0.03	Horisontellt	Rektangulärt	Intakt	Obestämbart			Planka
		Klar	4. Nya Lödöse				Stolpe				Ruttnat				
		Klar	4. Nya Lödöse	220	25	konstruktionen fortsätter mot öst och norr. Endast en liten del är framtagen.	Träkonstruktion		Horisontellt	Kvadratiskt	Intakt				Timmerkista
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8		Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	50	12		Stolpe		Vertikalt	Runt	Intakt				Ej tolkad konstruktion
		Pågår	4. Nya Lödöse	380	17	stock	Träkonstruktion	17	Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	70	17	stock	Träkonstruktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	200	17	stock	Träkonstruktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	220	17	stock	Träkonstruktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista

IntrasisId	Name	Class	Subclass	Händelse	Källvärde	Undersökningsmetod	Källkritiska aspekter	Undersökt andel	Kommentar	Osteologi-anteckningar	Insamlingsteknik
408009	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade		100	Stock tillhörande timmerkista. Stocken ligger i V-Ö riktning och fortsätter västerut in i schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408010	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade		100	Stock tillhörande timmerkista. Stocken fortsätter västerut in i schaktväggen. Timmerkistan går i NV till SÖ riktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408011	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Hacka | Maskin | Skärslev/skrapa		100	Stock tillhörande timmerkista. Släpstock - användes i första hand under vinterhalvåret då det gick att dra virket på snön till platsen för byggandet. Trädstammarna lades då på släpstockarna som drogs fram med hjälp av oxar. Släpstocken fortsätter västerut in i schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408016	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408017	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden (S400440) och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408018	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408019	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408020	KG4001	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin		100	Påle tillhörande pålrad belägen på insidan sett från timmerkistorna. Cirka 50 cm öster om timmerkistorna och cirka 33 cm mellan varje påle. Endast den nedre och kluvna delen av pålarna var bevarade så därav togs ej några dendroprover. Pålraden kan vara del av en tidig strandskoning. Del av timmerkistorna. En tidig utmärkning av staden. -Finns en liknande pålrad strax innanför pallisaden och påminner något om en tolkad 'kajskoning' på norra sidan om Säfeån.		Maskin
408021	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade	grovschaktning med maskin	100	Stock tillhörande timmerkista. stocken blev troligen skadad i samband med grovschaktningen och skulle förmodligen suttit ihop med stock 408005. Stocken fortsätter västerut in i den västra schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408022	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skärslev/skrapa | Skyffel/spade		100	Stock tillhörande timmerkista. Stocken fortsätter västerut in i schaktkanten. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin
408024	KG4000	Stratigrafiskt objekt	Träkonstruktion	Konstruktion	Konstruktion	Maskin | Skyffel/spade		100	Stock tillhörande timmerkista. Timmerkistan går i NV till SÖ rigktning. Timmerkistorna fortsätter N, Ö och V in i schaktkanterna. Timmerkistans sammanlaggda storlek som vi har framme är cirka 7.5 x 2.5 m i diam.		Maskin

Föremålsan-teckningar	Provant-eckningar	Dokumenta-tionsstatus	Fas	3_ Längd	4_ Bredd	An-märkning	Typ	5_ Höjd	1_ Placering	2_ Tvärsnitt	6_ Kondi-tion	7_ Klyvning	8_ Verk-tygsspår	Sammanfog-ningsteknik	Tolkning
		Pågår	4. Nya Lödöse	180	17	stock	Träkon-struktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	150	17	stock	Träkon-struktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	160	15	släpstock	Träkon-struktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8	påle	Träkon-struktion		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	20	8	påle	Stolpe		Vertikalt	Runt	Intakt	Hugget	Yxa		
		Pågår	4. Nya Lödöse	80	17	stock	Träkon-struktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	200	17	stock	Träkon-struktion		Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista
		Pågår	4. Nya Lödöse	350	17	stock	Träkon-struktion	17	Horisontellt	Runt	Intakt	Hugget	Yxa	Knut	Timmerkista

ID	Province	Town	Department	Location	Report no	Object	Dated	Mixed tech	Plaster	Panelling	Function	Balcony
1	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	1:2:1	1470-1480	log-timber/ timber-frame	yes	no	residence	no
2	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	3:2:1	1476	no	no	no	byre/ stable/pig sty	no
3	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	3:4:1	1482	no	no	no	residence/ shop	no
4	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	4:3:1	1470-1480	no	no	no	Residence ?/shop/ workshop	possibly
5	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	3:8:1	1500-1540	no	no	no	residence/ byre	no
6	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	3:15:1	1560-1570	no	no	no	residence	no
7	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	3:15:2	1560-1570	no	no	no	workshop	no
9	Västergötland	Göteborg	Arkeologerna	Nya Lödöse	2017:1	4:8:1	1570-1624	no	no	no	residence/ workshop/byre	no
10	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Gamla teatern	1984	House 1	1621-1645	log-timber/ timber-frame	no	yes	residence	no
11	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Gamla teatern	1984	House 2	1645-1669	no	no	yes	residence/ larder	no
12	Västergötland	Göteborg	Göteborgs historiska museum	Kv. Sparbandken	1988	A4	1620-1630s	no	no	no	residence	no
13	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1985	Southern plot	1650-1699	no	no	yes	residence	no
14	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot B/ phase 1	1620-1650	no	no	no	residence	no
15	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot B/ phase 2	1620-1650	no	no	yes	byre?	no
16	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot B/ phase 3	1650-1669	no	no	no	byre?	no
17	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot C/ phase 1	1620-1650	no	no	no	byre?	no
19	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot C/ phase 3	1669-1746	no	no	no	?	no
20	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot D/ phase 1a	1620-1650	no	no	no	residence?/ workshop?	no
21	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot D/ phase 1b	1620-1650	no	no	no	residence?/ workshop?	no
22	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot D/ phase 2	1650-1669	no	no	no	residence?/ workshop?	no
23	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot E/ phase 1a	1620-1650	no	no	no	byre?	no
24	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot E/ phase 1 b	1620-1650	no	no	no	byre?	no
25	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot E/ phase 2	1650-1669	no	no	no	?	no
26	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	Plot E/ phase 3	1669-1730?	no	no	no	residence	no
27	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Polismästaren	1983	plot E/ phase 4	1730-1746	no	no	no	residence	no
28	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Enigheten	1979-80	House west	17th century	no	no	no	residence	no
29	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Enigheten	1979-80	House East	17th century	no	no	no	residence	no
30	Västergötland	Göteborg	Göteborgs arkeologiska museum	Kv. Enigheten	1979-80	House East 2	17th century	no	no	no	residence	no
31	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A4a	1670 -	no	no	no	residence	
32	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A4b	1670 -	no	no	no	residence/hall	possibly
33	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A6	1670 -	possibly	no	no	storage/stair	
34	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A8	1670 -	no	no	no	kitchen	no
35	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A7	1670 -	no	no	no	storage/larder	no
36	Dalarna	Falun	Dalarnas Museum	Kv. Dalpilen	1996:109	A9	1670 -	no	no	no	residence	no
37	Småland	Jönköping	Riksantikvarieämbetet	Kv. Dovhjorten	2012:119	KG 41	1650s?	no	no	no	byre?	no
38	Småland	Jönköping	Riksantikvarieämbetet	Kv. Dovhjorten	2012:119	KG 43	1730s-	no	no	no	woodshed	no
39	Småland	Jönköping	Riksantikvarieämbetet	Kv. Dovhjorten	2012:119	KG 60	1650s-	no	no	no	byre/ ?	no
41	Småland	Jönköping	Riksantikvarieämbetet	Kv. Dovhjorten	2012:119	KG 24	1630s-early 1700s	no	no	no	residence?/ smithy?/ privet	no
42	Småland	Jönköping	Riksantikvarieämbetet	Kv. Dovhjorten	2012:119	KG 23	1730s-	no	no	no	residence?	-
43	Dalarna	Falun	Dalarnas Museum	Västra Falun	2018:14	Northern house/ phase 4	1600-	no	no	no	residence?/kitchen	no
44	Dalarna	Falun	Dalarnas Museum	Västra Falun	2018:14	Southern house/ phase 4	1600-	no	no		Residence?/ public house (pub)	no
45	Dalarna	Falun	Dalarnas Museum	Västra Falun	2018:14	Byre phase 4	1600-	no	no	no	Byre	no
46												

External stair	Fireplace	Insulation	Window glass	Floor type	No of rooms	No of storeys	Length	Width	Square meters	Conversion	Pad stones
no	yes	earth/sand/peat	yes	wood	6	1	12 m	4,5-6,5 m	54-78		occational
no	no	no	no	earth/ tile/	3	1	15 m	6 m	90		-
no	yes		yes	wood	1	1	7,7 m	4,6 m	35,42		yes
possibly	yes	clay/ peat/sand	yes	wood	5	1 (2)	13,5 m	6-6,4 m	86,4	several wood flooors in A	under middle walls
no	yes + chimney	sand	no	wood/stone/clay/ earth	3-5	1	13,7 m	5,3 m	72,61	2	no
no	yes + chimney	clay	yes	wood	1	1	6,3 m	6 m	37,8	1 attached to 1:17:1	no
no	yes	no	no	wood	2	1	6,3 m	6 m	37,8	1 re-use of 3:4:1	no
no	no	sand	no	wood/ clay/ tiles/ stone	5	1	13,5 m	5,8-7,3 m	78,3-98,55	room E	occational
no	yes	sea sand	(yes)	wood	3	1	11,5 m	4,7 m	54,05		corner pad stones
no	yes		(yes)	wood/ stone/ tiles	2 (3)	1	5,8 m	4,4 m	25,52		-
no	yes	clay	yes	wood	2	1	8 m	5 m	40		yes
no	yes	clay/ wood chips	yes	wood	2	1	unclear	unclear			-
no	yes	sand/clay		wood/sand	3	1	11,5 m	5,5 m	63,25		yes
no	no	wood chips/ manure/ grey sand		wood	4	1	?	?		house from phase 1 was converted into phase 2	yes
no	possibly a foundation for one?	sand / woodchips		wood/ stone	4	1	?	?			yes
no	no	sand/manure/ wood chips		wood	3	1	9 m	4,5 m	40,5		yes
no	no	?			2	1	?	?			yes
no	no	clay/ wood chips		wood	2	1	5,5 m	4,5 m	24,75		occational
no	no	sand/second floor		wood	2	1	5,5 m	4,5 m	24,75		-
no	no	sand/ wood chips		wood	2	1	5,5 m ?	4,5 m ?	24,75		-
no	no	sand/manure/ clay/ wood chips		clay	1	1	4,4 m	4 m	17,6		yes
no	no	and/manure/ clay/ wood chips		clay	2	1	?	?			-
no	no	clay		wood	2?	1	17 m	6 m	102		occational
no	yes	?		stone	2	1?	10 m	7-8 m	70-80		yes
no	yes	?		?	4	1?	18 m	6 m	108		yes
no	yes	clay		wood	4	1?	10,5 m ?	4,5 m	47,25		no
no	yes	clay		wood	2	1	?	?			no
no	yes	wood chips and dubbel floors		wood	2 (3)	1	?	?			no
	no	sand/clay/birch-bark	?	wood	3	1?			ca 30 m2		-
possibly	no	?	?	wood?	1	1?			ca 45 m2		yes
possibly	no	no	no	wood	1	1?					yes
no	yes + chimney	no	?	?	1 (2)	1	6 m ?	5 m?	30		yes
no	no			wood	1	1	2, 5 m ?	2 m?	5		yes
no	no	sand	?	wood	1	1			45 m2		yes
no	no	sandy clay/ slag/ wood chips	no	clay	1?	1	5,8 m	4,5 m	26,1		yes
no	no	wood chips	no	wood	1	1	4,8 m	4 m	19,2		yes
no	no	?	no	wood/clay	3+1	1	9 m	3 m	27		yes
no	4	clay/ sand	no	wood/ stone/clay	4+1	1					occational
yes	4	?		?	4	2?				re-construction of KG 24	yes
no	yes	sand/silt/gravel	yes	wood	2	1	8,3 m	6,7 m	55,61		yes
no/ maybe	yes	sand/gravle	yes	wood	2	1	8,5 m	6,7 m	56,95		yes
no	no	sand/silt/gravel/ wood chips/ slag		wood	1	1		3 m ?			no

Appendix 3b. Archaeological evidence of log timber technique

The sample data used comes from in the micro study of early modern urban log timber buildings from archaeological investigations in Nya Lödöse, Gothenburg, Jönköping and Falun.

There is a large dataset to choose from, and this represents a sample of the building remains where most of the layout is intact and where the log timber construction is identifiable. Since this is a sample and not a list of all log timber building remains in each town, it is not to be statistically analysed. Instead, the micro study will highlight methods of investigation and social connotations.

Corner-notching at Nya Lödöse

Eight buildings constructed in log-timber are included from the investigations in 2013 in Nya Lödöse (Öbrink and Rosén 2017).

1480s-1540s

Building 1:2:1 Room C-G

This is a house, dated to 1470-1480, that was built in a mix of techniques with six rooms and a storage unit, in total measuring c. 12.0 x 6.5m *Figure 1.* Towards the street there were two shops, rooms A c. 3.1 x 2.8m and B c. 3.0 x 2.8m, both constructed in timber-frame technique with a whitewashed façade and with wooden flooring. However, one room had previously had a clay floor; there were also the remains of what could be window glass. The shops did not have fireplaces; they had an entrance from the street. The rest of the building, rooms C-G, have been constructed in log-timber technique. Room C was a closed porch (entrance hallway) measuring 3.7 x 1.9m, which was insulated with a layer of sand and a wooden floor patched up with clay as well as a few sill stones that were used under the corner-notches. Next to the porch and adjacent to the shops was room D, a storage room with a clay floor measuring 3.7 x 2.0m. It had odd sill stones under the corner notches interpreted as a possible larder. There was also a drainage towards the *vret,* which is the Swedish word for a gap between buildings in close proximity, interestingly enough, frequently used for all sorts of activities. Another word for the same space is *dropprum (perhaps more used on the east coast),* which refers to the space and distance needed between adjacent buildings to minimise damage from rainwater dripping from one roof on to the other. Room E was the main room/ parlour, where all everyday activities took place and where everyone living in the premises slept (at least during the cold winter months) measuring 4.5 x 4.5m. The room had an insulated wooden floor, a fireplace and there were traces of window glass. Apparently, there were no sill stones supporting the main room. Room G identified as a storage room insulated with squares of peat with a layer of sand on top measured 1.7 x 2.6m Room F had a levelling layer of sand and above that a wooden floor 4.5 x 3.3m (Öbrink and Rosén 2017: 83, 126).

Figure 1 Two photos of 1:2:1 showing the layout and building technique and the corner fireplace, as well as the soleplate of the building. Photo The Nya Lödöse project 2013.

Building 3:2:1 Room A-C

This house consisted of three rooms, all in log-timber technique, dated to 1476 at the earliest, measuring 15 x 6m. The rooms were not insulated, and were built with an earthen floor, though in room B a part of the room had wooden flooring. There were no fireplaces in the building and the house did not rest on sill stones. Rooms A c. 5.3 x 6.5m and B, c. 5.3 x 3.5m were byres: room A, a stable and room B, a pigsty with a possible partitioned room to the east (with the wooden floor). Room C was a storage facility measuring 5.3 x 3.5 (Öbrink and Rosén 2017: 85).

Building 3:4:1 Room A-C

This is a residential house, measuring 7.7 x 4.6m, dated to 1482 at the earliest, with initially two rooms; the third room was added later, constructed in log-timber technique (Figure 2). Room A c. 4.4 x 4.2m, was built directly on the ground without sill stones; yet, rooms B and C had a foundation of sill stones under the corner-notches. Only the main room/ parlour, room A, had a fireplace. All the rooms had wooden floors, rooms A and C had insulation of sand and clay. Conversely, room B had an earthen floor level underneath the wooden floor, which might have acted as an insulation layer. Room B was interpreted as either a shop or a chamber measuring 2.6 x 4.2m, while room C was either a chamber or a closed porch. Room C was built at the beginning of the 16th century. Rooms A and C had traces of window glass. (Öbrink and Rosén 2017: 85, 226).

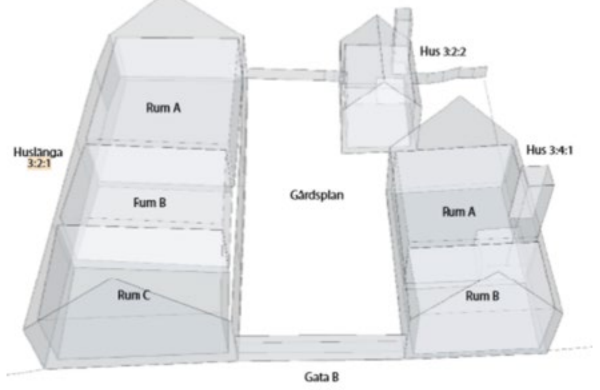


Figure 2 Building 3:2:1 in Nya Lödöse (Öbrink and Rosén 2017,49)

Building 4:3:1 Room A-E

This was a five-room building built in log-timber technique, dated between the second half of the 1470s to the first part of the 1480s measuring c. 13.5 x 6.0-6.4m (Figure 3). Rooms A, B and D had wooden flooring. Room A was the main room or parlour with a fireplace and measuring 5.8 x 6.3m in size with an insulated floor made from a layer of clay and squares of peat, yet the floor construction was not supported by sill stones. Room B was a closed porch i.e. entrance to the building, it had an inner wall resting on sill stones, and an insulated floor with sand and peat. Room B measured 3.2 x 2.0m. Next to room B and room A was room C, which was a storage room with a beaten earth floor and, surprisingly, fragments of window glass, measuring 3.7 x 3.0m. The inner wall rested on sill stones. Rooms D and E were shops or workshops, room D measured 2.0 x 2.6m with a wooden floor. Room E was c. 3.0 x 3.2m in size with a clay floor, which was insulated with peat and sand, with sill stones under an inner wall. Some distance from the outer wall, there was a construction of planks, oriented north-south on sill stones; in addition, there was a robust post to the south. These two construction parts put together might indicate a foundation for an external staircase and a possible balcony which would also point to a first floor, if the hypothesis holds up (Öbrink and Rosén 2017: 86, 258).

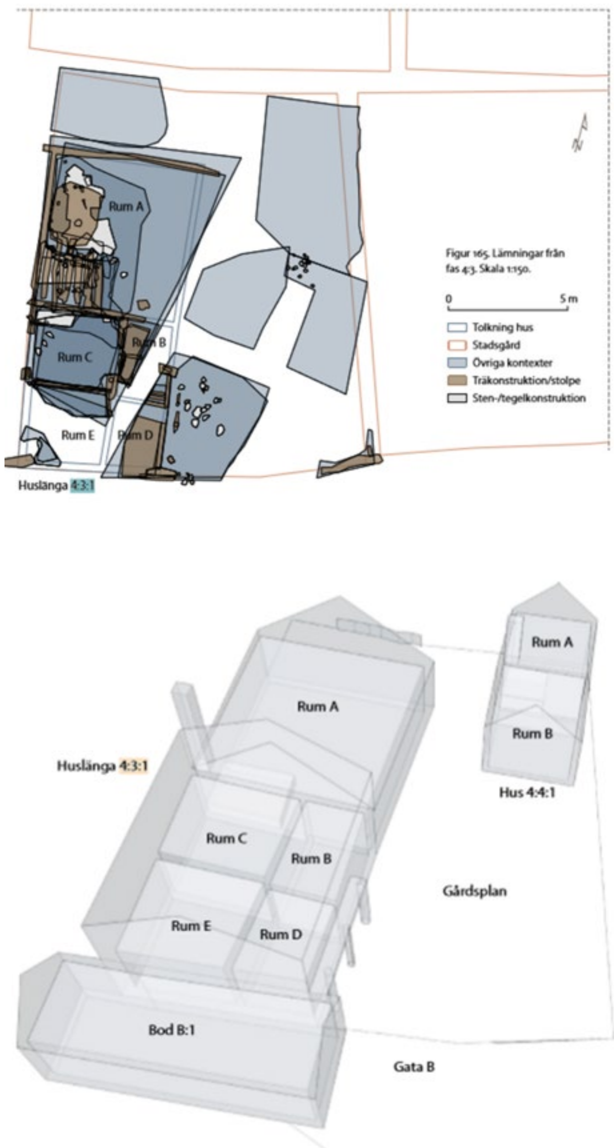


Figure 3 Building 4:3:1 in Nya Lödöse (Öbrink and Rosén 2017:52, 260.)

1500-1540

Building 3:8:1 Room A-E

This building was slightly more recent, from the beginning of the 16th century and was possibly built in log-timber technique (Figure 4). The house went through two conversions. Originally, there were three rooms, one main room and two slightly smaller. The first conversion divided the two smaller rooms into four rooms, thus creating enclosed porches/entrances to each room. Room A was, to begin with, built as a main room or parlour, but was in a third phase converted into a byre measuring c. 5.3 x 6.5m. Initially, the room had a wooden floor insulated with sand, which was later changed to a beaten earth floor. The room had a fireplace with a chimney, but the room construction did not rest on sill stones. Room B was a closed porch with a wooden floor c. 1.8 x 3.6m in size. Next to the porch was room C, a storage room/chamber c. 3.2 x 3.6m. It had a wooden floor with an older clay floor underneath. Room D was a second porch with a stone floor 1.8 x 3.5m. The last room, E, was another storage/chamber with a clay floor c. 3.2 x 3.5m (Öbrink and Rosén 2017: 85, 232).

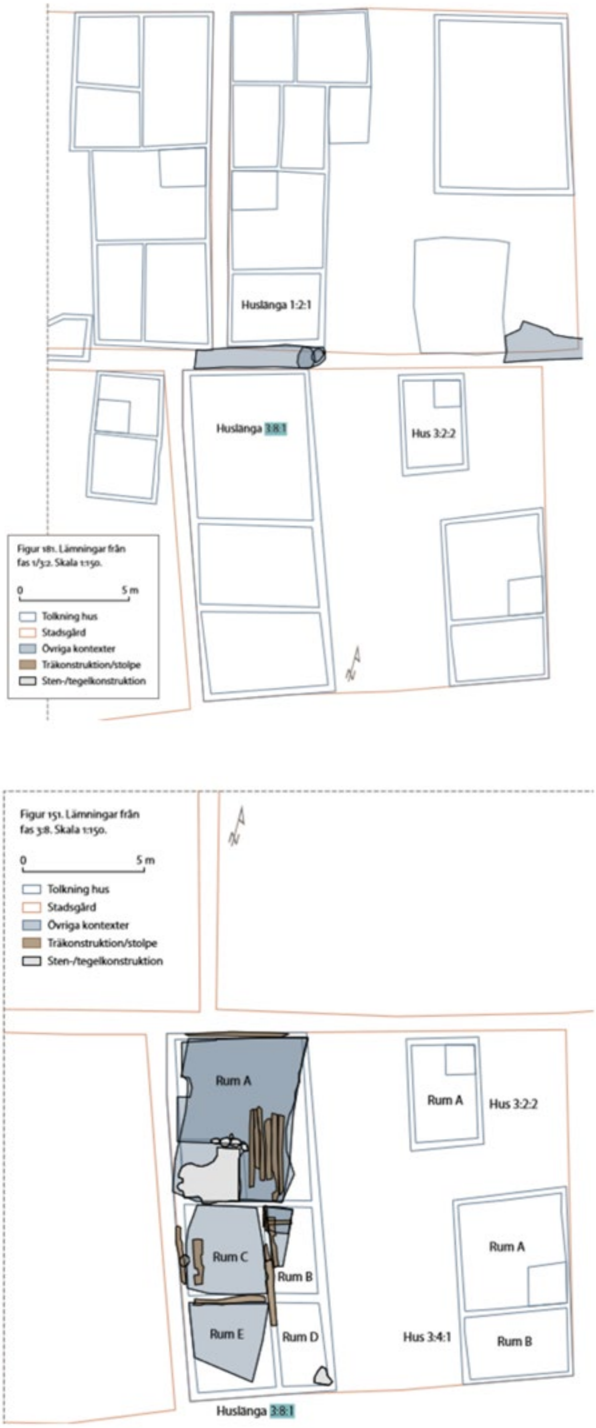


Figure 4 Building 3:8:1 in Nya Lödöse (Öbrink and Rosén 2017:233, 294).

1570-1624

Building 3:15:1 Room A

This building 6.3 × 6m in size, from the later part of Nya Lödöse's existence, only had one room with a main room/workshop and was conceivably built in log-timber technique (Figure 5). It had a wooden floor insulated with clay and a fireplace, which probably was not used for cooking, there were also traces of a chimney. Fragments of window glass were found (Öbrink and Rosén 2017: 86, 245).

Figure 5 Buildings 3:15:1 and 3:15:2 in Nya Lödöse (Öbrink and Rosén 2017: 248).

Building 3:15:2 Room A-B

A log-timber building, 6.3 × 6m in size, supposedly, with a main room-cum- workshop with a beaten earth floor and a fireplace, it seems to have been a place to handle fish, and probably not a residence. There were roof tiles found so the building could possibly have had a tiled roof. Room B was a storage room or a shop with a wooden floor and built on a stone sill. The roof could have been tiled. The building did not have insulation (Öbrink and Rosén 2017: 86).

Building 4:8:1 Room A-E

This is a five-room log-timber house, 13.5 × 5.8-7.3m in size, with the traditional main room/ parlour, porch and storage room (Figure 6). In addition, there were two shops or workshops as well, partly re-built from 4:3:1. The house was built sometime during 1560-1570s. The main room, room A, still used the old fireplace, it did however have a wooden floor insulated with sand. The porch, room B, had no remaining floor. The storage room, room C, had a stone/tiled floor also with sill stones supporting the construction. Room D was a shop or workshop with no floor remaining. There was conceivably a paved entrance to the room. Room E was feasibly used as a byre with a clay floor layer. This room was re-built around 1587. The building was destroyed in a fire possibly in connection with the abandonment of the town in the 1620s (Öbrink and Rosén 2017, 269–80).

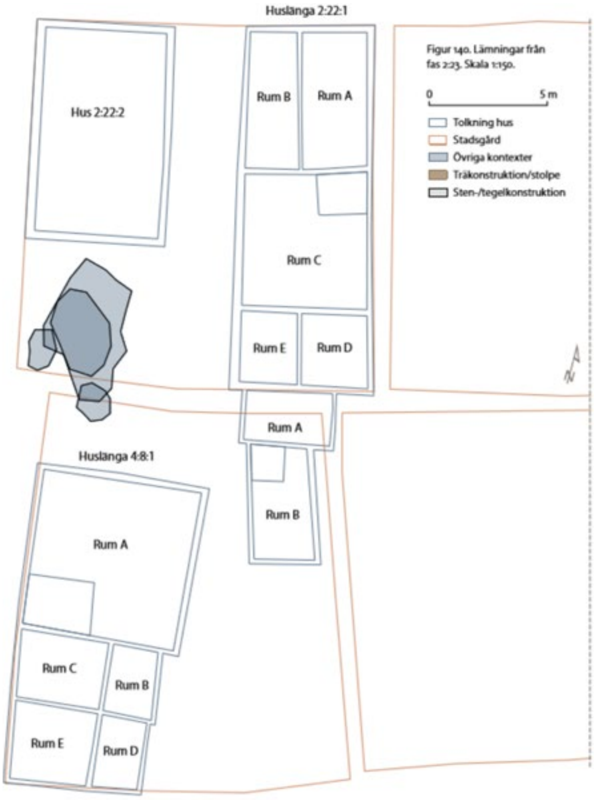


Figure 6 Building 4:8:1 in Nya Lödöse (Öbrink and Rosén 2017:211).

Gothenburg

These 20 examples of archaeological remains of buildings from Gothenburg have been taken from my forthcoming article with examples from *Kvarteret Gamla teatern*, *Kvarteret Sparbanken, Kvarteret Polismästaren* and *Kvarteret Enigheten,* all excavated in the 1970s and 80s.

1620-1746

Kv. Gamla teatern 1984: Two buildings with the gable to the street.

House 1 dated to c. 1621-1645.

Two rooms of the house were constructed in log-timber technique and one room possibly in timber-framing technique (Figure 7). The remaining part of the building measured 11.5m in length and 4.7m in width and had three corner notches intact. Two rooms were joined by a threshold, but the third room was partly destroyed by later truncations (none archaeological). There were two layers of wooden flooring on joists in the eastern room. In the room to the west was another wooden floor on joists. A fireplace was situated in the northeast corner of the eastern room with a stone foundation of 2 × 2m with a nicely rounded front in brick towards the room. Between the fireplace and the floor there was a coin found from 1627-31. There was moss inserted between the wall timbers, and there were remains of panelling on the western and northern sill-beam in the room to the west, presumably functioned as insulation. There was also a layer of sea sand, working as an insulation layer, under the floorboards. (Jeffrey 1984). There was glass mentioned in the report, but it was not specified as window glass.

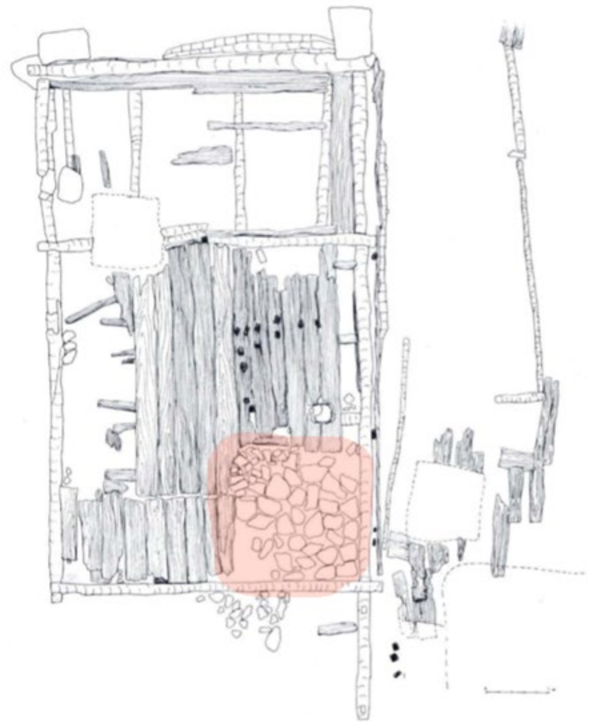


Figure 7 House 1, phase 2, dated to ca 1621-1645. Kv. Gamla Teatern (Jeffrey 1984, 6).

House 2: dated to c. 1645-1669.

The building was built in log timber technique with two remaining rooms measuring 5.8 × 4.4m (Figure 8). The house was badly damaged by fire, a third room is probably missing to the east. There was a threshold identifying the entrance to the building. The western room had a floor of flagstones 0.5-0.7 m and leaning heavily to the southwest, possibly functioning as a larder. The eastern room had an area with lead glazed floor tiles measuring approximately 1.0m2. Planks standing on edge limited the tiles to the west and north. There was a square fireplace 2 × 2m constructed with large stones in the northeast corner of the eastern room. Along the western wooden sill, there were the remains of standing panelling along the side of the wall. Even the corner notch in the southeast corner was panelled (Jeffrey 1984). There was glass mentioned in the report, but it was not specified as window glass.

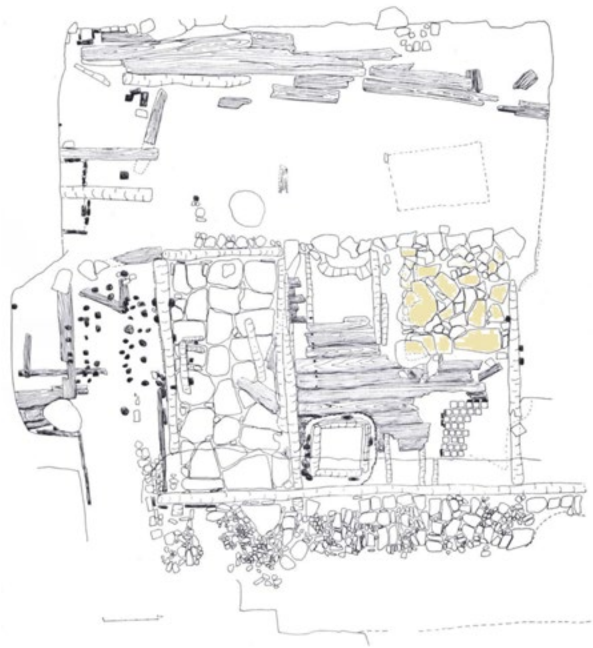


Figure 8 House 2, phase 4: dated to c. 1645-1669. Kv. Gamla Teatern (Jeffrey 1984, 6).

Kv. Sparbanken 1988: dated to the early 1600s.

A house, A4, with the gable oriented towards the street was found in *Kv. Sparbanken* (Figure 9). The building was built in log-timber technique measuring 8 × 5m with sill beams of oak, the length was not completely defined to the northeast. The building rested on sill stones. One main room or parlour and a chamber were 'intact'. The parlour had a wooden floor, in pine, resting on joists with a filling/insulation of clay. The second room was 2 × 4 metres in size with a wooden floor on top of a clay insulation layer. The fireplace measured 2 × 2m and was situated in the northwest corner of the room. There was window glass found in connection with the building: 2.0mm thick, coloured green and some with traces of the lead came (Nilsson Schönborg 1989).

Kv. Polismästaren 1985: dated to the second part of the 17th century.

The southern plot is discussed here since the northern plot did not contain any building remains. The gable of the building faced the street and the eastern harbour. The construction of the building and its size is unclear. Two rooms have been identified and they are interpreted from similarities with the 'typical' house from Gothenburg (compare with *Kv. Gamla teatern* above) (Andersson et al. 1986: 108). There was one smaller room, c. 3 × 5m in size. The parlour had a wooden floor and a foundation for a fireplace, 1.6 × 2.6m, possibly a baker's oven. The fireplace protruded about 1 metre into the alley/*vret*. A layer of wood chips was found under the wooden floor and under the wood chips, there was a layer of clay conceivably acting as insulation. Some form of horizontal panelling was found on the sill beam resembling the one found in *Kv. Gamla teatern*. 220 fragments of window glass were found on the site (Jeffrey 1985). There were no photographs or plans of the building remains in the report.

Figure 9 House A4 in Kv. Sparbanken. Photo by Staffan Westergren (Nilsson Schönborg 1989).

Kv. Polismästaren 1983: Dated to the first half of the 17th century.

The gable of the building was facing the street on plot B in phases 1-2; however, it is unclear if that was the case in plot C phase 1.

Plot B/phase 1; measuring 5.5 × 11.5m of the remaining building. There were two buildings, one with two rooms and the other with one room. The one room building had two chutes in a wooden floor on joists. The two-room building had a fireplace situated in the southwest corner of the main room, with a wooden floor on a layer of fine sea sand over a layer of clay. The second room had a sand floor (Lorentzon 1983).

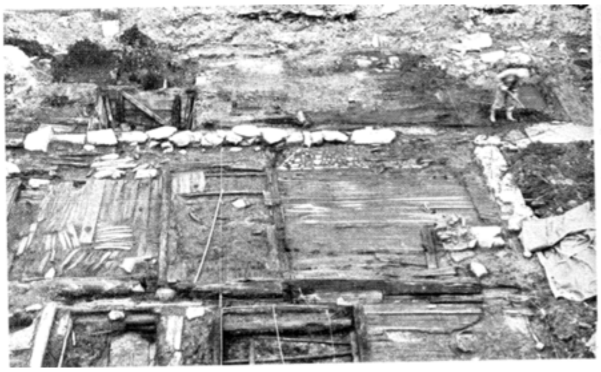


Figure 10 The layout of House B:1 in phase 2, towards the east. Kv. Polismästaren (Lorentzon 1983).

Plot B/phase 2; the size of the building remains undetermined (Figure 10). Four rooms have been recorded in total. On top of the old floor in room 1, there was a new wooden floor of a similar type, as in phase 1, on top of a system of joists and nailed down. The floor was delimited on three sides, by wooden beams and it rested on a foundation of flint and coarse gravel. On the external side of the wall to the west there were horizontal planks attached, probably panelling. Room 2 had a wooden floor laid east to west and covered, after the re-build, 0.5m of the alley/*vret*. Under the floor, there were layers of wood chips, manure and grey sand. Room 3 had a wooden floor that protruded a full metre into the alley. Sill beams determined the extent of room 4. The two buildings from phase 1 had been converted into one building. Room 4 had a system of joists suggesting that it had once had a wooden floor. The floor had layers of wood chips, manure and grey sand, same as in room 2, but the floor level was slightly higher than in room 3 (Lorentzon 1983). The presence of manure could most likely point to the house being used as a byre rather than a residence.

Figure 11 Plan of Site B. Building 1, phase 1, lying on beams supporting a plank floor. Between Sites A and B runs a cobble-stone lane. Phase 3 has a stone floor, divided into sections with surfacing of cobblestones, respectively flagstones. Plan of Building C:1, phases 1-2. The building lies on beams and boundary-stones and is partly provided with a plank floor. Phase 3 consists of a metalled yard or floor. Scale 1:100 (Lorentzon 1983).

Plot B/phase 3; it is more or less the same room division as in phase 2 but the building now occupies the alley/*vret* as well (Figure 11). Parts of room 1 had a stone floor and the other part had a wooden floor. The room was delimited to the north by a sill beam, carbonized from a fire at some point. The floor had an insulation layer of sand on top of a layer of wood chips. Rooms 2 and 3 had floors of big flat stones mixed in with small cobbles. On the eastern part, the floor was dismantled and underneath there was a section of tightly laid posts presumably a foundation for a fireplace. The floor rested on a layer of fine sand on top of a wood chip layer. In room 4, there was a wooden floor damaged by fire on a system of joists. In the south the room was delimited by a sill beam, the floor rested on a layer of sand and wood chips (Lorentzon 1983).

Plot C/phase 1; The building, which measured 4.5 × c. 9m, was a log-timbered building with building remains of a wall, still standing three logs high, and a wooden floor. The house had three rooms in phase one. Room 1 was connected to room 2 by a threshold and a sawn-down doorway. There was a wooden floor on joists laid in a north-south direction resting on a layer of yellow sand. Room 2 had a system of floor joists constructed from split-logs, laid at a distance from one another with the rounded part turned up. Under the floor was a thick layer of manure and wood chips above a layer of grey sand. The floor in room 3 was interpreted as constructed of secondary timbers of logs and planks and the floor was set lower than in rooms 1 and 2 (Lorentzon 1983). The building showed traces of having been used as a byre.

Plot C/phase 3; there was a wall or foundation of stone that probably belonged to the house visible on maps from before 1790. The foundation partly destroyed room 1 in phase 1-2. The foundation was constructed through the fire horizon/layer but did not rest on a bulwark. There was also a wall east-west that had a bulwark going through in the middle of room 2 in phase 3 (Lorentzon 1983).

Plot D/ phase 1a; many of the remains on this plot has been destroyed when constructing modern cellars. House 1 had a remaining building with a log-timber structure measuring 4.5 × 5.5m. The sill beams were intact on three sides of the building, only missing the western side. Sill stones were preserved sporadically under the sill beams. The wooden floor rested on a system of joists. The floor was in turn laid on a layer of fatty clay and under that the natural ground surface. The sill beam between rooms 1 and 2 had two rectangular gaps hewn into it, presumably traces of a doorway. Nothing of the actual floor was preserved in room 2, only the system of joists. Between the joists there were layers of grey-brown clay mixed with wood chips. Towards the east there was a continuation of the north wall, which might have been part of the house (Lorentzon 1983).

Plot D/phase 1B; in room 1 there was a second wooden floor constructed on top of the former wooden floor with a layer of sand in-between.

Plot D/phase 2; the extent of the building was still roughly the same as in phase 1. The outline of rooms 1 and 2 was rather unclear due to damage. There was a continuous row of sill stones on the south side of the building while only scattered examples remained on the northern side. It was not possible to determine the extent of the building to the east and west. Most of the floors were carbonized after a fire (possibly in 1669) and consisted of scattered planks on a system of joists. Under the floors there were layers of yellow sand and wood chips (Lorentzon 1983).

Plot E/phase 1a; house 2 was 4.4 × 4m and was situated in the eastern part of the plot. It was a one-room house. The house rested on sill stones. The floor had layers of manure, wood ships and large pieces of wood and below there was a layer of clay (the clay contained 16 coins from 1624-1631) (Lorentzon 1983). Plot E/phase 1b, a room was added but otherwise the layers and construction of the building as well as use (there was still a layer of manure) seem to follow directly on from phase 1.

Plot E/ phase 2; this house was 17m long and 6m wide. It may have been joined to house 2 to the east. At the south end, there was a sill beam of oak, which seemed to be re-used timber with some scattered sill stones. The substantial foundation wall, belonging to house 4 in phase 3, had destroyed all other sill beams in the building. The floor in room 2, had suffered damage by fire and rested on a layer of clay. In room 1 that layer of clay had not been touched by fire. These floors damaged by fire can be seen in phase 3 and 4 and is not part of the stone house later erected, since the floors have been hewn next to the stonewalls. On top of the burned floor in room 2 there was a substantial layer of burnt wood possibly debris from a collapsed roof (Lorentzon 1983).

Plot E/ phase 3-4; house 4a-4b. On top of house 1, there was a bulwark of square hewn timbers on top of which a stone foundation for a two-room house was built (Figure 12). The house measured 10m in length and approximately 7-8m in width. There were no traces of a floor in room 1, but room 2 had possibly remains from a stone floor. Room 2 also had a foundation for a hearth in the north-west corner. The south wall of the house was missing. The house was built in the middle of two plots, which might suggest a merging of the plots by a common owner. In the second building phase (phase 4), a third room was added to the east. An internal wall had been moved about a metre to the east of the old wall. A fourth room was probably part of the building to the east suggested by a prolongation of the stonewall. In phase 4 the building was 18 × 6 m in size (Lorentzon 1983).

To conclude there were c. 1250 fragments of window glass, bottle-glass and drinking vessels retrieved from the site, the major part being window glass. The report does not specify where the window glass was found and in connection with which buildings. It states that the pieces of glass were greenish brown in colour. One piece was a painted window glass in a 17th century geometric pattern (Lorentzon 1983).

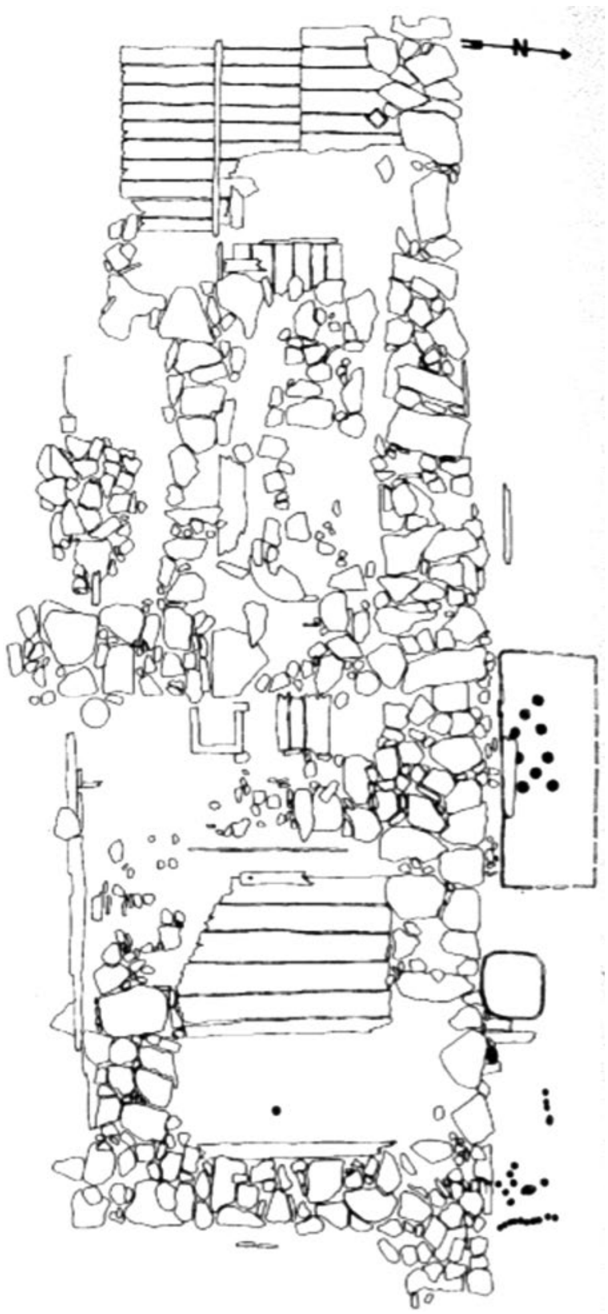


Figure 12 Building 3 in phase 2 consists of an elongated construction with a carbonized plank floor. Building 4 in phase 3 and 4 had a long stone foundation built in two stages (Lorentzon 1983).

Kv. Enigheten 1979-80: Dated to the 17th century.

There were three buildings on the plot, all with their gables facing the street; referred to in the report as

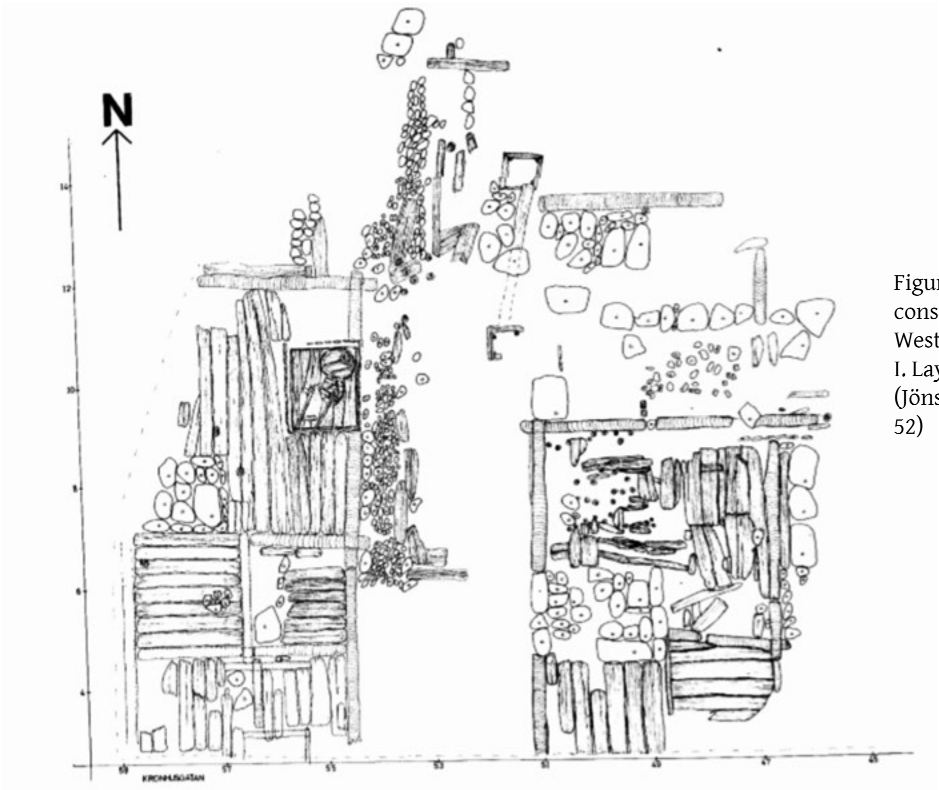


Figure 13 Kv. Enigheten, construction 15. The house in West and the house in the East I. Layout 1:100 EJ. SK. KO - 79 (Jönsson and Kihlberg 1981, 52)

House to the West, House to the East and House to the East 2. Green window glass was found at the site but it is not clear from the report where exactly and in connection to which buildings (Jönsson and Kihlberg 1981: 163).

House to the West; the building was built in log-timber technique (or at least the sill beams were) on top of clay ground (most of Gothenburg within the city walls rests on clay). The house measured 10.5 × 4.5m, although the length was not fully established (Figure 13). The main room/parlour had a wooden floor and a corner hearth in stone. There was a second room, a closed porch, to the south of the parlour, which possibly had been divided into two rooms, conceivably, a storage room. South of the porch was another room with a wooden floor, this room continued out into what is now Kronhusgatan (Jönsson and Kihlberg 1981: 55).

The House to the East; the sill beams were connected through corner notches, thus indicating log-timber technique, but it is hard to say anything for sure about the construction of the walls. The floors were damaged so definitive measurements were hard to establish. This seem to be a log-timbered two-room building. The parlour had a floor constructed in wood with planks of various lengths and sizes measuring 4 × 4m above a layer of clay. There was also a corner fireplace in the parlour (Jönsson and Kihlberg 1981: 56).

The House to the East 2; the parlour had a wooden floor; another floor level with a wood construction was found underneath (Figure 14). It has the same measurements

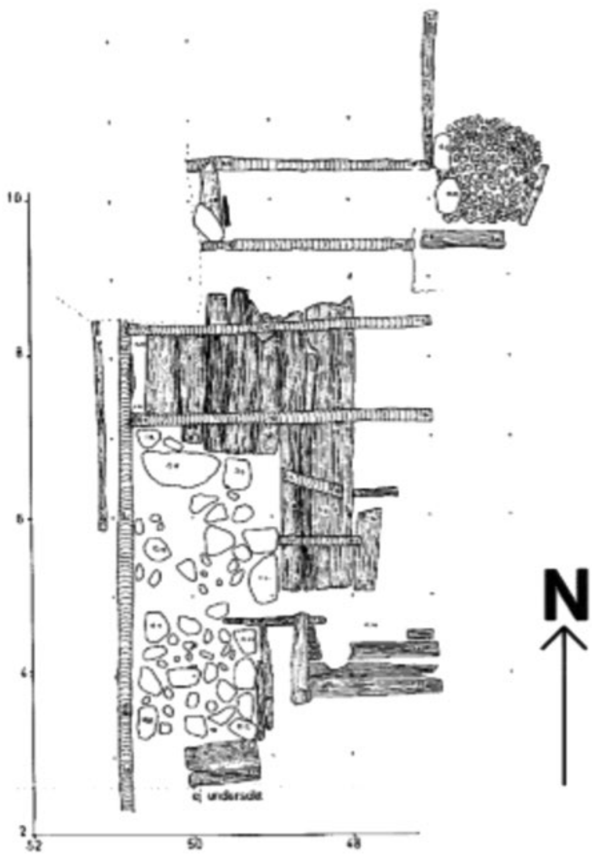


Figure 14 Kv. Enigheten, construction 15. The house in the east II. Layout 1:100 SK -79 (Jönsson and Kilhberg 1981:57).

as the upper floor. Between the two floor levels, there in the western part of the parlour. To the southwest of the fireplace, there was another room, most likely was a dumped layer of wood chips. There was a stone setting, probably remains from a fireplace, 3.70 × 1.70m,

a closed porch, which continued under Kronhusgatan. A large stone was located outside of the building's northwest corner, possibly representing a sill stone. The porch had planks laid in two directions, which might indicate that it had been divided into two rooms (Jönsson and Kihlberg 1981: 57).

Jönköping

1600-1700s

Kv. Dovhjorten

Nine plots were investigated in Kv. Dovhjorten, in eight phases. Here, five buildings from plot 238 from phase 3-5 will be discussed. These buildings have been selected because they have some timber parts preserved and with a somewhat recognizable layout.

Plot 238, phase 3-4 dated to 1630s to the beginning of the 18th century.

KG 24 was a row of houses made up by KG 30-33 + KG 37 a privy (Figure 15). KG 30 was the room facing north, interpreted as storage or maybe a dwelling. The floor had been repaired on several occasions and was eventually built in two layers of wood planks with a layer of sand in between, possibly used as insulation. Some strengthening of the floor had occurred with additional clay perhaps as a way to bar off damp, new joists and some flat flagstones. There had been a fireplace in the southeast part of the room. There was no doorway connecting this room to the next (Bramstång Plura et al. 2012: 125, 31, 37). Perhaps this was a '*drängstuga*' a servants' quarters? KG 31 was the next room, which was interpreted as a smithy or a workshop during the investigation, the entrance to the building had some metalled flooring. Part of the room had a remaining wooden floor. There was a fireplace in the southwest corner of the room, possibly a smithing hearth. The floor in the rest of the room resembled KG 30 with three layers of wood flooring and beneath that a clay floor, suggested to perhaps have worked as a barrier for damp. If it is not a smithy it might be a regular residential parlour (Bramstång Plura et al. 2012: 126, 35). KG 32 was a room interpreted as a kitchen with a clay floor and some large flagstones, the archaeobotanical analysis also points to its use as a kitchen. There was an entrance to the room in the south wall. The foundation for the fireplace in the smithy was connected to the stove in the kitchen, possibly indicating a cast iron stove (Sw. *biläggarugn*) (Bramstång Plura et al. 2012: 112). KG 33 had several traces of fish-related activities concentrated around a wooden box that was situated next to a fireplace and a well-laid stone floor, perhaps this room functioned as a larder. There was also a small extension, KG 37, 4.5 × 1.2m in size that consisted of a latrine pit and a wooden floor most likely the remains of a privy (Bramstång Plura et al. 2012: 127, 129, 35).

Figure 15 KG 24 in Kv. Dovhjorten (Bramstång Plura et al 2012).

Plot 2, phase 4-6

The building, KG 60, was c. 9 × 3m when measuring the sill stone construction, it was not possible to get an accurate measurement since most of the wood construction was missing (Figure 16). The western room/part of the house, KG 61, c. 3.5 × 3m in size, had a layer of manure on the wooden floor with floor joists and was understood as a byre. KG 62 was the middle room, which was partly destroyed by a wooden structure from an overlying layer. The function of this room was not established. The eastern room, KG 63, had a compact beaten earth floor (Bramstång Plura et al. 2012: 35, 143–44). Adjacent to KG 63 was a tunnel entry, KG 76, with a very hard trampled surface that had not been subjected to light, hence no weed grew there (Bramstång Plura et al. 2012: 35).

Plot 2, phase 4-6, building KG 41

The construction measured c. 4.5 × 5.8m and was interpreted as an outbuilding. There were two floor layers, the uppermost one had significant traces of manure, weed and hops, which is a probable indication of the building having been used as a byre. The floor was constructed of a sandy clay. A layer of slag could be found either under or next to the sandy clay floor. It was

Figure 16 Buildings 23, 41, 43, 60 in phase 2:5, at Kv. Dovhjorten (Bramstång Plura et al 2012:38)

not fully concluded whether the slag was connected to a workshop or if it was simply used as a consolidation layer. A layer of wood chips mixed with humic sand was situated under the slag (Bramstång Plura et al. 2012: 35, 132).

Plot 2, phase 5-6, dated from 1730s

Building 23 was a house that survived for a long time with no additional building layers on top, and had roughly the same outline and location as building 24, thus four rooms and four fireplaces. In this phase an external staircase have been added, which might suggest that the building had a first floor (Bramstång Plura et al. 2012: 121). Unfortunately, there was only fragmented wood material within these building remains making it hard to determine construction technique.

Plot 2, phase 5-6, dated to 1730s and onwards.

The building, KG 43, was 4 × 4.8m in size. It had a wooden floor and since there were plenty of wood chips in the floor layer the building was interpreted as a woodshed. (Bramstång Plura et al. 2012: 35, 133).

Falun

1600s

Kv. Dalpilen, phase 5 dated to the second part of the 17th century.

6 phases have been excavated in Kv. Dalpilen in Falun (Berghold 1996), and this study will deal with the row of houses belonging to phase 5 (Figure 17). This text is partly taken from a paper of mine (Nilsen 2014). The buildings were built on sandy clay and the foundations were filled with slag, probably in connection with the regulation of the city plan. A5, A4, A7, A9 and A8 makes up the house foundation for a row of houses and in addition to A6 that probably was a storage facility (Berghold 1996).

Figure 17 Kv. Dalpilen phase 5 (Berghold 1996).

corners might indicate that there has been some sort of superstructure. At some point, the superstructure has been dismantled and covered with a plank construction that is connected to the passage between the houses A4 and A7, which also continues towards the river. A storage bay was found under the plank construction in A6 (Berghold 1996).

The building called A8, was interpreted as a cooking house with a fireplace in stone and brick and with a brick chimney. It is possible that A8 was significantly larger than the residual remains implies since the delimitation between A8 and A7 is somewhat unclear (Berghold 1996).

A9 was a well-constructed residence with a remaining system of joists and floor planks. The building was c. 45m2 but with no indications of any division into separate rooms; nor were there any remains of a fireplace.

A7 was also interpreted as a residence, or perhaps a storage facility/larder connected to the kitchen.

The larger room with a double set of sill stones, A4b, could perhaps indicate that the house had more than one floor, which in turn begs the question, where were the stairs? Could A6 with its superstructure have been a staircase to the first floor and possibly a balcony? The construction is connected to the passage between the houses (Berghold 1996).

Kv. Västra Falun, the south house, phase 4, erected in 1600.

The building was 6.7-8.5m in size with two rooms i.e. a parlour (Sw. *stuga*) and a vestibule (Figure 18). The house was situated in a north-south direction and the entrance was located on the eastern side of the building marked by a large flat stone. The fireplace was placed at the corner of the parlour next to the entrance from the vestibule. The wood in the lower wall-timbers was well preserved apart from on the northern side. Dendrochronology dates the wall-timbers to 1595, 1582-96 and a fragmented part of the floor from 1607-1608. The wooden floor was laid out on a joist system, yet, parts of the floor were removed, for example around the fireplace. The remaining floorboards were laid in a north-south direction. Conversely, the floorboards towards the south wall in the parlour were laid in an east-west direction, which made the archaeologists, excavating the site, consider some kind of furniture fixed to the wall, such as for instance a wall bench, might have stood there at one point (Wehlin et al. 2018: 42–44). The north room did not have any remains of a floor construction left. There were many datable finds under the floorboards, from the period 1550-1675, including glass beakers of various kinds, as well as clay pipes and coin. The extended period does not entirely reflect the use of the building, but coins for example, may have fallen through a crack in the floor at a later date. The large quantity of glass sherds of precious types makes an interpretation of this building as a tavern plausible (Wehlin et al. 2018: 46).

Figure 18 The southern and northern house, Västra Falun. Photo A. Nilsen.

Passage/staircase phase 4

Between the south house and the north house there was a passage, 1.3 metres wide, with traces of a wooden structure (Figure 19). There was a smaller-sized patch of sand as well as some scattered planks. The latter were interpreted as some sort of wooden construction, or possibly used as stepping 'stones' in the cramped space. The report gives another suggestion to perhaps understand the space as a covered area with a roof or a staircase leading to an upper floor level/ balcony of the south house, thus connecting the two houses (Wehlin et al. 2018: 47).

The northern house, phase 4, erected in 1600

The northern house was not as well preserved as the southern house and only fragments were left (Figure 20). The building had the same measurements as the southern house, 8.3m long and 6.7m wide with two rooms. The parlour had the remains of a wooden floor and a slightly more centrally placed fireplace. It was not situated all the way towards the outer wall as in the southern house, but about 1 metre in, and with a wider area to move around in connection to the fireplace. There were fewer finds in this house, which corresponds well with the fact that it was not as well preserved. On

Figure 19 The part that is lighter in colour has been interpreted as a passage between the southern and northern house. Photo by J. Wehlin (2018:47).

the other hand, the range of finds resembled that of the southern house, also consisting of many types of drinking vessels. There was much more indication of food preparation and kitchen-related activities in this house. Partly from the archaeobotanical sampling i.e. fish, meat, foul, nuts, berries, herbs, fruit, and the layout of the room with a fireplace surrounded by plenty of work space (Wehlin et al. 2018: 49), it is suggested that maybe this was where the food for the tavern was prepared?

The byre, phase 4, erected in 1595-1600.

Part of a corner of a house was found in the northern corner of the site. The house extended outside of the investigation area, which means that only the corner of the building was archaeologically excavated. Therefore, it has not been possible to establish how large the building was. Conversely, it could be the same building that was excavated in two previous interventions (Wehlin 2018a; 2018b), which would make the building 3m long in an east-west direction. The house was constructed in log-timber and the dendrochronology indicated that the timbers were felled around 1572-1601, with an estimated building date to 1595-1600. Several courses of the timber wall were preserved. The foundation for the building consisted of layers of clay, wood chips and slag with a wooden floor. There was a thick layer of manure, which made for the interpretation as a byre or stable (Wehlin et al. 2018: 50–51).

Windows and tiles in Kv. Västra Falun

These examples of houses from Kv. Västra Falun come from one of the phases (number 4) that were represented there. Sherds of window glass featured in the finds collection quite evenly from every phase from 1595 to the 1800s. It is interesting that so many different types of window glass were found and also of many different shapes (Wehlin et al. 2018: 87). It would have made for a diverse aesthetic look on the building stock, even if these samples were all taken from one isolated plot.

There was an abundance of tile fragments found on the plot, mostly relief tiles with black glazing and plant ornamentation, and some with green glazing. However, none of the tile fragments were dated as early as in phase 4, but rather from later phases (Wehlin et al. 2018: 87–88). There is a large amount of brick debris in the data from Kv. Västra Falun perhaps some of it could have been part of a chimney at some point in time, although it has not been conclusively determined.

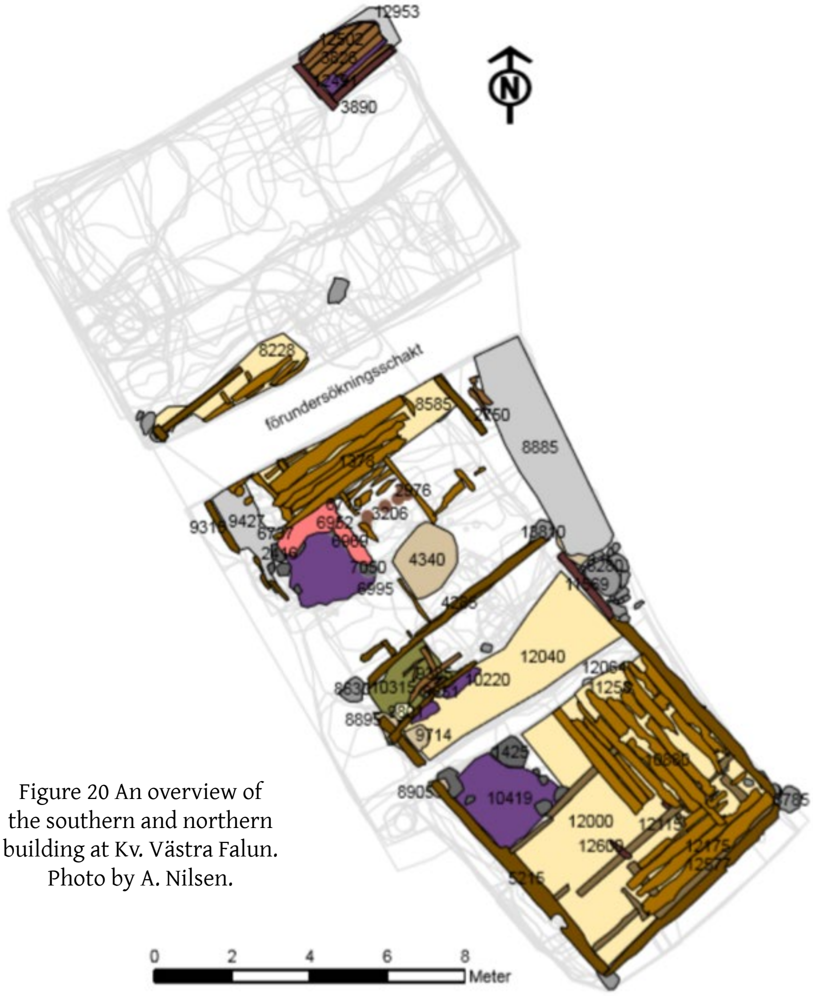


Figure 20 An overview of the southern and northern building at Kv. Västra Falun. Photo by A. Nilsen.

Bibliography

Andersson, Stina, Eva Jönsson-Kihlberg, Björn Broo, Janolof Bengtsson, Håkan Berg, and Hans-Erik Dillner. 1986. *Livet i Det Gamla Göteborg*. Göteborg: Göteborg : Göteborgs arkeologiska museum.

Berghold, Helmut. 1996. 'Dalpilen - Ett 1600-Talskvarter i Falun.' Arkeologisk undersökning 1996:109. Stockholm, Sweden: Riksantikvarieämbetet. UV Stockholm.

Bramstång Plura, Carina, Kristina Carlsson, Christina Rosén, Jens Heimdahl, Maria Vretemark, and Eva Hjärthner Holdar. 2012. 'Nio Tomter i Jönköping. Småland, Jönköpings Stad, Kvarteret Dovhjorten (Druvan), RAÄ 50.' Arkeologisk undersökning 2012:119. UV Rapport, Riksantikvarieämbetet.

Jeffrey, Sonia. 1984. 'Kv. Gamla Teatern.' Arkeologisk slutundersökning. Göteborg: Göteborgs stadsmuseum.

———. 1985. 'Kv. Polismästaren 3. Slutundersökning 1985.' Arkeologisk slutundersökning 1985:24. Göteborg, Sverige: Göteborgs arkeologiska museum.

Jönsson, Eva, and Stefan Kihlberg. 1981. 'Stadsarkeologisk Undersökning i Göteborg. Kv. Enigheten, Kv. Vindragaren, Kv. Stadskvarnen, Kv. Vadman, 1979-1980.' Stadsarkeologisk undersökning. Göteborg, Sverige: Göteborgs arkeologiska museum.

Lorentzon, Mona. 1983. 'Göteborg 216, Kv Polismästaren, Bebyggelselämningar Och Kulturlager, Nyare Tid.' FYND-Rapporter. Göteborg, Sverige: Göteborgs arkeologiska museum.

Nilsen, Andrine. 2014. 'Metodutveckling För Analys Av Träbebyggelse Över Och under Mark: En Fallstudie Med Exempel Från Falun, Säter Och Eksjö.' In *Med Hjärta Och Hjärna. En Vänbok till Professor Elisabeth Arwill-Nordbladh.*, edited by Henrik Alexandersson, Alexander Andreeff, and Annika Bünz, 563–76. Göteborg, Sverige: Institutionen för Historiska Studier, Göteborgs universitet.

Nilsson Schönborg, Göte. 1989. 'Kv. Sparbanken, Göteborg. Bebyggelselämningar Och Kulturlager Från 1600-1700-Tal.' Arkeologisk undersökning. Göteborg, Sverige: Göteborgs Historiska Museum.

Öbrink, Mattias, and Christina Rosén. 2017. 'Stadsgård 1-4. Gata a Och b Samt Vretar. Arkeologiska Undersökningar i Gamlestaden. Västergötland, Göteborgs Stad Och Kommun.' Slutundersökning 2017:1. Göteborg, Sverige.

Wehlin, Joakim. 2018a. 'Arkeologisk Undersökning, Västra Falun, Schaktning För Garage i Stadslager Falun 68:1, Falu Kommun, Dalarnas Län.' Arkeologisk rapport 2018:6. Falun, Sverige: Dalarnas Museum.

———. 2018b. 'Arkeologisk Undersökning, Västra Falun, Släntning Genom Kulturlager, Stadslager Falun 68:1, Falu Kommun, Dalarnas Län.' Arkeologisk rapport 2018:5. Falun, Sverige: Dalarnas Museum.

Wehlin, Joakim, Mathias Bäck, Tomas Westberg, Eva Carlsson, David Fahlberg, and Jimmy Axelsson Karlqvist. 2018. 'Västra Falun 11 - 1500- Och 1600-Talsbebyggelse Inom Stadslager Falun 68:1 i Falu Kommun, Dalarnas Län.' Arkeologisk undersökning 20018:14. Falun, Sverige: Dalarnas Museum.

ID	Province	Town	Department	Location	Report number	Object	Dated	Mixed tech	Plaster	Panelling	Function	Balcony	External stair	Fireplace	insulation	Window glass	Floor type	No of rooms	No of storeys	Length	Width	Square meters	Conversion	pad stones
1	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 8	2000a	MPg8b, phase 1	1812	log timber/ planks	no	yes	dwelling	no	no	yes	yes	2	wood	2-3	1	7 m	5 m	35	yes	yes
2	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 2 Svanken	2000b	MPg2, phase 1	1731?	log timber/ planks	no		dwelling	no	no	yes	?	2	?	2	1	5,2 m	4 m	20,8	yes	-
3	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 2, Svanken	2000b	MPg2, phase 2	1774	log timber/ planks	no		dwelling	no	no	yes + ceramic stove	yes	4	wood	5	1	10,2 m	4 m	40,8	yes	-
4	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 2, Svanken	2000b	MPg2, phase 3	1889	log timber/ planks	yes	yes + paint	dwelling	no	no	yes + ceramic stove	yes	4	wood	2	1	10,2 m	4 m	40,8		-
5	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 2. Verkstan	2004	MPg2, phase 1	1774	possibly	no	internally	dwelling + (porch)	no	no	yes + ceramic stove	yes	5	wood	3	1	7 ,1 + 3 m (+ 4 m)	4 + 1,6 m (+ 2 m)	33,2 m (+ 8)	yes	yes
6	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 2. Verkstan	2004	MPg2, phase 2	1889	yes	no	yes	dwelling + (shed)	no	no	yes + ceramic stove	dirt/ clay/ moss/ birch bark	4	wood	3/4	1	7,1 + 4,2 m(+ 1,7)	4 + 1,6 m (+4 m)	38,34 (+ 5,7)		yes
7	Södermanland	Stockholm	Blomberg and Linscott Arkitekter AB	Mäster Pers gränd 8	2000a	MPg8b, phase 2	1860	possibly	no	yes	dwelling	no	no	yes		2	wood	2-3	1	7 m	5 m	35		yes

Appendix 4b. Preserved buildings in Vita Bergen, Stockholm

Mäster Pers gränd 8 (MPg 8b), former Barnängen mindre 13

The earliest houses on the plot were registered in 1735-1744 in the ownership rosters and was thereafter continuously built and inhabited. There were three wooden cabins up until 1902 and 1910 when two of them burnt down.

The only remaining cabin was described in the fire insurance records in 1812. The log timber body included a parlour with a corner fireplace and in addition there was a vestibule in a plank construction (Blomberg and Linscott 2000a), most probably representing a heated/ insulated room (the parlour) and one unheated/ uninsulated room (the vestibule). The house was 7 × 5m in size and had a tiled roof in 1812, but there were remnants of an older birch bark and peat roof identified during the investigation in 2000, which led the architects to suspect that the building might be a lot older than the early 1800s.

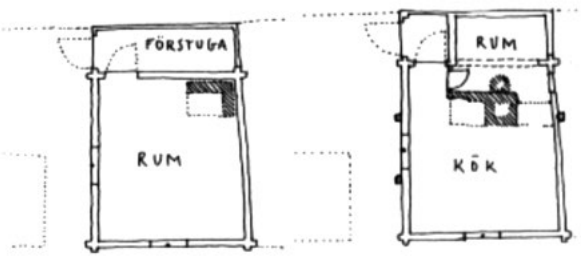


Figure 1. Reconstructions of MPg8b from fire insurance records from 1812 and 1860. (Blomberg and Linscott 2000).

The second fire insurance record from 1860, largely described the cabin as it looks today (Figure 1). The fireplace was moved slightly further into the parlour and a section of the north wall of the parlour was removed to create a room behind the fireplace, stretching into the vestibule (Blomberg and Linscott 2000a). The vestibule must have had the external wall changed from planks to log timber or some other more substantial technique, though there is no mention of it in the report. There were some major changes to the interior during the 1950s and 60s. The exterior had panelling originating from before 1900, although some older panels were visible underneath. The floor construction and associated insulation seems not to have been investigated. For translations of Swedish words in the figures see Table *1.*

Mäster Pers gränd 2, Svanken.

The plot is first mentioned in a fire insurance record from 1774, which states that it was bought by dragoon Lars Humla in 1731.[1] The plot was most likely furnished with its first building soon after. The house has been converted a few times according to fire insurance records from 1774 and 1889 (Blomberg and Linscott 2000b). The building assumed its current look before 1774. Another building called *Verkstan*, is situated next to *Svanken*, the buildings were not inhabited in 2000, when the report was written. Yet another dwelling is situated on the plot and not included in this survey. *Svanken* is 10.3 × 4 metres in size, 10.3 × 5.9 metres including the porch. The house had two rooms, a bedchamber and a kitchen at the time for the investigation. Blomberg and Linscott have tried to reconstruct the conversions of the building in three stages, after traces of reconstruction in the cabin and descriptions in fire insurance records.

Phase 1, the initial building, from the 1730s, seem to have been made up from one parlour with a corner fireplace and a vestibule (Figure 2). 5.2 × 4 metres in size, built entirely in log timber technique. Two entrances existed to the building at either end of the vestibule creating a through passage, with one facing the street and the other the courtyard. The parlour had two windows (Blomberg and Linscott 2000b).

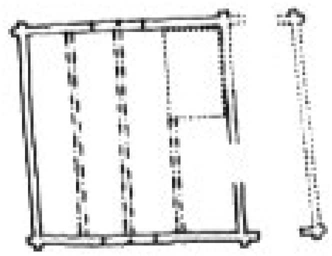


Figure 2 Reconstruction of phase 1 MPg2 (Blomberg and Linscott).

Phase 2, the house had gone through its first conversion in 1774 (Figure 3). Another room plus a vestibule was added, next to the original parlour and an internal door was joining the two rooms. The new room, called chamber in the fire insurance records, had a ceramic stove in the corner towards the vestibule and the room was constructed in log timber technique. The new vestibule was built in another technique, which could be a plank construction according to the drawing. The vestibule had a small office in the upper corner and an entrance to the building towards the courtyard. The building was 10.2 × 4 metres in size. The other vestibule on the opposite side of the building retained the two front doors, one towards the street and one facing the yard. The building had two windows in the parlour and two windows in the chamber. The fire insurance record

[1] Dragoons were infantry soldiers who transported themselves on horseback but fought on foot.

states that the chamber had two floors (Blomberg and Linscott 2000b), which begs the question whether this could indicate one floor on top of the other (Figure 7).

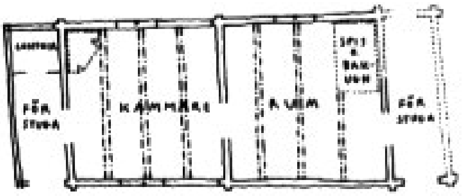


Figure 3 Reconstruction of phase 2 MPg2 (Blomberg and Linscott).

Phase 3, with changes in place by 1889 (Figure 4). The house had a panelled and painted exterior measuring 10.2 × 4 metres. The vestibules are now gone and the two main rooms have been extended. The southern gable was constructed in stone as an extended part of the fireplace, and instead of the former vestibule there was an open porch 1.5 × 2.1 metres in size. An iron stove was inserted into the fireplace. The former parlour is called a kitchen and the former chamber is called a room. The office was turned into a wardrobe. The interior has wallpaper and a panelled ceiling (Blomberg and Linscott 2000b).

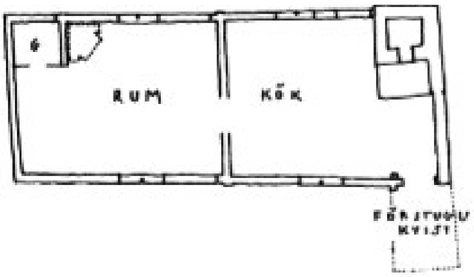


Figure 4 Reconstruction of phase 3 MPg2 (Blomberg and Linscott).

Mäster Pers gränd 2, *Verkstan* (the Workshop)

Phase 1, the main body of the building was built in log timber technique according to the fire insurance record from 1774, and from visible remains according to the building survey in 2004 (Figure 5). The reconstruction of the 1774 fire insurance record describes the house as 7 × 3.9 metres in size. An external vestibule/entrance with two small offices or storage facilities with windows on both sides.[2] There were two main rooms, a room with a fireplace with a small garden along the gable end. The other room is called a chamber with a green ceramic stove. On the other gable was a porch. This house also had two floors according to the fire insurance on a system of joists. There was an attic to this building with a roof of turf, and a cellar underneath. The house had been painted red at some point (Blomberg and Linscott 2004).

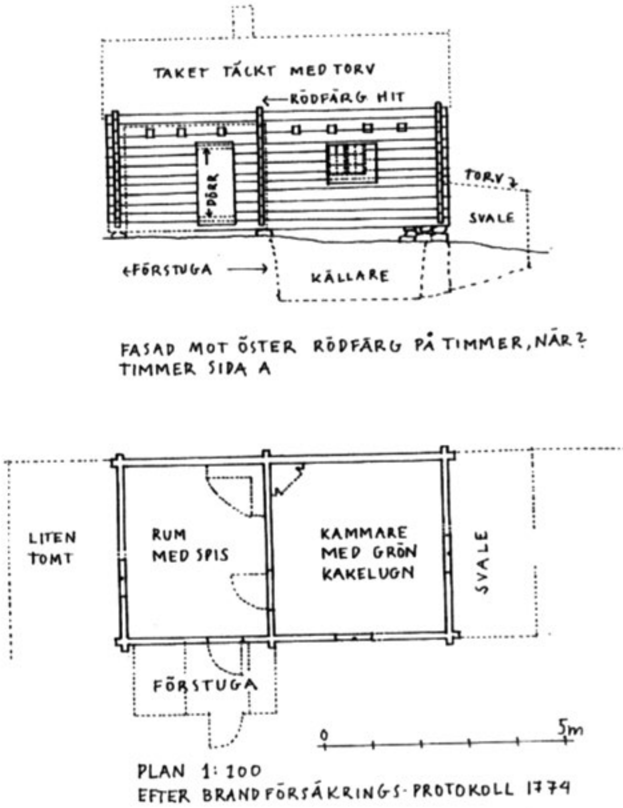


Figure 5 Reconstruction of phase 1, MPg2 Verkstan. (Blomberg and Linscott 2004)

Phase 2 is a reconstruction from fire insurance records from 1889 (Figure 6). The log timber construction was 7.1 × 4 metres, but when adding the external vestibule in post and plank construction and the shed at the gable end in an unestablished technique, the building then measures 8.5 × 5.4 metres. The vestibule had been widened to 4.2 metres, which also includes two offices or storage rooms. The house had been clad with panelling before the conversion of the vestibule. There was a kitchen with a fireplace and an iron stove, the room had wallpaper. The other room had a ceramic stove and wallpaper. There was a cellar under part of the building with a low ceiling. The roof was covered with tiles (Blomberg and Linscott 2004). The floor was insulated with dirt and clay on top of moss and birch bark. The inner ceiling was insulated in a similar way.

[2] Tagesson (2019) suggests that the word '*kontor*' which means office in modern Swedish, might imply a utility room during the early modern era.

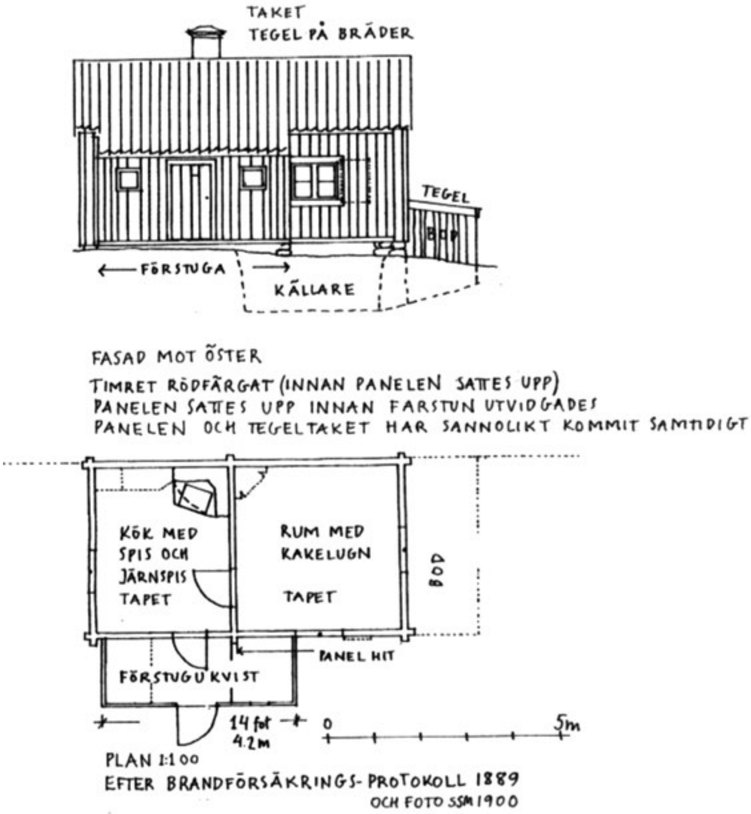


Figure 6 Reconstruction of phase 2, MPg2, Verkstan
(Blomberg and Linscott 2004).

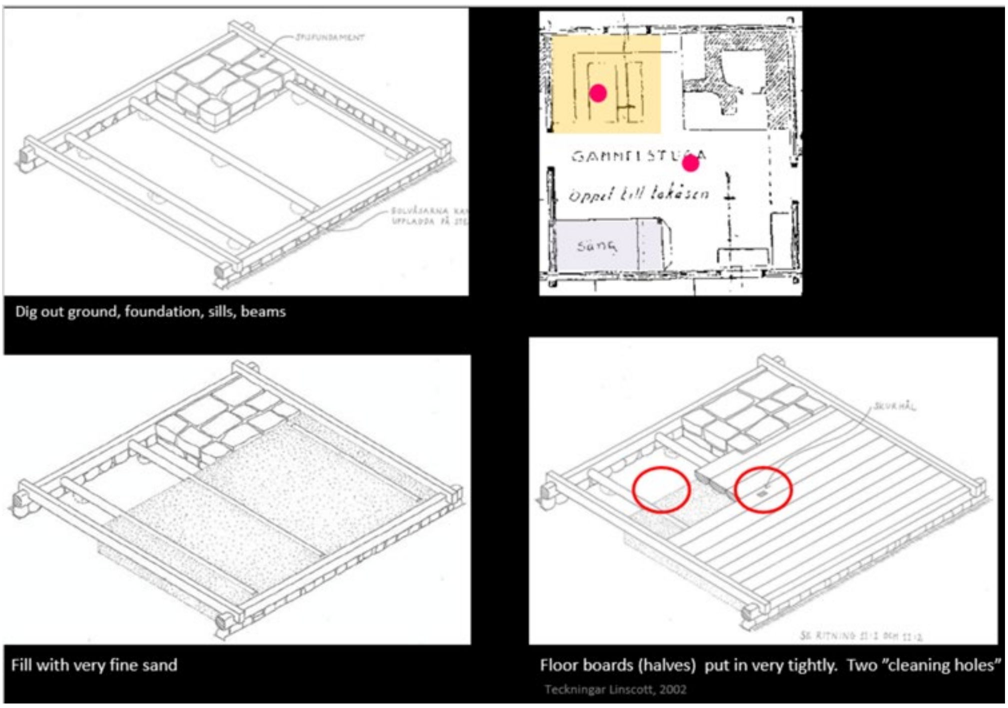


Figure 7 Reconstructions of insulation layers in floor and ceiling (Blomberg and Linscott 2004).

Rum	Room
Förstuga (förstugukvist)	Vestibule/porch
Kök	Kitchen
Kammare	Chamber
Spis och bakugn	Stove and baking oven
Contoire	Utility room
Källare	Cellar
Svale	Cool space/in this particular instance probably a larder
Torv	Peat
Tak	Roof
Rödfärg	Red paint
Kakelugn	Ceramic stove
Liten tomt	Small patch/plot
Tegel	Roof tiles
Bod	Shed
Järnspis	Iron stove
Tapet	Wallpaper

Table 1 Glossary

Bibliography

Blomberg, Anna, and Kina Linscott. 2000a. ‘Kv. Flintan 1, Mäster Pers Gränd 8b. Fd. Barnängen Mindre 13. Stockholm. Översiktlig Teknisk Beskrivning Och Reviderat Förfrågningsunderlag.’ Byggnadsvårdsrapport 2000a. Falun, Sverige: Blomberg and Linscott Arkitekter AB.

———. 2000b. ‘Kv. Flintan, Mäster Pers Gränd 2, Svanken. Stockholm. Översiktlig Teknisk Beskrivning.’ Byggnadsvårdsrapport 2000b. Falun, Sverige: Blomberg and Linscott Arkitekter AB.

———. 2004. ’Kv. Flintan 1, Mäster Pers Gränd 2, Verkstan. Stockholm. Undersökning Av Timmerstomme Och Takkonstruktion.’ Byggnadsvårdsrapport 2004. Falun, Sverige: Blomberg and Linscott Arkitekter AB.

Tagesson, Göran. 2019. ’Hus Och Hushåll i Svenska Städer 1600-1850. Rapport 6. Hus i Fem Tidigmoderna Städer. En Arkeologisk Studie.’ Arkeologisk studie. Linköping: Arkeologerna, Statens Historiska Museum.

ID	Province	Place name	Location	Report nr	object	dating	mixed techniques	infill	panelling	plaster
6										
7	Västergötland	Göteborg	Gamla Teatern 3	1984:18	Hus 1	1621-1645	yes	brick and mortar	yes	
8	Västergötland	Göteborg	Gamla Teatern 3	1984:18	Hus 2	1645-1669	yes	brick and mortar	yes	
9	Blekinge	Sölvesborg	Kv Uttern 8 and 29	1992		end of the 1400s		wattle and daub, burned clay		
11	Småland	Kalmar	Valnötsträdet 8, Kalmar gamla stad		Byggnad C med varmluftsugn	1360-1420		brick		
12	Småland	Växjö	Domkyrkocen-trum	2013	Residenset	1400s				
13	Sörmland	Stockholm	Storkyrko-brinken	2012:19	A 23 a-b, e-f	1370-1400		brick		
15	Sörmland	Stockholm	Kv. Mercurius	2015:2557	S:t Laurentii gränd	ca 1590-1620		brick		
17	Sörmland	Stockholm	Skeppsbron	2000	K 73, utanför Kv. Argus	1592-1593		brick and mortar		yes
19	Sörmland	Stockholm	Dihlströms 1	2016	Södermalm	1820s				
25	Sörmland	Stockholm	Västergötland 6	2006:9	K53	after 1723		stone and mortar		
26	Sörmland	Stockholm	Gustav Adolfs torg	2004:4	S328	ca 1590-1620		brick		
27	Sörmland	Stockholm	Gustav Adolfs torg	2004:4	SR 320, SR 725	1600s		brick		
28	Sörmland	Stockholm	Kring mynt-torget	2011:4	20A	1402		brick		
30	Västergötland	Göteborg	Nya Lödöse	2017:1	2:22:2	1610-1624		wattle and daub		
32	Östergötland	Söderköping	Medeltid bakom posten	2008:28	A8	1200s				
33	Sörmland	Stockholm	Storkyrko-brinken	2012:19	A 21	1400-1450		brick		
34	Småland	Växjö	Domkyrkocen-trum	2015:34	10288, 10294, 10341	1570-1590s		wattle and daub		possibly
35	Västergötland	Göteborg	Nya Lödöse	2017:1	3:2:2	1480s-1540s		brick, daub and mortar		
36	Västergötland	Göteborg	Nya Lödöse	2017:1	1.2:1 a	1480s-1540s	yes			
37	Västergötland	Göteborg	Nya Lödöse	2017:1	1:2:1 b	1480s-1540s	yes			possibly
38	Östergötland	Linköping	Linköpingsslott	106:2003		1500s-1900s		brick		yes
39	Småland	Kalmar	Kalmar slott	2015:54	rum 16/17	1600-1921				
40	Småland	Kalmar	Kalmar slott	2015:54	hus A?	1300-tal				

Institution	function	balco-ny	external stair	fireplace	insola-tion	window glass	floor type	Pad-stones	Width	Length	square meters	storeys
Göteborgs arkeologiska museum	dwelling				unclear		unclear	yes				1
Göteborgs arkeologiska museum	dwelling				unclear		unclear	yes				1
RAÄ UV syd	smithy			yes			clay	yes	4 m	4 m	16	1
Arkeologerna	dwelling							yes				1
Kulturparken Småland	dwelling		yes					-	3,9 m	5,2	(20,28) cellar	(2)
Stockholms stadsmuseum								yes				1
Arkeologikon-sult	dwelling						clay	yes				1
Stadsmuseet	kitchen			(yes)			cobbled	-	(1,6m)	6m		1
Stadsmuseet	sheds and cart shed							-				-
Stadsmuseet	shed				yes		wooden	yes	2,10 m	4,8 m	10	1
Stadsmuseet	dwelling/ workshop							yes				1
Stadmuseet	dwelling							yes				
Stadsmuseet	dwelling							-				1
Gamlestad-sprojektet	shed				yes?		clay?	no				1
Östergötlands länsmuseum								no				-
Stockholms stadsmuseum							cobbled/ bricks	-				1
Kulturparken Småland	dewelling/ shed							yes	3,87 m	4 m	15,48	1
Gam-lestadsun-dersökning-arna	bakery/ brewery			yes	yes	yes?	wooden	yes	3 m	4,5 m	13,5	1
Gam-lestadsun-dersökning-arna	shop				yes	yes?	wooden/ clay	yes				1
Gam-lestadsun-dersökning-arna	shop				yes		wooden	no				1
Östergötlands läns museum	innerwall							no				-
Statens historiska museer	innerwall							no				-
Statens historiska museer	dwelling							-				-

ID	Province	Place name	Location	source	object	dating	mixed tech-niques	infill	panelling	plaster	function
11											
12	Sörmland	Stockholm	Slussen	Ledningsomläggning vid Slussen		1758		brick			slaughter-house
13	Sörmland	Stockholm	Skolstugugränd/Storkyrko-brinken	Mercurius 12	riksråd Mattias Soop	1628					shop
14	Sörmland	Stockholm	Skolstugugränd/Storkyrko-brinken	Mercurius 12	riksråd Mattias Soop	1628					shop
15	Sörmland	Stockholm	Inre Norreport	Blodbadstavlan		1540s	yes				city gate
16	Småland	Kalmar	Kv. Bryggaren	Brandhjälpskommitten år 1800 and Westrinska samlingen		1828		brick		yes	brewery
17	Småland	Kalmar	Kv. Bryggaren	Brandhjälpskommitten år 1800 and Westrinska samlingen		after 1828		brick			wood shed/ warehouse
18	Småland	Kalmar	Kv. Bryggaren	Brandhjälpskommitten år 1800 and Westrinska samlingen		1856		brick			dwelling/ warehouse
19	Sörmland	Stockholm	Kv. Västergötland 6	Fire insurance record	K 53	efter 1723		stone/brick			Stable/cart-shed
20	Sörmland	Stockholm	Kv. Västergötland	Fire insurance record	K53	efter 1723	yes				henhouse
21	Sörmland	Stockholm	Kv. Västergötland	Fire insurance record	K53	efter 1723	yes				privet
22	Västergötland	Göteborg	Otterhällan, 2 roten, tomt 87 Utanför kvartersin-delningen	Probate inventory	Karin Bengtsdotter	1788	possibly		yes		Stable/tool shed/ hey mo
23	Västergötland	Göteborg	Otterhällan, 2 roten, tomt 93 utanför kvartersin-delningen	Probate inventory	Sofia Maria Westergren	1809					dwelling
24	Västergötland	Göteborg	kv. Enigheten, 8 roten, tomt 39	Probate inventory	snuff grinder Andreas Johansson	1819					dwelling
25	Västergötland	Göteborg	Kv. Enigheten, 8 roten, tomt 41	Probate inventory	dyer Anders Törnstens	1795		brick			dwelling/ workshop
26	Västergötland	Göteborg	Kv. Enigheten, 9 roten, tomt 32	Probate inventory	Carl Berg	1813					dwelling
27	Västergötland	Göteborg	Kv. Vadman, 9 roten, tomt 40	Fire insurance record	Magnus Claesson	1803		brick			inner walls in dwelling
28	Västergötland	Göteborg	Kv. Vadman, 9 roten, tomt 40	Fire insurance record	Magnus Claesson	1803			yes		cartshed/ byre/ and 2 wood sheds/ privy
29	Sörmland	Stockholm	Kv. Iris	Fire insurance record	Gertrud Ziegler	1751					innerwall
30	Sörmland	Stockholm	Dihlströms 1	Fire insurance record	Dihlström	1822					Cartshed/ sheds
31	Sörmland	Stockholm	Kungsholmen	SSM, Kungsholmen östra, Byggnadsinventering 1990	Kungsholms glasbruk	1750s					Glassworks
32	Sörmland	Stockholm	Engelska huset 3, Götga-tan 48		Lillienhoffska palatset	1751	possibly		yes		5 sheds
33	Sörmland	Stockholm	Lappskon Större 8	Holms tomtbok and Man-talslängd	F.d. Lappskon större 3(12, 13)- Pryssgränd 10 A och B, Söder Mälarstrand 19	1704					dwelling
34	Sörmland	Stockholm	Lappskon Större 8	Holms tomtbok and Man-talslängd	F.d. Lappskon större 3(12, 13)- Pryssgränd 10 A och B, Söder Mälarstrand 19	1740s					dyehouse
35	Sörmland	Stockholm	Lappskon större 8	Holms tomtbok and Man-talslängd	F.d. Lappskon större 3(12, 13)- Pryssgränd 10 A och B, Söder Mälarstrand 19	1757					laundry for wool
36	Småland	Kalmar	Kalmar rådhus	Bilddatabas	KLM 15851:1	undated	yes				dwelling
37	Småland	Kalmar	Kalmar rådhus	Bilddatabas	KLM 15851:6	undated					dwelling?
38	Småland	Kalmar	Kalmar rådhus	Bilddatabas	KLM 158551:9	undated					dwelling
39	Småland	Kalmar	Kalmar rådhus	Bilddatabas	KLM 15851:4	undated					warehouse
40	Sörmland	Stockholm	Skolstugugränd	Mercurius 12	Hans Bagare	early 1600s					dwelling
41	Västergötland	Göteborg	Utanför kvartersindelnin-gen	Probate inventory	Anna Maria Bismarck	1824					dwelling

balcony	jettie	report nr	institution	author	number of floors	fireplace and chimneys	Cellar	rooms	painted	tunnel entry
		2016:93	Stockholms stadsmuseum	Wändesjö						
		2013:11	Stockholms stadsmuseum	Bergman						
		2013:11	Stockholms stadsmuseum	Bergman						
	yes	2011:4	Stockholms Stadsmuseum	Söderlund et al	2					
		2016:18	Arkeologerna	Stibéus et al.	2	yes				
		2016:18	Arkeologerna	Stibéus et al.	2					
		2016:18	Arkeologerna	Stibéus et al.	2					
		2006:9	Stockholms stadsmuseum	Fennö	1					
		2006:9	Stockholms stadsmuseum	Fennö	1					
		2006:9	Stockholms stadsmuseum	Fennö	1					
		2.87	Göteborgs tomtägare 1637-1807	Olga Dahl	1,5					
		2.93	Göteborgs tomtägare 1637-1807	Olga Dahl	1,5	yes	yes	1 room, kitchen, an attick chamber		
		9.38	Göteborgs tomtägare 1637-1807	Olga Dahl	1					
			Göteborgs tomtägare 1637-1807	Olga Dahl	1			3 rooms one of which a workshop		
		9.32	Göteborgs tomtägare 1637-1807	Olga Dahl	1			2 rooms, kitchen		
		9.39-40	Göteborgs tomtägare 1637-1807	Olga Dahl	2	yes		1 room, kitchen and a hallway		
		9.39-40	Göteborgs tomtägare 1637-1807	Olga Dahl	1				yes	yes
		2015:101	Stockholms stadsmuseum	Anna Bergman						
		2016:100	Stockholms stadsmuseum	Sternegård and Ek						
			Industriinventering	Per Skoglund						
		2015	AB Stadsholmen							
		2004:2	Stockholms stadsmuseum	lorentzi and Lundberg						
		2004:2	Stockholms stadsmuseum	orentzi and Lundberg	1					
		2004:2	Stockholms stadsmuseum	orentzi and Lundberg						
			Kalmar Läns Museum		2,5	yes	yes	5		
yes			Kalmar läns museum		2,5					
			Kalmar läns museum		3,5	yes				
			Kalmar läns museum		3,5					
		2013:11	Stockholms stadsmuseum	Bergman						
		2.93		Olga Dahl	1					

ID	town	photo	name/street	jetty bressumer/ girding beam	upward brace	double posts	up and down braces	floors	external stairs	balcony	jettie	bays	tunnel entry	adjusted windows
16														
17	Kalmar	KLMF.B00373	Close to the city gate, Västerport	no	no		yes	1	no	no		13+	no	yes
18	Kalmar	KLMF.OL01279	Proviantgatan	yes	yes	yes	yes	2	no	no		8	no	yes
19	Kalmar	KLMF.HJ1-3725	Tuna församlingshem	no	no	yes	yes	1	no	no		6,5	no	yes
20	Kalmar	KLMF.B00378/	Fränkelska gården, Storgatan	no				2		no	yes		no	yes
21	Karlstad	KARLSTAD313	Tideholmsgården, Kvarteret Almen	yes	no	no	no	2	no	no		6	no	yes
22	Kalmar	KLMF.Slottin004-67/ KLMF.Slottin004-70	Kalmar slott					1	no	no			no	no
23	Växjö	INWA0725	Norra järnvägsgatan 4	yes	no	no	yes	2	no	no		14+	no	yes
24	Växjö	nätet + rapport	Idun 5	yes	no	no	no	1.5	no	no		7	no	yes
26	Läckö	nätet + vårdprogram	Kungsgård	no	no	no	yes	1	no	no		23	yes	yes
31	Rommele socken	bild rapport	Anstorp 1:2					2	no	no			no	
32	Grebbestad	Byggnadsminne (BM) 3 kap. KML 2008-12-16	Kaptensgården, Grebbestad 7:2					2,5	no	yes internal			no	
34	Grebbestad	bebyggelseinventering Tanum	Nerdrumska huset, Gisslerödsbacken, Grebbestad 20:5					2.5	no	no				
35	Vadstena	kringla.nu	Jöns Larssons hus, VADSTENA NUNNAN 2 - husnr 1					2	yes	yes			no	
36	Skänninge	IMG 2658/ 2664	Korpgatan	yes	no	no	yes	2	no	no		10	no	yes
37	Nyköping	S78-80-14	Vrena	no	no	yes	no	1	no	no		6	no	yes
39	Trosa	ritning	Kv. Baderskan 3, hus 2	yes	yes	yes	yes	3	no	no		9	no	yes
40	Lagmansö	i powerpoint	Ridhus				yes	1.5	no	no			no	
41	Katrineholm	Claestorp	Stallbyggnad	no	no	no	yes	1.5	no	no		14	no	no
42	Trosa	vård and bevaringsprogram	Garvaregården					1,5	yes	yes			removed	
43	Björkvik	länk	Dammstugan					1.5	no	no			no	
44	Stockholm	nätet	Bellmanhuset					3	no	no			no	
45	Stockholm	FRÅN PIA	Örby slott, Vietnams ambassy					2	no	yes			no	
46	Västerås	raä	Lovisa 4, hus nr 1	yes	no	no	yes	2.5	no	no				yes
47	Ronneby	rapport	Göholms gård	yes	no	no	yes	1	yes	no		7	no	no
48	Karlshamn	D 1141	Asschierska huset	yes	yes	no	yes	2	no	no	yes	11	yes	yes
49	Sölvesborg	BLM D 6648	Kv. Ceres 6-7				yes	2	yes	no			no	yes
50	Karlshamn	BLM DB 2009 3895	Elleholms kyrka	no	no	no	yes	1	no	no			no	yes
52	Visby	GFF978_409	Brucebo	yes	yes	no	yes	2.5	yes	yes	yes	10	no	yes
53	Buttle	GFF905_118	Stora Velinge	no	no	no	yes	1	no	no			no	yes
56	Bunge	GFF903_406	Lundarhagestugan	yes	yes	no	yes	1,5			yes	4		no

function	Dating	plastered	infill	report	mixed materials	panelling	Provins	buildingpart in timber-framing	pad stones	chimney
warehouse		no	brick		no	no	Småland	entire	yes	two
dwelling		no	brick		no	no	Småland	entire	yes	two
parish		no	brick		no	no	Småland	entire	yes	one
dwelling	end of 1700s	yes				no	Småland		yes	-
dwelling		no	brick	https://digitaltmuseum.se/021016604751/kvarteret-almen-i-karlstad-vid-rivningen-av-tidholmsgarden-1961-visade?aq=text%3A%22korsvirke%22+owner%3A%22S-VLM%22&i=0	yes	yes	Värmland	half the house	-	two
inner wall	1500s			RAÄ 2015:54	?		Småland		no	a fire-place
warehouse		no	brick	https://digitaltmuseum.se/021016652155/korsvirkeshus-norra-jarnvagsgatan-4-vaxjo-till-vanster-i-forgrunden-syns	no	no	Småland	entire	-	-
dwelling	1870s	no	brick	Idun 5	yes	yes	Småland	top gable has paneling	yes	one
barn	1761	yes		Vårdprogram KMMD	no	no	Västergötland	entire	yes	no
dwelling	1720s	no		Byggnadsinventering 1975	yes	yes	Västergötland	half timber-framed and half log timber	-	two
dwelling	1780/ 1856	no	brick	Kulturhistorisk bebyggelseinventering i tanums kommun Del 4a	yes	yes	Bohuslän		yes	-
dwelling	1859	no	brick	Kulturhistorisk bebyggelseinventering i tanums kommun Del 4a	yes	yes	Bohuslän		yes	two (three?)
dwelling	1580	yes		http://www.kringla.nu/kringla/objekt;jsessionid=A2C5B2B8B9E7ECBC024C1695BDB3AE25?referens=raa/bbrb/21420000014536	yes		Östergötland		yes	three
dwelling		no	brick		yes	yes	Östergötland		yes	one
dwelling					no		Sörmland		yes	one
3 dwellings/ bakery/brewery,four warehouses	1880	no	wattle and daub, logs	Kv Baderskan 3_Hus 2_rivndok 1997	yes	yes	Sörmland		yes	two
stable	1850	yes	brick		no		Sörmland	entire	yes	
stable	1720s	no			yes	yes	Sörmland	first floor	yes	
warehouse	1848-1852	yes	brick, logs and clay	Garvaregården vårdplan och underhållsplan 2002-2004	yes	yes	Sörmland	part of house	yes	no
dwelling	1800s	yes	log and clay		no		Sörmland		-	
dwelling	1723	yes		https://stockholmskallan.stockholm.se/post/29436			Sörmland/ Uppland		yes	two
dwelling/castle	1674	yes		https://sv.wikipedia.org/wiki/%C3%96rby_slott_(byggnad)			Sörmland/ Uppland		yes	two
warehouse	1740-1759	no	brick	http://www.bebyggelseregistret.raa.se/bbr2/byggnad/visaHistorik.raa?byggnadId=21400000583227&page=historik	no		Västmanland		yes	?
dwelling/pub	1815	no	brick	https://pub.epsilon.slu.se/8194/1/persson_et_al_110620.pdf	no		Blekinge		cellar	one
town hall, church, customs house, weighhouse, warehouse, pub, custody	1682	no	brick	https://web.archive.org/web/20150622211949/http://www.lansstyrelsen.se/blekinge/Sv/samhallsplanering-och-kulturmiljo/skyddad-bebyggelse/Pages/asschierska.aspx	no		Blekinge		yes/ cellar	one
dwelling/shed		no	brick	https://blm.kulturhotell.se/search?query=ceres&submit_search=S%C3%B6k&query_type=exact_match&record_types%5B%5D=Item&record_types%5B%5D=File&record_types%5B%5D=Collection	yes	yes	Blekinge	living quarters	yes/ cellar	
church	1705-1713	yes	brick	http://blm.kulturhotell.se/search?query=elleholms+kyrka&submit_search=S%C3%B6k&query_type=exact_match&record_types%5B%5D=Item&record_types%5B%5D=File&record_types%5B%5D=Collection	yes		Blekinge	timber porch and tower	yes	
dwelling	1900-1906	no		htGFF978_409	no	yes	Gotland		yes	one
dwelling	1800s	no	logs and clay/ stone	http://ca.gotlandsmuseum.se/pawtucket/index.php/Detail/Object/Show/object_id/10926	yes	yespart of the house	Gotland	most	-	
dwelling	-	no	brick	http://ca.gotlandsmuseum.se/pawtucket/index.php/Detail/Object/Show/object_id/10123	yes		Gotland	upper gables	yes	one

ID	town	photo	name/street	jetty bressumer/ girding beam	upward brace	double posts	up and down braces	floors	external stairs	balcony	jettie	bays	tunnel entry	adjusted windows
58	Lamskvie	GFF942_376	Smedjan	no	no	no	no	1	no	no			no	no
59	Roannarfve	GFF982_626	Söderberg f.d. backstuga	no				1	no	no			no	no
60	Visby	P1010472	Burmeisterska huset	yes	no	no	yes	2.5	no	no	yes	4	no	no
61	Visby	P1010469	Burmeistersa korsvirkeshuset	yes	yes	no	yes	2	yes	no	yes	5	yes	yes
62	Visby	P1010414	Laboratorn 4	yes	yes	yes	yes	2			yes	5		yes
63	Visby	P1010564	Gråbrodern 5	yes	no	no	yes	2			yes	6	no	yes
64	Visby	P1010562	Gråbrodern 7	yes	yes	no	yes	1.5	no	no		16	no	no
65	Göteborg		Drottning Kristinas jaktslott					1.5	no				no	

function	Dating	plastered	infill	report	mixed materials	panelling	Provins	buildingpart in timber-framing	pad stones	chimney
smithy		no	gutmur	http://ca.gotlandsmuseum.se/pawtucket/index.php/Detail/Object/Show/object_id/21836	no		Gotland	entire	-	
dwelling	1800s?	yes	gutmur	http://ca.gotlandsmuseum.se/pawtucket/index.php/Detail/Object/Show/object_id/50078	yes		Gotland	half in Post and plank	yes	
dwelling/warehouse	1654	no	brick	http://www.guteinfo.com/scripts/fastigheter.asp?avd=400&bid=281&bnr=1&fid=118&fst=&b=Museum,%20aff%C3%A4rslokal	yes	yes	Gotland	Gables	no	
dwelling	1500s	no	brick	http://www.guteinfo.com/scripts/fastigheter.asp?avd=201andfid=118andfst=Burmeister%204	yes		Gotland	half a wall in Post and plank construction	yes	
dwelling/shop	1600s	yes		http://www.guteinfo.com/scripts/fastigheter.asp?avd=201&fid=118&fst=Burmeister%204	yes		Gotland		yes	
dwelling/shop	1600s	yes		http://www.guteinfo.com/scripts/fastigheter.asp?avd=201&fid=220andfst=	yes		Gotland	gables	yes	one
dwelling /shop	1600s	no	limestone	http://www.guteinfo.com/scripts/fastigheter.asp?avd=201&fid=220&fst= http://www.guteinfo.com/scripts/fastigheter.asp?avd=400&bid=556&bnr=1a&fid=222&fst=&b=Bostadshus,%20aff%E4rslokal%20(Ljuspunkten)	no	yes	Gotland	entire	yes	
dwelling/pub	1731	yes			no	no	Västergötland	entire	yes	yes

Appendix 8. Post and plank in Fire Insurance Records

ID	Insurance number	Long	Width	Height	Square meter	Floor type	Function	Paneling	Worth	Window	Doors	Pad stone row	painted
3	5522	18 el/ 10,6 m	4 ½ el/ 2,6 m	6 el/ 4 el/ 3,5 m	27.5	wood	Wood shed		58.16 rd		2		
4	5522	4 el/ 2,6 m	4 el/ 2,6 m		6.7		Privy		20 rd	1	2		
5	5533	16 ¼ el/ 9,6 m	8 el/ 4,7 m	3 ½ el/ 2 m	45.1		Woodshed/ cartshed/ privy	yes	83.16 rd		3	2 el	
6	5769	28 el/ 16,6 m	10 el/ 5,9 m	14 el/8,3 m	97.9	?	stable/ chamber/ barn/ woodshed/ 2 small rooms	yes	500 rd	?	yes	1 1/2 el	yes
7	5769	8 el/ 4,7 m	6 el/ 3,5 m	7 el/ 4,1 m	16.4		byre	yes	31.32 rd		yes		yes
8	5678	9 el/5,3 m	6 el/ 3,5 m	3 ½ el /2 m	18.5	wood	Shed	yes	33.16 rd		2		red
9	5120	11 ½ el / 6,8 m	6 el/ 3,5 m	8 el/ 4,7 m	23.8		mangle shed/ privy	no	75 rd		3		
10	5299	7¾ el/ 4,6 m	7 ½ el/4,6 m	3 ¾ el/ 2,2 m	21.1		cellar with superstructure	yes	50 rd		1		
11	5299	7 el/ 4,1 m	6 ½ el/3,8 m	6 el/ 3,5 m	15.5		Byre/ hay loft		58.16 rd		?		

Appendix 9. Post and plank in Archaeological reports

ID	province	town	Source	Object	period	Function	Length	Width	Square meter	Pad stones	Planted posts	fireplace/ chimney	painted
8	Sörmland	Stockholm	Svensson and Carlsson 2015										
9	Västergötland	Nya Lödöse	Öbrink and Rosén 2017	1:1:1	1473	byre	7 m	4,3 m	30,1				
10	Västergötland	Nya Lödöse	Öbrink and Rosén 2017	3:2:2	1476	bakery / brewing house	4,5 m	3 m	13,5			fireplace	
11	Sörmland	Stockholm	Arkeologikonsult/ Slussenportalen.se		1500	warehouse	10 m	5,5 m	55				
12	Dalarna	Falun	Berghold and Grälls 1989	A6	1650	privy				yes	yes		
13	Småland	Jönköping	Nordman and Pettersson 2009	plot 218/ house 368	1640	byre	7 m	4,8 m	33,6		yes		
14	Dalarna	Falun	Berghold 1996	phase 6	1700		5 m	5 m	25	yes			

ID	Province	Town	Object	Dating	Function	Length	Width	Storeys	Windows	Fireplace	balcony	external stair	plaster	panelling	Mixed technique	chimney	pad stones
1	Gotland	Visby	Torsmanska huset	1700-1745	Bailiff/ tavern			2,5	yes	central/ corner/ ceramic	no	no	no	yes	log timber/ Post and plank	yes	yes
2	Gotland	Visby	Mellangatan 35	?	residence	8 + 7 m	5 + 3,5 m	2,5	yes	corner + ceramic	no	no	no	no	Stone / Post and plank	?	-
3	Gotland	Visbyá	Mellangatan 4	?	residence			1,5	yes	corner	no	no	no	no	Timber-framing/ Post and plank	no	yes
4	Gotland	Visby	Tunnbindaregatan 3	?	byre	5 m	4 m	1	hatch	no	no	no	no	no	no	no	-
5	Gotland	Visby	?	?	Warehouse			1,5	hatches		no	no	no	no	no	no	yes
6	Gotland	Visby	Biskopsgatan 1	1700s	residence			1,5	yes	central	no	no	no	no	no	yes	yes

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	well	Worth
Building 1 1784	Pine and fir	16 ell long 16 ell wide 14 ell high	1 + furnished attic	3 rooms	1	1	yes	1 kitchen stove with baking oven	5		399,48 rd
Building 2 1789	Pine and fir	20 ell long 14 ell wide 18 ell high	2 + 2 cellars	Groundfloor 3 (1 hall, 2 chambers) First floor 2 rooms Attic 2 chambers	1 1	1 1	1	2 kitchen stove 1 baking oven	7		795,32 rd
Building 3 ?	Pine and fir	11 ell long 6 ell wide 6 ell high	1	1 chamber 1 brewery				1 baking oven 1 brewery stove and baking oven			208,96 rd
Building 4 1789	Timber ?	12 ell long 8 ell wide 4 ell high	1 + arched cellar	2 rooms + attic		1	1		2		176,88 rd
Building 5	Pine and fir	13 ell long 7 ell wide 6 ell high	1	1 room A tannery							390 rd
Building 6	Pine and fir	26 ell long 5 ell wide 10 ell high	1	Stables, byre, privet 2 wood sheds							100 rd
									Total		2081,24

Table 1 1795 Inspector Johan Hernblad insurance number 2020 Torpet Justitia nr 113. Majorna

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1762	Pine and fir	26 ell long 13 ell wide 14 ell high	1 + furnished attic + cellar	4	1	1	1	1 kitchen stove 1 baking oven 4 chamber stoves	3 on the first floor 1 in the attic		800,40 rd

Table 2 1795 PÅ ELFSBORGS KONGS LADUGÅRDS ÄGOR. ANDERSSON ABRAHAM, HANDLANDEN. Insurance number 2278

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1790	Fir Painted white on one side the rest of the house was red	18 ell long 12 ell wide 7 ell high	2 + attic + cellar	Ground floor 2 rooms and a shop First floor 1 chamber 1 office Furnished attic	1		1	1 kitchen stove 1 baking oven	2		602,16 rd
Building 2	Post and plank Painted red	9 ½ ell long 7 ½ ell wide 4 ½ ell high		Byre Sheep shed Wood shed							60 rd
Building 3	Boards and timber-framing	4 ell long 2 ½ ell wide									4,11 rd
										Total	666,32 rd

Table 3 1795, Insurance number: 2337 SÅGÄNGEN, LANDGREN ANDERS, KRÖGAREN

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1778	Fir Painted red	20 ½ ell long 10 ½ ell wide 8 ell high	2	Ground floor 2 rooms + 1 larder First floor 2 rooms + 2 larders	Yes Yes	Yes Yes	Yes Yes	1 kitchen stove with baking oven 1 kitchen stove	3 ceramic stoves 1 chamber stove	Yes	591,32 rd
Building 1a Part of building 1	Post and plank Painted red	5 ell long 12 ¾ wide 5 ½ high		Wood shed							45 rd
1b Part of building 1	Post and plank Painted red	11 ell long 5 ell wide 3 ell high		Shed							30 rd
										Total	666,32 rd

Table 4 1795, Insurance nr: 2263, Lundsberg nr 221, CEDER PETER, HOFMÄSTARE

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building A 1769	Fir Panelled and painted	48 foot long 28 foot wide 18 foot high	2 + cellar + partly furnished attic	Ground floor 1 hall 2 chambers First floor 1 hall 4 chambers 1 attic chamber	Yes yes	Yes Yes	Yes	Kitchen stove with baking oven Kitchen stove	3 ceramic stoves 5 ceramic stoves 1 ceramic stove	Yes	1247:12 rd
Building B	Timber-framing Painted red	59 foot 6 inches long 18 foot wide 8 foot high	1	1 byre 2 wood sneds							
Building b cellar		14 foot 9 inches long 18 foot wide 5 foot 3 inches high	1 + cellar	1 apartment 1 brewery				1 brewery stove 1 walled pan			100:3 rd
										Total	1347 rd

Table 5 1795, Insurance nr 2089, GAMLA AMIRALITETS VARFVETS GRUND NR 32, SPERRING BRITA CHRISTINA, MADEMOISELLE

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1793	Fir Painted red	21 ell long 9 ell wide 6 ell high	1 + attic	1 room	Yes	Yes	Yes	Kitchen stove with baking oven	1 ceramic stove		321 rd
Building 2 1793	Timber-frame Wing	24 ell long 9 ell wide + 31 ell long 11 ell wide 5 ½ ell high	1	Barn/ Cowshed + stable Cart shed Privet Feed room Corn shed							210,84 rd
Building 3	Timer-framing	17 ell long 7 ell wide 5 ½ el high	1	Feed room							112,16 rd
Building 4	Post and plank		1	shed							15
										Total	980 rd

Table 6 1795, Insurance nr 2053, LILLJEDALEN KALLADT I SK SLOTTSSKOGEN, SANDBORG, HERR VÅGMÄSTAREN

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1	Fir	14 ell long 8 ½ ell wide 9 ½ ell high	2	Ground floor First floor 1 hall 1 chamber	Yes	Yes Yes	Yes	1 Kitchen stove with baking oven	2 ceramic stoves		335.20 rd
Building 2 1764	fir	13 ell long 8 ell wide 4 ¾ high	1	2 rooms	Yes	Yes		1 Kitchen stove with baking oven	1 ceramic stove		138 rd
Building 3	Post and plank	10 ell long 7 ell wide 4 ½ ell high									10 rd
Building 4	Fir			Privet							8 rd
										Total	491,20 rd

Table 7 1795, Insurance nr 1887, Enkefru fändrikskan Elisabeth Berg, NR 26 GAMLA AMIRALITETSWARFVET

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1792	Fir and pine	23 ell long 14 ell wide 8 ½ ell high	2 + cellar	Ground floor 3 rooms First floor 2 rooms	Yes Yes	Yes	yes	 1	1		1872,32
Building 2 1793	Fir	21 ell long 10 ell wide 4 ell high		shed							125 rd
										Total	1997,32rd

Table 8 1795, Insurance nr 2334, PÅ ELFSBORGS KONGS LADUGÅRDS ÄGOR, Johan Hernblad Frälse Inspectoren

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1781	Fir Painted in oil on one gable Rest is painted red	26 ell long 16 ell wide 10 ell high	2 + cellar	Ground floor 3 rooms 1 larder First floor 1 hall 2 chambers 1 office 1 larder	Yes Yes	Yes yes	Yes	1 1	 6		966,32 rd
Building 2	Timber-framing	15 ell long 8 ell wide 5 ell high	1								70 rd
Building 3	Timber-framing Tar and whitewash Stone cellar	18 ell long13 ell wide 5 ell high + 1 ¼ ell thick 4 ell high		Shed/cellar							250 rd
Building 4	Timber-frame Painted red	8 ell long 4 ell wide 6 ell high		Shed							33,16rd
Building 5	Timber-frame	8 ell long 4 ell wide 6 ell high		shed							40 rd

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
										Total	1359,48 rd

Table 9 1795, Insurance nr 2338 GÅRD OCH ÄGENDOM NR 225 MARTS KALLAD, REUTERQVIST PETTER, KÄLLARMÄSTARE

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating/ Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1	Timber	27 ell long 14 ell wide 5 ¾ ell high Except the middle that is 9 el high	2 + cellar + attic	Ground floor 5 rooms First floor 2 rooms	Yes + brewery	Yes	Yes	Kitchen stove with baking oven 1 brewery stove with baking oven	3 ceramic stoves 2 brick stoves		571,36 rd
Building 2	Timber	7 ½ ell square 4 ell high	1	Shed							
Building 3	Timber-frame Painted red	13 ell long 7 ell wide 4 ell high		Shed							
Building 4		4 ell square	1	privet							
Building 5		4 ell square	1	pigsty							
										Total	600rd

Table 10 1794, Insurance nr 1838 TORPET NEPTUNUS WID MAYBUGTEN: HOLMSTRÖM MAGNUS, AM:TS ÖFWERSKEPPAREN

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Fir log timber, with a tiled roof	12 ½ ell long, 12 ell wide, 11 ell high 1 ¼ ell high stone sill	2	Ground floor 1 room First floor 2 chambers	1		yes	1 stove 1 stove with a baking oven	4		1024,42 rd

Table 1 Dahl 2.58, 1803. Janitor Joh. And. Bahrman owned the plot in 1800-02. The house was built in 1784. The plot was 12 ½ ell long and 10 ell wide. 2 shorter ladders, 2 leather buckets, several water Wells in the nearby plots and the plot is situated 290 ell from Västra Hamnkanalen.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1804	?	?	1.5	Cellar Ground floor 1 room First floor 2 chambers + attic	1						266,32 rd ?

Table 2 Dahl 2.65, 1804. Johannes Winterstein and Ingrid Isacsson Plot/Gård no. 65 on Käppslängaregatan on Otterhällan. The property was insured in the Fire Insurance foundation in Amsterdam. The house burnt down in the big fire in 1804.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Stone Building	11 ½ ell high, 40 ½ ell long and 17 ell wide with a wing towards the yard 10 ell wide, 24 ell long built in 1792.	2	Vaulted cellar Ground floor 5 rooms First floor, 5 rooms		2	yes	yes	3 and 1 pot tiled stove		5508 rd not including the vaulted cellar and the sill stone foundation
Building 2	Timber-framing			shed/ warehouse							

Table 3 Dahl 4.20, 1803. Merchant Carl Johan Törngren, the plot is 49 ell long, 17 ell wide and 17 ell from the Harbour Canal.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Pine timber Building built in 1714. Panelled and painted red Tiled roof	30 ell long, 17 ell wide, 8 ½ ell high. Stone foundation ½ ell high with wooden stairs	2	Ground floor 1 room, a baking room, 1 gateway First floor, 5 rooms and 1 malt sieving room	yes		Yes + 2 balconies/ svalgång	1 baking oven with a stove, 1 smaller baking oven, 3 chimneys	4		1948,12 rd
Building 2	Timber-framed stable/shed/ privy Panelling and tiled roof	9 ell long, 4 ell wide and 6 ell high									100 rd

Table 4 Dahl 4.56, 1804. The baker Anders Molin in the corner of Magasinsgatan and Kyrkogatorna. The plot is 30 ell long, 17 ell wide, 96 ell from The Western Harbour Canal. 2 ladders, 2 fire hooks, 3 hand held pumps, 2 buckets in sail cloth, 2 swabs.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Pine timber Building, built in 1780. Panelled and painted yellow. Roof of planks and tiles	21 ell long towards the street. 17 ell long towards the yard. 12 ell wide and 9 ell high. On a stone sill	2,5 floors 2 non-vaulted cellars	Ground floor, 3 rooms, 1 shop, 3 sheds First floor, 4 rooms, 1 larder	1 1		yes	1 kitchen stove and baking oven 1 kitchen stove	5+3	Yes	1029,8 rd
Building 2	Timber-frame Building/ Shed Roof of planks and 3/4th of tiles	10 el long, 17 ell wide									30 rd

Table 5 Dahl 4.101, 1803. Hustimmerman/ Carpenter Johan Pettersson. The plot was 60 ell long, 18 ell wide towards the street and 8 ell wide in the lower end of the backyard. 240 ell from the Big Harbour Canal. One Well in front of the plot. 1 big ladder, 2 buckets.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1800	Stone Building		3 + two vaulted cellars	Ground floor, 2 large warehouses, 1 larder First floor, 6 rooms Second floor, 7 rooms Brewing house, bakery, stables, cart shed, wood shed	 1 1						4500 rd + 1500 rd for the plot
Building 2	Timber-frame Building/ economy Building with 2 wings										

Table 6 Dahl 5.24, 1800. Merchant Zacharias Arfvidsson.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1804	Timber Building in Fir and Pine, built in 1776. With a tiled roof. Panelled and painted yellow	26 ½ ell long towards the street, 24 ell wide and 10 ¾ ell high, stone sill	2	2 cellars with wooden beams. Ground floor, 1 shop, 4 rooms, 1 larder.	1	2		1 kitchen stove with a baking oven			1307,21 rd
				First floor, 1 hall, 5 rooms	1	1					
Building 2	Timber Building in Fir and Pine, built in 1780. Panelled and painted red, with a tiled roof A timber	10 ¾ ell long, 4.8 ell wide and 8 ½ ell high on a stone sill 172 ell high	2	Ground floor, an extension staircase, 1 room, 1 larder First floor, 1 larder		1 1		1 kitchen stove and frying oven			171 rd
Building 3	Building in Fir and Pine, built in 1778 with 2 wings. It is panelled and painted red.	The main Building is 26.12 ell long, 14 ¾ ell wide. The east wing is 47 ell long, 9 ell wide and the West wing is 47 ell long and 7 ½ ell wide. The Building is 9 ½ ell high.		Ground floor, 2 shops, 2 rooms, 1 salt shed, 1 brewery, 1 bakery, 3 warehouses, 1 big cart shed, 2 hallways, 1 wood shed, 1 privet The first floor two balconies, 10 granaries,		1	4 stairs to the attic	1 kitchen stove and baking oven			4780,24 rd

Table 7 Dahl 5.73, 1804. Handelsman Tobias Lundgren. A plot in the corner of the Northern Harbour and Slakthusgatorna. The plot measures 96 ell long, 27 ell wide and is situated 26 ell from the Northern Big Harbour Canal. 2 ladders, 2 hooks, 2 hand held pumps, 6 leather buckets, 2 swabs

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	A timber-framed Building with brick, built in 1788. With a tiled roof.	25 ¾ ell long towards the street, 14 ½ ell wide, 14.14 ell high. On a stone foundation 1 ½ ell high.	3	Vaulted cellar above ground. Ground floor, 1 larder, 1 hall		1	1		6+2+		House 2518,4 rd
				The first floor, 1 hall, 3 rooms	1	1		1 kitchen stove			
				The third floor, 1 larder, 1 hall, 3 rooms	1	1		1 kitchen stove			
Building 2	A wing Building attached to the former. Timber-frame construction with brick. Built in 1788.	24 ½ ell long, 10.20 ell wide, 11 ell high. On a stone foundation ¾ ell high.	2	Ground floor, 1 storehouse, 2 larders, 2 rooms, 1 brewery, 1 smithy	1	1	1	1 kitchen stove, 1 brewery stove and baking oven, 2 fires in the smithy	6		1927 rd
				First floor, 4 rooms, 2 workshops, 2 larders	2	1		2 kitchen stoves			

Table 8 Dahl 7.34, 1803. Master Smithy Waldemar Hasselgren. The plot was 40 ell long and 25 ¾ ell wide along the street. 208 ell from the Eastern Harbour Canal. There was a Well on the next property, 3 ladders, 2 hookes, 2 hand held pumps, 3 leather buckets and 2 swabs.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Stone Building + timber-framing	29 ell long, 16 ell wide, 11 ½ ell high	2	Ground floor, cellar, a parlour, 1 office for selling theatre tickets.	1	1 large	1	1 kitchen stove with baking oven	3+4+1		Total worth 8618,32 rd
				First floor, 1 billiard room, 2 rooms, 1 small room,	1	1 large	1	1 kitchen stove with baking oven			
				Attic constructed in timber-framing technique							
Building 2	A theatre, timber-framing construction on a stone foundation. Panelled and painted red. Built in 1777.	19 ½ ell wide towards Sillgatan, 62 ell long, 15 ell high, ½ ell stone foundation		Dressing rooms, orchestra, An amphitheatre with 32 padded benches for the audience. An addition towards the courtyard is a 2 storey Building with 4 rooms				1 kitchen stove	1 ceramic stove		
Building 3	Timber-framed Building with panelling painted red, built in 1787	27 ell long, 10 ell wide		Stables, stable chambers, cart shed							
Building 4	A timber-framed Building towards Smedjegatan, panelled and painted red, built in 1784	9 ½ ell long, 5 ell wide									
Building 5	A shed, built in 1797	42 ell long, 8 ell wide									

Table 9 Dahl 7.60, 1803. Restaurant keeper C J Crohn. The plot is 48 ½ ell long towards Sillgatan, 54 ell wide towards Smedjegatan. There is a backyard towards Kronhusgatan 32 ell long and 13 ell wide. 180 ell from the moat and 20 ell from the Well at the Artillery yard and 150 ell from the Eastern Harbour. 2 hand held pumps, 4 leather buckets, 2 ladders, 2 swabs and 2 hooks.

	Building material	Size	Number of floors	Rooms/ Chambers/ hall	Kitchen	Porch	Stair	Heating Kitchen stove and baking oven	Heating/ ceramic stoves	Well	Worth
Building 1 1803	Stone house, built in 1799.	14 ell wide towards the street, 28 ¾ ell long and 9 ell high.	2	Ground floor, 4 rooms	1	1	1	1 kitchen stove and baking oven			1700 rd
				First floor, 4 rooms	1	1		1 kitchen stove			

Table 10 Dahl 8.58, 1804. Mademoiselle Anna Caisa Barkenbom. The plot was 14 ell wide towards Kronhusgatan, 27 ell on the northern side and 39 ell to the east. 249 ell from the Harbour Canal, 49 ell from the moat, 5 ell deep Well, 1 ladder, 2 hooks, 2 hand held pumps, 2 sailcloth buckets, 2 swabs

Archives, sources and bibliography

Archives

Alvin
Digital archive, the University Library Carolina Rediviva, at Uppsala University

Blekinge museum
Digital museum, föremål och fotodatabas (photo database)

Gotlands museum
Digital archive, Magasin Visborg, Svanströmska samlingen (photo database)

Gothenburg city museum
Digital archive, Carlotta (photo database)

Kalmar Läns Museum
Digital archive, fotodatabas (photo database)
Krigsarkivet
Historical maps/ historiska kartor
Sverige, stads- och fästningsplaner, Jönköping, SE/KrA/0424/056/017 (1624 Ca), bildid: K0028287_00001. Title: Jönköping. Fortifikationen. [På baksidan]: Jönekõpings Stad och Slått.
Sverige, stads- och fästningsplaner, Karlstad, SE/KrA/0424/064/001 (1648), bildid: K0030616_00001 Title: Karlstad. [På baksidan]: Affrithning opå Carlstadh medh des befästels och huru houn fortificeras schall den 22 Aprilis 1648. Matthias Monson blom.

Kulturparken Småland/ Smålandsmuseum
Digital archive, Inga Waldes samling (photo database)

Lantmäteriverkets arkiv
Lantmäteriet, Gävle - LMV

Norrköpings stadsarkiv
Norrköpings kommun. Stadsplanekommittén Inventeringar, Saneringsutredningen: Kvarterskartor

ArkivDigital Online/Riksarkivet
Digitala forskarsalen, Brandförsäkringar: Västra Götalands län, Örgryte och Göteborgs Karl Johans församlingar, Ort Fredrikshamn, 1805 (Fire Insurance Record)
Sävedals häradsrätt FIIb:1, Bouppteckningar (1735-1788), FIIb:2, 1789-1797
Sävedals häradsrätt FIIa:14 Ver:a (1803-1806). Riksarkivet: Sävedals häradsrätts arkiv, Bouppteckningar, huvudserie, E/GLA/11082/F II a/14 (1803-1806) (Probate inventories)

Stockholm City Museum
SR Stadsarkeologiskt register (Archaeological directory)

Stockholms stadsarkiv (Stockholm city archive)
SE/SSA/NS37/Stadsbyggnadskontorets kartor och ritningar

Sörmlands museum
Digital archive – Sörmlands museums samlingar (photo database)

The Swedish National Heritage Board (Riksantikvarieämbetet)
Bebyggelseregister (A building directory)
Kringla (Cultural heritage database)

Värmlands museum
Digital archive, Värmlands museums samlingar (photo database)

Göteborgs tomtägare 1637-1807
Dahl, Östen https://www.gbgtomter.se/ Olga Dahls research on plot ownership in Gothenburg 1637-1807 based on magistrates records, probate inventories and fire insurance records.

Internet sources
Media/ News papers and Magazines
2019-05-08 Göteborgs Tidning https://www.expressen.se
2015-07-23, 2006-08-26, Göteborgs Posten http://www.gp.se
2014-04-10, Brandsäkert **http://www.brandsakert.se**
2015-10-23, Woodcraft Magazine
Media/ TV/ Radio

2019-07-25, BBC http://www.bbc.com
2004, När Domus kom till stan, Anders Wahlgren for Swedish Television http://www.oppetarkiv.se
2014-10-02, Spiegel Online http://www.spiegel.de
2015-08-16, Sveriges Radio http://sverigesradio.se
2015-08-16 SVT Nyheter. P4 Jönköping http://www.svt.se/nyheter

Laws and regulations
2017-11-15 Regeringskansliets rättsdatabaser, http://www.notisum.se
Riksantikvarieämbetet, Swedish National Heritage Board, http://www.raa.se
2013 October, Scheduled Monuments, Department for Culture Media & Sport, UK, https://www.gov.uk
2017 Sveriges Riksdag, http://www.riksdagen.se
Open air museums and practitioners
Byalaget, Ale Kommun http://www.alevikingagard.info
Fotevikens museum

Friluftsmuseet Gamla Linköping https://gamlalinkoping.se
2015-09-08 Hantverkslaboratoriet, Virkesberedning - Rekonstruktionen av Södra Råda medeltidskyrka, Göteborgs Universitet, https://www.youtube.com
Kulturreservatet http://www.kulturreservatet.se
Norsk Folkemuseum https://norskfolkemuseum.no
Skansen, 2017 http://www.skansen.se
Sveriges Hembygdsförbund https://www.hembygd.se
May 2012, Sveriges hemslöjdskonsulenter i.e handicraft consultant http://www.slojdhaller.se

Webpage articles connected to rescue archaeological companies

2015-04-16, Arkeologikonsult, Blogg Slussen. http://www.slussenportalen.se
2014-04-14, Jönköpings läns museum https://arkeologijonkoping.wordpress.com
Staden Nya Lödöse http://www.stadennyalodose.se/artiklar
2018.04.05 webb@arkeologerna.com https://arkeologerna.com/bloggar
Staden Nya Lödöse 2017 http://www.stadennyalodose.se/

Museums

Museum Ons' Lieve Heer op Solder https://www.opsolder.nl
2019-10-02 Tekniska Museet in Stockholm, https://www.tekniskamuseet.se
The Swedish National Heritage Board
http://www.kringla.nu
http://www.bebyggelseregistret.raa.se

Historical maps

2020-05-29 Historiska kartor – Göteborgs stad goteborg.se

Dictionnaires

Svenska Akademien 2017 www.saob.se
Cambridge Dictionary 2017 http://dictionary.cambridge.org

Technical knowhow

2007-11-06, Ekologism – att leva på naturens villkor https://ekologism.wordpress.com
2016-2020 Reyjkavík City Museum https://reykjavikcitymuseum.is
Skogsstyrelsen https://www.skogsstyrelsen.se
SkogsSverige https://www.skogssverige.se
2008-05-13, Skogssällskapet https://www.skogssallskapet.se
Sustainable heritage http://www.sustainableheritage.eu
Westergren, Elina Blom, 2019-07-04, www.byggahus.se
23 Nov 2005, Wikimedia https://commons.wikimedia.org
2016-05-31, Yale's Pevsner Architectural Guides series https://twitter.com

Buildings and cultural heritage programs

Länsstyrelsen http://www.lansstyrelsen.se
Statens fastighetsverk https://www.sfv.se
Stiftelsen kulturmiljövård vårdprogram, Läckö Kungsgård https://www.kmmd.se

Dendrochronology

Linderson, Hans, 2015-03-11 Geologiska Institutionen, Lunds Universitet, https://www.geologi.lu.se

Miscellaneous

'Domus' https://sv.wikipedia.org
Hendefelt, Marie, 2010-08-10 http://www.alltidgot.com
2015, Intelligent logistik https://intelligentlogistik.com
2017-06-17, Timbro https://timbro.se
2017-05-23, Trafikverket https://www.trafikverket.se
Trångboddhet' Crowded living. In Wikipedia. https://en.wikipedia.org also in Riksdagen.se https://data.riksdagen.se
2020-01-10, Tvättmaskin.net viewed http://www.tvättmaskin.net
WebMD Natural Medicines Comprehensive Database Consumer Version https://www.webmd.com

Conference papers

Neil Price: '*Slavery and the Vikings: Archaeological Perspectives*'. At the conference Connecting Continents: Archaeological Perspectives on Slavery, Trade, and Colonialism organized by EAA and SAA in Curaçao in 2015
Paul Wardes' conference paper '*The use of wood as a fundamental resource in pre-industrial society*' at the 2017 Winter Conference by Vernacular Architecture Group VAG in Leicester, England.

Bibliography

Agertz, Jan, and Lennart Grandelius. 2003. *Gå Och Se Eksjö: Vandringar i Den Unika Trästaden.* Eksjö, Sweden: Stiftelsen Aschanska gården.

Ahlberg, Nils. 1998. *Stadens mönster: de historiska kartorna berättar*. 1. uppl. Stockholm: Riksantikvarieämbetet.

———. 2000. *Stadsplanereglering i Sverige 1550-1875.* Stockholm: Svensk stadsmiljö, Konstvetenskapliga inst, Univ.

———. 2005. 'Stadsgrundningar Och Planförändringar : Svensk Stadsplanering 1521-1721. Kartor.' Uppsala: Diss. Uppsala : Sveriges lantbruksuniversitet, 2005.

———. 2012. *Svensk stadsplanering: arvet från stormaktstiden, resurs i dagens stadsutveckling*. T / Formas, 2012:3. Stockholm: Forskningsrådet Formas.

———. 2014. 'Jönköping Och Stormaktstidens Stadsbyggande.' In *Stormaktsstaden Jönköping : 1614 Och Framåt*, edited by Ann-Marie Nordman, Mikael Nordström, and Claes Pettersson, 23–52. Jönköping: Jönköping : Jönköpings läns museum.

Ahlberger, Christer. 1996. *Konsumtionsrevolutionen*. Göteborg: Göteborg : Humanistiska fakulteten, Univ.

Åkerhagen, Arne. 1985. *Kritpipor*. [Ny, Omskriven och utök. uppl.]. Handen]: Handen : A. Åkerhagen i samarbete med Svenska tobaks AB.

———. 1994. *Pipmakare i Värmlandsskogarna : De Sista Kritpipsmakarna i Sverige*. Haninge]: Haninge : A. Åkerhagen.

Alcock, N. W., and C. R. J. Currie. 1989. 'Upstairs or Downstairs?' *Vernacular Architecture* 20 (1): 21–23. https://doi.org/10.1179/vea.1989.20.1.21.

Alcock, N. W, and D. W. H Miles. 2013. *The Medieval Peasant House in Midland England*. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=970508.

Alcock, N. W, and Vernacular Architecture Group. 2010. *A Bibliography of Vernacular Architecture. Vol. 5, Vol. 5,.* Aberystwyth: Vernacular Architecture Group.

Alcock, Nat. 2010. 'The Distribution and Dating of Wealden Houses.' *Vernacular Architecture* 41 (1): 37–44. https://doi.org/10.1179/174962910X12838716153808.

———. 2013. 'A Fourteenth-Century Illustration of a Cruck.' *Vernacular Architecture* 44 (1): 28–30. https://doi.org/10.1179/0305547713Z.00000000013.

———. 2018. 'English or French Carpenters in Fourteenth-Century Normandy? The Manoir de La Haule at Aclou Revisited.' *Vernacular Architecture* 49: 44–57.

———. 2019. 'Buildings of Medieval Europe: Studies in Social and Landscape Contexts of Medieval Buildings.' *Vernacular Architecture* 50 (1): 132–33. https://doi.org/10.1080/03055477.2019.1677123.

Alcock, Nat, and Dan Miles. 2012. 'An Early Fifteenth-Century Warwickshire Cruck House Using Joggled Halvings.' *Vernacular Architecture* 43 (1): 19–27. https://doi.org/10.1179/0305547712Z.0000000003.

Algreen-Ussing, Gregers, Dominique Mulliez, and Erik Hallager. 2008. *Den franske forbindelse: 100 ar med danske arkitekter ced den Franske arkaeologiske skole i Athen = Une liaison française : 100 années de présence d'architectes danois à l'école française d'Athènes*. Thorvaldsens Museum ;--Danske Institut i Athen :--Ecole française d'Athènes,. http://hdl.handle.net/2027/uc1.31822036256949.

Allan, Graham, and Graham Crow. 2001. *Families, Households, and Society*. Sociology for a Changing World. Houndmills: Palgrave.

Almevik, Gunnar. 1993. *Typologisering Som Dokumentationsmetod : Ett Kulturvårdande Typologiseringssystem För Svenska Historiska Byggnadselement : Förslag till Metodutveckling.* Göteborg: Göteborg : Univ. Institutionen för kulturvård.

———. 2004. 'Det Sydgötiska Husets (Vetenskapliga) Konstruktion.' *RIG-Kulturhistorisk Tidskrift* 87 (4): 193–209.

———. 2012. 'Byggnaden Som Kunskapskälla.' Göteborg: Diss. Göteborg : Göteborgs universitet, 2012.

———, ed. 2017. *Hantverksvetenskap*.

Almquist, Helge. 1929. *Göteborgs historia: grundläggningen och de första hundra åren. D. 1 Från grundläggningen till enväldet (1619-1680).* Skrifter utgivna till Göteborgs stads trehundraårsjubileum genom jubileumsutställningens publikationskommitté, 1:1. Göteborg.

Almquist, Torbjörn. 1975. *Arbetarbostäder i trä: saneringsläget 1974*. Den nordiske træstad, 30. Stockholm.

Ambrosiani, Björn. 1996. *Birka vikingastaden Vol. 5 [Vikingastaden lever upp igen i TV:s modell av 800-talets Birka]*. Stockholm: Sveriges radio.

Andersen, Roger. 1983. *Pidginization and Creolization as Language Acquisition*. Rowley, Massacusetts, US: Newbury House.

Anderson, Perry. 1974. *Lineages of the Absolutist State.* London: London : N.L.B.

———. 1996. *Den absoluta statens utveckling*. Enskede: TPB.

Andersson, Bertil, Martin Fritz, and Kent Olsson. 1996. *Göteborgs historia: näringsliv och samhällsutveckling.* Stockholm: Nerenius & Santérus.

Andersson, Eva. 2006. 'Kläderna Och Människan i Medeltidens Sverige Och Norge.' Göteborg: Diss. Göteborg : Göteborgs universitet, 2006.

Andersson, Hans. 1973. *Nya Lödöse - Gamlestaden Femhundra År*. Göteborg: Göteborg : Göteborg-Gamlestadens rotaryklubb.

———. 1976. *Projektprogram*. Rapport / Riksantikvarieämbetet och Statens historiska museer Medeltidsstaden, 1. Stockholm: Riksantikvarieämbetet/Statens historiska mus.

———. 1979. *Urbaniseringsprocessen i det medeltida Sverige: enforskningsöversikt*. Rapport/Riksantikvarieämbetet och Statens historiska museer Medeltidsstaden, 7. Stockholm: Riksantikvarieämbetet och Statens historiska mus.

———. 1984. *Städer i öst och väst: sammanfattande rapport etapp I*. Rapport / Riksantikvarieämbetet och Statens historiska museer Medeltidsstaden, 34. Stockholm: Riksantikvarieämbetet och Statens historiska mus.

———. 2009. 'Medeltidsstaden i Sverige Och Finland-Blick Bakåt Och Framåt.' In *Maasta, Kivestä Ja Hengestä. Markus Hiekkanen Festschrift.*, edited by H-M Pellinen. Turun Yliopisto, kulttuurien tutkimuksen laitos.

———. 2010. 'Järn, Stad Och Stadsbildning.' *Med Hammare Och Fackla XLI*, Sancte Örjens Gille, Stockholm, .

Andersson, Hans, Stina Ejderoth-Linden, and Lena Tegnér. 2009. *Varför revs inte hela Haga ?: om bevarande av en stadsdel i Göteborg*. Rapport / Länsstyrelsen Västra Götaland 2009. Göteborg: Länsstyrelsen Västra Götalands län, Kulturmiljöenheten.

Andersson, Hans, Lars Ersgård, Peter Carelli, and Riksantikvarieämbetet, eds. 1997. *Visions of the Past: Trends and Traditions in Swedish Medieval Archaeology*. Lund Studies in Medieval Archaeology 19. Stockholm: Central Board of National Antiquities (Riksantikvarieämbetet) : Almqvist & Wiksell International [distributör utanför Sverige].

Andersson, Hans, Gitte Hansen, and Ingvild Øye, eds. 2008a. *De første 200 årene: nytt blikk på 27 skandinaviske middelalderbyer*. UBAS 5. Bergen: Arkeologisk institutt, Universitet i Bergen.

———. 2008b. *De Første 200 Årene : Nytt Blikk På 27 Skandinaviske Middelalderbyer*. Bergen: Bergen : Arkeologisk institutt, Universitet i Bergen.

Andersson, Ingrid. 1986. *Karin Larsson: konstnär och konstnärshustru*. Stockholm: Gidlund.

Andersson, Karin. 1988. *Byggnadsarkeologisk undersökning: det murade huset*. 2., rev. Uppl. Underrättelser från Riksantikvarieämbetet och Statens historiska museer, 1988:1. Stockholm: Informationsenheten, Riksantikvarieämbetet.

Andersson, Karl-Erik. 2001. *Risveden : En Västsvensk Obygds Historia. D. 1, Gränsbygd, Vägar, Skogens Historia, Arbetsvandring, Slott Och Herresäten*. Älvängen: Älvängen : Acta Risvedensis.

———. 2006. *Risveden : En Västsvensk Obygds Historia. D. 2, Obygdens Villkor Vid Övergången Från Självhushållning till Industrisamhälle*. Älvängen: Älvängen : Acta Risvedensis.

———. 2008. *Risveden : En Västsvensk Obygds Historia. D. 3, Gårdar, Torp Och Människoöden*. Älvängen: Älvängen : Acta Risvedensis.

Andersson, Stina, Eva Jönsson-Kihlberg, Björn Broo, Janolof Bengtsson, Håkan Berg, and Hans-Erik Dillner. 1986. *Livet i Det Gamla Göteborg*. Göteborg: Göteborg : Göteborgs arkeologiska museum.

Andrén, Anders. 1997. *Mellan ting och text: en introduktion till de historiska arkeologierna*. Kulturhistoriskt bibliotek. Eslöv: B. Östlings bokförl. Symposion.

———. 1998. *Staden: himmel eller helvete : tankar om människan i staden*. Stockholm: Informationsförl.

Anund, Johan. 2001. 'The Curses and Possibilities of Wooden Architecture: Domestic Buildings in Medieval Uppsala.' In *Lübecker Kolloquium Zur Stadtarchäologie Im Hansearum III: Der Hausbau*, 636–57. Lübeck: Verlag Schmidt-Römhild.

Arbman, Holger. 1926. 'Bidrag till Kännedom Om Det Äldsta Sigtuna. Undersökningar Sommaren 1925.' *Fornvännen, Journal of Swedish Arntiquarian Research* 1926 (21): 171–95.

Arnstberg, Karl-Olov. 2000. *Miljonprogrammet*. Stockholm: Carlsson.

Ashmore, W., and J.A. Sabloff. 2002. 'Spatial Orders in Maya Civic Plans.' *Latin American Antiquity*, no. 13: 201–15.

Asplund, Erik Gunnar. 1980. *Acceptera*. [Stockholm]: Tiden.

Atzbach, Rainer. 2012. 'The Stube: Constructive Evidence for the Concept of a Smoke-Free Heated Living Room between the Alps and Southern Scandinavia.' In *Nuts and Bolts of Construction History: Culture, Technology and Society*, edited by Robert Carvais, André Guillerme, Valérie Négre, and Joël Sakarovitch. Vol. 3. Paris: Picard.

———. n.d. 'Die Äldsten Erhaltenen Holzbauten in Dänemark Und Ihr Bezug Zum Niederdeutchen Hausbau.' *Mitteilungen Der Deutschen Gesellschaft FÃ¼r ArchÃ¤ologie Des Mittelalters Und Der Neuzei* 2012: 83–98.

Augustsson, Jan-Erik. 1986. 'Ett bidrag till det Sydgötiska husets historia.' In *Medeltiden och arkeologin: festskrift till Erik Cinthio*, edited by Anders Andrén, 271–78. Lund studies in medieval archaeology, 1. Lund: Institute of Archaeology, UnivLunds universitets historiska museum distributör.

———. 1992. 'Medeltida Husbyggande i Sverige.' In *Bebyggelsehistorisk Tidskrift*. Vol. 1992 (23), s. 55–85. Bebyggelsehistorisk tidskrift Uppsala : Swedish Science Press, 1981-.

———. 1995. 'Medeltida Byggnadsskick.' In *Skara i Medeltid / Red.: Agneta H Boqvist*. Vol. S. 30-45. Skara i medeltid / red.: Agneta H Boqvist Skara : Skaraborgs länsmuseum, [1995].

———. 1999. 'Läckö Som Maktcentrum Och Bostad.' In *Läckö / Leif Jonsson, Red.* Vol. S. 47-69. Läckö / Leif Jonsson, red. Stockholm : Carlsson, 1999.

Balic, Ivan, Linda Billström, and Åsa Alering. 2015. 'Arkeologi Vid Domkyrkocentrum. Kronobergs Län, Småland, Växjö Kommun, Växsjö Socken. Fastigheterna Växjö 10:14 Och Domkyrkan 1. Växjö 170:1.' Arkeologisk undersökning 2015:34. Växsjö: Riksantikvarieämbetet, UV Syd.

Beaudry, Mary C. 2017. *Documentary Archaeology*. Edited by James Symonds and Vesa-Pekka Herva. 1st ed. Oxford, UK: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199562350.013.3.

Beckman-Thoor, Karin, Annette Färjare, and Anna Ulfhielm. 2019. 'Kulturmiljöprogram, Flen Kommunal Författningssamling.' 2019:6-212. Flen: Flens kommun.

Bedal, Konrad. 1995. *Historische Hausforschung: eine Einführung in Arbeitsweise, Begriffe und Literatur*. Bad Windsheim: Fränkisches Freilandmuseum.

Bengtsson, Rickard. 1999. *Vid stadens hank och stör: tullstugor, portar och bommar i svenska städer 1622-1810*. Stockholm]; Dalarö: Generaltullstyrelsen]; Tullmuseet.

Berg, Arne. 1968. *Norske Gardstun*. Instituttet for Sammenlignende Kulturforskning 55. Oslo.

———, ed. 1974. *Trebyer i Norden*. Oslo: Grøndahl & son.

———. 1980. *Stavkyrkja Frå Vang Og Hennar Lange Ferd: [The Stave Church from Vang and Its Long Journey]*. Fortidsminner 67. Oslo: Foreningen til norske fortidsminnesmerkers bevaring.

———. 1986. 'Om Laftning i Noreg i Mellomalderen.' In *Knuttimring i Norden. Bidrag till Dess Äldre Historia.*, edited by Göran Rosander, 15–36. Falun, Sverige: Dalarnas Museum.

———. 1989. *Norske Tømmerhus Frå Mellomalderen*. Norske Minnesmerker. Oslo: Landbruksforlaget.

———. 1998. *Norske Tømmerhus Frå Mellomalderen*. Norske Minnesmerker. Oslo: Landbruksforlaget.

Berg, Arno. 1965a. *Det Gamle Christiania*. Oslo: Dreyer.

———. 1965b. *Det Gamle Christiania*. Oslo, Norway.

Berg, Wilhelm. 1882. *Samlingar till Göteborgs historia. 1, Kulturhistoriska skildringar*. Stockholm: Beijers.

———. 1883. *Slottsruinen På Ragnhildsholmen*. Stockholm.

———. 1893. *Augustinerklostret i Konungahälla*. Göteborg.

Berger, Lars, Inger Forsmark, Åse Moberg, Britta Tunberg, and Ola Wikström. 1998. 'Projekt Fornminnesgården. Bebyggelseutveckling.' Byggnadsvårdsrapport. Göteborg, Sverige: CTH Byggnadsvård, Chalmers Tekniska Högskola.

Berggren, Jan, and Per Eliasson. 2010. 'Energi Och Temporalitet.' *Historisk Tidskrift*, no. 130:4: 689–713.

Berghold, Helmut. 1996. 'Dalpilen - Ett 1600-Talskvarter i Falun.' Arkeologisk undersökning 1996:109. Stockholm, Sweden: Riksantikvarieämbetet. UV Stockholm.

Berghold, Helmut, and Annika Grälls. 1989. 'Dalarna, Falun, Kvarteret Garvaren Nr 2, 7 Och 8 (Gesällen).' Arkeologisk slutundersökning. Falun, Sverige: Riksantikvarieämbetet, Byrån för Arkeologiska Undersökningar.

Bergman, Anna. 2013. 'Mercurius 12. F.d. Mercurius 4-9. Gamla Stan, Stockholm. Murverksdokumentation. Stadsmuseet Rapporterar 53. Stockholm.' Murverksdokumentation 2013:11. Stockholm, Sweden: Stockholms stadsmuseum, Kulturmiljöavdelning.

———. 2015. 'Iris 14, Gamla Stan, Stockholm. Murverksdokumentation 2015. Västerlånggatan 37 & Prästgatan 36.' Murverksdokumentation 2015:101. Stockholm, Sweden: Stockholms Stadsmuseum.

Bergstrand, Thomas. 2013. 'Säveån Genom Gamlestaden. Göteborg 218, Gamlestaden 740:162 m.Fl. Göteborgs Stad, Göteborgs Kommun.' Arkeologisk förundersökning 2013:8. Uddevalla: Bohusläns Museum.

Binford, Lewis R. 1962. 'Archaeology as Anthropology.' *American Antiquity* 28 (2): 217–25. https://doi.org/10.2307/278380.

———. 1979. 'Organization and Formation Processes: Looking at Curated Technologies.' *Journal of Anthropological Research* 35 (3): 255–73.

Birdwell-Pheasant, Donna, and Denise Lawrence-Zúñiga, eds. 1999. *House Life: Space, Place and Family in Europe*. Oxford: Berg.

Blomberg, Anna. 1991. *Dikmanska Gården i Falun*. Anna Blomberg Arkitektkontor AB.

Blomberg, Anna, and Kina Linscott. 2000a. 'Kv. Flintan 1, Mäster Pers Gränd 8b. Fd. Barnängen Mindre 13. Stockholm. Översiktlig Teknisk Beskrivning Och Reviderat Förfrågningsunderlag.' Byggnadsvårdsrapport 2000a. Falun, Sverige: Blomberg & Linscott Arkitekter AB.

———. 2000b. 'Kv. Flintan, Mäster Pers Gränd 2, Svanken. Stockholm. Översiktlig Teknisk Beskrivning.' Byggnadsvårdsrapport 2000b. Falun, Sverige: Blomberg & Linscott Arkitekter AB.

———. 2004. 'Kv. Flintan 1, Mäster Pers Gränd 2, Verkstan. Stockholm. Undersökning Av Timmerstomme Och Takkonstruktion.' Byggnadsvårdsrapport 2004. Falun, Sverige: Blomberg & Linscott Arkitekter AB.

Blomberg, Ingela. 1980. *Tekniska och miljömässiga aspekter på bostadssanering en kunskapsöversikt*. Rapport / Byggforskningsrådet, 1980:50. Stockholm: Statens råd för byggnadsforskning: Svbyggtjänst distr. http://hdl.handle.net/2077/43262.

Boëthius, Gerda. 1931. *Hallar, Tempel Och Stavkyrkor. Studier till Kännedom Om Äldre Nordisk Monumental Arkitektur.* Studier Från Zornska Institutet För Nordisk Och Jämförande Konsthistoria. Stockholm: Zornska institutet, Stockholms Högskola.

———. 1941. *Falu stads kyrkor: konsthistoriskt inventarium*. Stockholm: Generalstabens litografiska anstalt.

Boholm, Åsa. 1983. *Swedish Kinship: An Exploration into Cultural Processes of Belonging and Continuity*. Gothenburg Studies in Social Anthropology, 5. DissGöteborg: Univ.

———. 1993. *Venetian Worlds: Nobility and the Cultural Construction of Society*. Göteborg: Institute of Advanced Studies in Social Anthropology Institutet för socialantropologisk forskning, UnivIASSA.

Boqvist, Agneta. 1978. *Den dolda ekonomin: en etnologisk studie av näringsstrukturen i Bollebygd 1850-1950 = [The hidden economy] : [an ethnological study of patterns of production and the economic structure in Bollebygd 1850-1950]*. Skrifter från Folklivsarkivet i Lund, 21. Lund: LiberLäromedel/Gleerup.

Braidotti, Rosi. 1991. *Patterns of Dissonance: A Study of Women in Contemporary Philosophy*. Oxford: Polity.

Bramstång Plura, Carina, Kristina Carlsson, Christina Rosén, Jens Heimdahl, Maria Vretemark, and Eva Hjärthner Holdar. 2012. 'Nio Tomter i Jönköping. Småland, Jönköpings Stad, Kvarteret Dovhjorten (Druvan), RAÄ 50.' Arkeologisk undersökning 2012:119. UV Rapport, Riksantikvarieämbetet.

Braudel, Fernand. 1972. *The Mediterranean and the Mediterranean World in the Age of Philip II*. London: Collins.

Braun, Georg, Frans Hogenberg, and Raleigh Ashlin Skelton. 1966. *Braun & Hogenberg: Civitates Orbis Terrarum. 'The Towns of the World.' 1572-1618 ... With an Introduction by R.A. Skelton.* Cleveland & New York: The World Publishing Company.

Brendalsmo, A. Jan. 1994. *Tønsberg Før År 1000 : Fra Gård Til By*. Oslo: Oslo : Universitetets Oldsaksamling.

Brendalsmo, A. Jan, Finn-Einar Eliassen, and Terje Gansum, eds. 2009. *Den urbane underskog: strandsteder, utvekslingssteder og småbyer i vikingtid, middelalder og tidlig nytid*. Oslo: Novus.

Briassoulis, Helen. 1997. 'How the Others Plan: Exploring the Shape and Forms of Informal Planning.' *Journal of Planning Education and Research*, no. 17: 105–17.

Bringéus, Nils-Arvid. 1979. *Arbete och redskap: materiell folkkultur på svensk landsbygd före industrialismen*. 4., omarb. uppl. Handböcker i etnologi. Lund: LiberLäromedel.

———, ed. 2003. *Arbete och redskap: materiell folkkultur på svensk landsbygd före industrialismen*. 5., omarb. uppl. Stockholm: Carlsson.

Broberg, Birgitta. 1978. *Söderköping*. Rapport / Riksantikvarieämbetet och Statens historiska museer Medeltidsstaden, 5. Stockholm: Riksantikvarieämbetet och Statens historiska mus.

Bæckström, Arvid. 1923. *Studier i Göteborgs Byggnadshistoria Före 1814 : Ett Bidrag till Svensk Stadsbyggnadshistoria*. [Utvidgad uppl.]. Stockholm: Stockholm : Nordiska museet.

Bäckström, Mattias. 2012. *Hjärtats Härdar: Folkliv, Folkmuseer Och Minnesmärken i Skandinavien, 1808-1907*. Möklinta: Gidlund.

Bäckström, and Sigurd Wallin. 1911. *Gamla Svenska Städer. Gator Och Gränder, Hus Och Gårdar.* Anstalts förlag.

Börjesgård, Britt-Marie. 2017. 'Forssellska Gården. Dokumentation i Samband Med Rivning Efter Brand. Ciselören 1, Eksjö Stad i Eksjö Kommun, Jönköpings Län.' Byggnadsvårdsrapport 2017:29. Jönköping, Sweden: Jönköpings Läns Museum.

Carelli, Peter. 2001. 'En Kapitalistisk Anda : Kulturella Förändringar i 1100-Talets Danmark.' Diss. Lund : Univ., 2001.

———. 2007. *Det Medeltida Skåne : En Arkeologisk Guidebok*. Stockholm : Historiska media.

———. 2012. *Lunds Historia : Staden Och Omlandet. 1, Medeltiden : En Metropol Växer Fram*. Lund: Lund : Lunds kommun.

Carl R. af Ugglas. 1931. *Lödöse: (gamla Lödöse) : historia och arkeologi*. Skrifter utgivna till Göteborgs stads trehundraårsjubileum genom jubileumsutställningens publikationskommitté, 4. Göteborg: Medéns bokhi distr.

Carlsson, Kristina. 1998. *Tre kvarter i Gamla Lödöse: kronologi och funktion (GOTARC. Serie C. Arkeologiska skrifter, 19)*. Göteborg University Göteborg.

Carlsson, Michél, and Kenneth Svensson. 2015a. 'Livet Längs En Bakgata i Stockholm, 1250-1759. Om Utgrävningarna i Kvarteret Mercurius.' Särskild arkeologisk undersökning. Arkeologikonsult. http://samla.raa.se/xmlui/handle/raa/8653.

———. 2015b. 'Livet Längs En Bakgata i Stockholm, 1250-1759. Utgrävningarna i Kvarteret Mercurius. Särskild Undersökning RAÄ 103:1, SR 1192, Kvarteret Mercurius 12, Stockholms Stad Och Kommun, Stockholms Län.' 2015:2557. Stockholm, Sweden: Arkeologikonsult.

Castenbrandt, Helene. 2012. *Rödsot i Sverige 1750-1900 en sjukdoms demografiska och medicinska historia*. DissGöteborg: Göteborgs universitet. http://hdl.handle.net/2077/30195.

Cederbourg, Erik. 1739. *En Kort Beskrivning Av Göteborg*. Göteborg: H.G. Flemming.

Chakrabarty, Dipesh. 2007. 'History and the Politics of Recognitio.' In *Manifestos for History*, edited by Keith Jenkins, Sue Morgan, and Alun Munslow. New York; USA: Routledge.

Chomsky, Noam. 1957. *Syntactic Structures*. The Hague: Mouton.

———. 1965. *Aspects of the Theory of Syntax*. Special Technical Report / Massachusetts Institute of Technology. Research Laboratory of Electronics 11. Cambridge, Mass: M.I.T. Press.

Christensen, Arne Lie. 1995. *Den norske byggeskikken : hus og bolig på landsbygda fra middelalder til vår egen tid*. Oslo : Pax. https://gu-se-primo.hosted.exlibrisgroup.com/primo-explore/search?query=any,contains,eilert%20sundt&tab=default_tab&search_scope=default_scope&vid=46GUB_VU1&lang=sv_SE&offset=0.

Christie, Håkon. 1974. *Middelalderen bygger i tre*. 2. opl. Oslo: Univ-forl.

Christie, Håkon, Jan Michael Stornes, Ola Storsletten, and Terje Thun. 2000. 'Dendrokronologiske dateringer av norske bygninger.' *Årbok / Foreningen til Norske Fortidsminnesmerkers Bevaring / Foreningen til Norske Fortidsminnesmerkers Bevaring.*, 271–75.

Christie, Sigrid, and Håkon Christie. 1959. *Norges kirker. Østfold*. Norske minnesmerker. Oslo: Land og kirke.

Christophersen, Axel. 1980. *Håndverket i forandring: studier i horn- og beinhåndverkets utvikling i Lund c:a 1000-1350 = The transformation of handicraft: [studies in the development of antler and bone working in Lund ca. 1000-1350]*. Acta archaeologica Lundensia 13. Bonn : Lund: Habelt ; LiberLäromedel/Gleerup.

———. 1994. *Kaupangen Ved Nidelva : 1000 Års Byhistorie Belyst Gjennom de Arkeologiske Undersøkelsene På Folkebibliotekstomten i Trondheim 1973-1985*. Oslo: Oslo : Riksantikvaren.

Cinthio, Erik, and Kristina Carlsson. 1982. *Lödöse: västsvensk medeltidsstad. 3 [Lödöse som handelsstad], 2 Importkeramik i Gamla Lödöse*. Stockholm: Vitterhets-, historie- och antikvitetsakademin, Almqvist & Wiksell international.

Cinthio, Erik, Hans Andersson, and Jes Wienberg. 2011. *Medeltiden och arkeologin: mer än sex decennier*. Lund studies in historical archaeology, 14. Lund: s universitet, Arkeologiska institutionen och Historiska museet. http://lup.lub.lu.se/record/1890415.

Claesson, Eivind. 1993. 'Kvarteret Harven, Arkeologisk Undersökning Med Anledning Av Nybyggnation i Kvarteret Harven Sofia Församling, Jönköpings Stad, RAÄ 50. Jönköpings Kommun, Jönköpings Län.' Arkeologisk undersökning 1993:29. Jönköping, Sweden: Jönköpings Läns Museum.

Clarke, David. 2013. 'The Medieval Peasant House - towards a New Paradigm?' *Vernacular Architecture* 2013 (44): 1–5.

Clemmensen, Mogens. 1937. *Bulhuse. Studier over Gammel Dansk Træbygnignskunst*. København, Danmark: Levin & Munksgaard.

Cnattingius, Bengt. 1966. *Linköpings domkyrkan*. Linköping.

Conneller, Chantal. 2011. *An Archaeology of Materials Substantial Transformations in Early Prehistoric Europe*. Routledge Studies in Archaeology 1. New York: Routledge. http://ezproxy.ub.gu.se/login?url=http://www.GU.eblib.com/patron/FullRecord.aspx?p=604171

Cook, David, and Susan Neave. 2018. 'Early Fabric in Historic Towns: The Beverly Project.' *Vernacular Architecture* 49: 58–78.

Cornell, Elias. 1959. *Om rummet och arkitekturens väsen*. Göteborg]: Göteborg.

———. 1962. *Byggnadskonst eller bedräglig nytta*. Stockholm: Sveriges radio : [Seelig].

———. 1967. *Kritiskt kring arkitekturen*. Göteborg: Wezäta.

———. 1968. *Arkitekturhistoria*. Stockholm: Almqvist & Wiksell.

———. 1970. *Byggnadstekniken: metoder och idéer genom tiderna*. Stockholm: Byggförl.

———. 1972. *Trafiksamhälle: färdsätt och färdmedel - utveckling, framsteg, kris*. Värt att veta (1971). Stockholm : [Solna]: Sveriges radio ; Seelig.

———. 1977. *Bygge av stad och land*. En PAN-bok. Stockholm: PAN/Norstedt.

———. 1984. *Rivningsraseriets rötter*. Stockholm: Norstedt.

———. 1997. 'Going inside Architecture.' *Architectural History* 1997 (Vol 40): 24–63.

Cornell, Per. 2015. 'Colonial Encounters, Time, and Social Innovation.' *Rethinking Colonialism. Comparative Archaeological Approaches / Edited By Craig N. Cipolla and Katherine H. Hayes., 2015, Pp. 99-.120*. University Press of Florida Gainesville.

———. 2016. 'On the Lack of the New in Archaeology or Microarchaeology and Grand-Theory.' *Current Swedish Archaeology* 23: 37–45.

———. 2017. 'How Prehisotry Becomes Crucial for Bordermaking.' In *Cultural Borders of Europe*, edited by Anders Andrén, Thomas Lindkvist, Ingmar Söhrman, and Katharina Vajta. New York: Berghahn.

Cornell, Per, Lars Ersgård, Andrine Nilsen, and Richard Potter, eds. 2018. *Urban Variation: Utopia, Planning and Practice*. Gothenburg: LULU.COM Department of Historical Studies, University of Gothenburg.

Cornell, Per, and Fredrik Fahlander. 2002. *Social Praktik Och Stumma Monument : Introduktion till Mikroarkeologi*. GOTARC. Serie C, Arkeologiska Skrifter, 0282-9479 ; 46. Göteborg: Inst. för arkeologi, Univ.

Cornell, Per, and Martina Hjertman. 2013. 'Stadsomvandling, Kontinuitet Och Iteration - Rom Och Det Tidigmoderna.' In *Visioner Och Verklighet. Arkeologiska Texter Om Den Tidigmoderna Staden.*, 9–30. GOTARC. Serie C, Arkeologiska Skrifter. Göteborg: Institutionen för Historiska Studier, Göteborgs universitet.

———. 2014. 'Style and Monumental Rebirth: Modernity, Iteration and Connection in Rome from Renaissance to Fascism.' In *Med Hjärta Och Hjärna. En Vänbok till Professor Elisabeth Arwill-Nordbladh*, edited by Henrik Alexanderson, Alexander Andreeff, and Annika Bünz. Vol. 5. GOTARC, A. Göteborg: Institutionen för Historiska Studier, Göteborgs universitet.

———. 2018. 'Built Environment and Social Form: An Introduction to Urban Variation.' In *Urban Variation: Utopia, Planning and Practice.*, edited by Lars Ersgård, Andrine Nilsen, and Richard Potter. Gothenburg: LULU.COM Department of Historical Studies, University of Gothenburg.

Cornell, Per, Anna Nilsson, Lennart Palm, and Christina Rosén. 2018. 'A Scandinavian Town and Its Hinterland: The Case of Nya Lödöse.' *International Journal of Historical Archaeology* 22 (2): 186–202. https://doi.org/10.1007/s10761-017-0426-1.

Coupland, Andy. 1997. *Reclaiming the City : Mixed Use Development*. London: London : E & FN Spon.

Croix, Sarah. 2015. 'Permanency in Early Medieval Emporia: Reassessing Ribe.' *European Journal of Archaeology* 18 (3): 497–523.

Crozier, Alan, Jens Rytter, Hans Andersson, Kristina Carlsson, Maria Vretemark, Magnus Stibéus, Anders Jonasson, and Axel Christophersen. 2001. *Kungahälla: problem och forskning kring stadens äldsta historia*. Edited by Hans Andersson arkeolog, Kristina Carlsson, and Maria Vretemark. Lund studies in medieval archaeology, 28. Uddevalla: Bohusläns museums förl. Stockholm.

Dahlbäck, Göran. 1985. 'Att Bygga Ett Hus - Glimtar Ur Senmedeltidens Vardagsliv Förmedlade Av Helga Lekamens Gilles Räkenskapsbok.' In *Studier i Äldre Historia: Tillägnade Herman Schück 5/4 1985*, edited by Robert Sandberg. Stockholm.

Dahlgren, Stellan, Hans Norman, and Johan Risingh. 1988. *The rise and fall of New Sweden: Governor Johan Risingh's journal 1654-1655 in its historical context*. Acta Bibliothecae R. Universitatis Upsaliensis 27. Uppsala : Stockholm: Univ. ; Almqvist & Wiksell International [distributör].

Dean, Jenny. 2010. *Wild Colour: How to Grow, Prepare and Use Natural Plant Dyes*. London: Mitchell Beazley.

Deetz, James. 1977. *In Small Things Forgotten: The Archaeology of Early American Life*. Doubleday Anchor Original. Garden City, N.Y.: Anchor P.

———. 1996. *In Small Things Forgotten: An Archaeology of Early American Life*. Rev. and Expanded ed. New York: Doubleday.

Duursma, Egbert K., and Michel P. R. M. Boisson. 1993. 'Global Stability of Atmospheric Oxygen.' *Academia Europaea 1993* 1 (3): 217–29. https://doi-org.ezproxy.ub.gu.se/10.1017/S1062798700000594.

Dyer, Christopher. 1997. 'History and Vernacular Architecture.' *Vernacular Architecture* 28 (1): 1–8. https://doi.org/10.1179/030554797786050428.

———. 2013. 'Living in Peasant Houses in Late Medieval England.' *Vernacular Architecure* 44: 19–27. https://doi.org/10.1179/0305547713Z.00000000012.

Eggertsson, Ólafur. 1997. 'Dendrokronologisk Analys Av Boktryckaren 9-10, Eksjö.' Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 1999. 'Dendrokronologisk Analys Av Fornminnesgården, Eksjö.' Lund, Sweden: Department of Quaternary Geology, Lund University.

Eimer, Gerhard. 1961. 'Die Stadtplanung Im Schwedischen Ostseereich 1600-1715 : Mit Beiträgen Zur Geschichte Der Idealstadt.' Stockholm: Diss. Stockholm : Univ.

Ekre, Rune. 1963. *Lödöse-utgrävningar: förutsättningar och projekt, inventering utförd 1962*. Utgivningsort okänd]: Utgivningsort okänd.

———. 1968. *Ny bild av medeltidens Lödöse*. Göteborg.

———. 1994. *Lödösefynd: Ting Från En Medeltidsstad*. Lödöse: Stödfören. för Lödöse museum.

Ekroll, Øystein. 1991. 'Oslo 1537 - 1624 : mellomalderby eller renessanseby?' *Årbok / Foreningen til Norske Fortidsminnesmerkers Bevaring / Foreningen til Norske Fortidsminnesmerkers Bevaring.*, 73–92.

Ekroll, Øystein. 1997. *Med Kleber Og Kalk: Norsk Steinbygging i Mellomalderen*. Oslo: Oslo : Norske Samlaget.

———. 2015. 'The Building History of Nidaros Cathedral 1030-1537.' In *Nidaros Cathedral Restauration Workshop*. Vol. 2015. Trondheim.

Ekroll, Øystein, Jill I. Løhre Krokstad, and Tove Søreide, eds. 1995. *Nidaros Cathedral: And the Archbishop's Palace*. Trondheim: Nidaros Cathedral's restoration workshop's publishers.

Eldjárn, Kristján. 1971. *Stöng i Þjórsárdal: leiðarvísir*. Reykjavík: Þjóðminjasafn Íslands.

Eliassen, Finn-Einar. 1995. *Mandal Bys Historie. Den Förindustrielle Byen ca. 1500-1850*. 1995th ed. Vol. 1. Mandal Kommune.

———. 2014. 'Geir Atle Ersland Og Arne Solli: Stavanger Bys Historie. Bind 1: Bispeby Og Borgarby – Frå Opphavet Til 1815.' *Historisk Tidsskrift*, no. 02: 320–25.

———. 2018. 'New Towns, Lesser Towns in Late Medieval and Early Modern Europe.' In *Urban Variation: Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, and Andrine Nilsen, 259–78. Gothenburg: LULU:COM Department of Historical Studies, University of Gothenburg.

Eliassen, Finn-Einar, Marianne Johansson, and Reidun Aasheim. 2016. *Son under Son*. Trondheim: Museumsforlaget.

Enhörning, Gunilla. 2006. 'Landerierna i Göteborgs Stadsbyggande.' Diss. Göteborg : Chalmers tekniska högskola, 2006.

Epaud, Frédéric. 2013. 'Abbaye Saint-Amand de Rouen : Étude d'un Édifice En Pan de Bois Du XIIIe Siècle.' In *La Construction En Pan de Bois - Au Moyen Age et á La Renaissance*, edited by Clément Alix and Frédéric Epaud, 127–40. Presses universitaires François-Rabelais, Presses Universitaires de Rennes.

Ericson Wolke, Lars. 1998. *Vägen till Westfaliska Freden : Sverige Och Trettioåriga Kriget*. Lund : Historiska media.

Eriksdotter, Gunhild. 2005. 'Bakom Fasaderna : Byggnadsarkeologiska Sätt Att Fånga Tid, Rum Och Bruk.' Stockholm: Diss. Lund : Lunds universitet, 2005.

———. 2013. 'Did the Little Ice Age Affect Indoor Climate and Comfort?: Re-Theorizing Climate History and Architecture from the Early Modern Period.' *Journal for Early Modern Cultural Studies* 13 (2): 24–42. https://doi.org/10.1353/jem.2013.0008.

Erixon, Sigurd. 1924. *Prästgårdar i Dalarna under 1600-Talets Senare Del Och Början Av 1700-Talet*. Stockholm.

———. 1938a. *Folklig möbelkultur i svenska bygder*. [Ny kompletterad uppl.]. Stockholm: Nordrotogravyr.

———. 1938b. *Svenskt Folkliv: Några Kapitel Svensk Folklivsforskning Med Belysning Av Dess Arbetsuppgifter Och Metoder*. Uppsala: Lindblad.

———. 1960. *Svenska Byar Utan Systematisk Reglering: En Jämförande Historisk Undersökning Utarbetad Med Stöd Av Nordiska Museet Och Samfundet För Svensk Folklivsforskning*. Stockholm: Nordiska museet.

———. 1964. *Gammelstan i Norrboda*. Falun]: Dalarnas museum.

———. 1982. *Svensk Byggnadskultur: Studier Och Skildringar Belysande Den Svenska Byggnadskulturens Historia*. Facs.-Uppl. Lund: Ekstrand.

Ersgård, Lars. 2013. 'Tidigmoderna Städer i Sverige - En Arkeologisk Forskningsöversikt.' In *Visioner Och Verklighet- Arkeologiska Texter Om Den Tidigmoderna Staden.*, edited by Lars Ersgård, 76:30–54. GOTARC. Arkeologiska Skrifter,The Early Modern Town No. 1, Serie C. Göteborg: Institutionen för Historiska Studier, Göteborgs universitet.

Ersgård, Lars, Cornell, Per & Hjertman, Martina, Cornell, Per, Nilsen, Andrine, Rosén, Christina, and Tagesson, Göran. 2013. *Visioner Och Verklighet- Arkeologiska Texter Om Den Tidigmoderna Staden.* Edited by Ersgård, Lars. Vol. 76. GOTARC.Arkeologiska Skrifter,The Early Modern Town No. 1, Serie C. Göteborg: Institutionen för Historiska Studier, Göteborgs universitet.

Ersgård, Lars, and Per Lagerås. 2016. *Change, Desertion and Survival : An Archaeology of the Late-Medieval Crisis*.

Evertsson, Elin. 2019. 'Brandlager Från Katarinabranden 1723. Arkeologisk Undersökning i Form Av Schaktövervakning På Glasbruksgatan Och i Kvarteret Drottningen 8, Stadslager Stockholm 103:1/L2015:7789, Stockholms Stad Och Län, Södermanland.' Arkeologisk undersökning 2019:3195. Stockholm, Sweden: Arkeologikonsult.

Fagerland, Tor Einar, and Knut Paasche. 2011. *1537 - Kontinuitet Eller Brudd?* Tapir Akademisk Forlag.

Feldt, Ann-Charlott. 2018. 'Let´s Paint the Town - Mortar as a Historical Source.' In *Urban Variation: Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, and Andrine Nilsen, 431–52. Gothenburg: LULU.COM, Department of Historical Studies, University of Gothenburg.

Fennö, Helena. 2004. 'Västergötland 24, Stockholms Stad, Södermalm, RAÄ 103.' Arkeologisk undersökning 2005:3. Stockholm, Sweden: Stockholms stadsmuseum, Kulturmiljöavdelning.

———. 2006. 'Västergötland 6, Stockholms Stad, Södermalm, RAÄ 103. Arkeologisk Undersökning 2002.' Arkeologisk undersökning 2006:9. Stockholm, Sweden: Stockholms stadsmuseum, Kulturmiljöavdelning.

Ferretti, Federico. 2015. 'The Making of Italian Agricultural Landscapes: Emilio Sereni, between Geography, History and Marxism.' *Journal of Historical Geography* 48: 58–67.

Fischer, Ernst. 1923. *Göteborgs Landerier : Med En Historisk Inledning*. Göteborg.

Fjellström, Phebe. 2003. 'Material Och Teknik.' In *Arbete Och Redskap*, edited by Nils-Arvid Bringéus. Författarna och Carlsson Bokförlag.

Flöög, Stefan, and Mikael Henriksson. 2007. 'Medeltidsstaden II, Stads-GIS Sölvesborg.' Projektrapport 2007:6. Karlskrona: Blekinge museum.

Forsberg, Linnea. 2001. 'Stormaktstidens Stockholm Tar Gestalt : Gaturegleringen i Stockholm 1625-1650.' Diss. Stockholm : Univ., 2001.

Forsblom Ljungdal, Veronica, Astrid Lennblad, and Delia Ni Chíobháin Enqvist. 2019. 'Arkeologi under Emigranten. Lämningar Från 17-1800-Talen i de Gamla Masthamnarna. Arkeologisk Undersökning. Del Av RAÄ Göteborg 342, Masthugget 26:1, Göteborgs Stad Och Kommun.' Arkeologisk undersökning 2019:35. Uddevalla: Bohusläns museum.

Fox, James A. 1983. 'Simplified Input and Negotiation in Russenorsk.' In *Pidginization and Creolization as Language Acquisition*, edited by Roger Andersen, 94–108. Rowley, Massacusetts, US: Newbury House.

Frandsen, L.B., and S. Jensen. 1988b. 'Hvor Lå Ribe i Vikingetiden?' *Kuml*, 21–35.

———. 1988a. 'Kongen Bød.' *Skalk*, no. 4: 3–8.

Frendberg, Torsten. 1967. *Från Oket till Lyftkranen: Så Byggde vi Göteborg*. Göteborg: utg.

Fritz, Martin. 1997. *Nordstan: från gårdagens vision till dagens affärscentrum*. Göteborg: Tre böcker.

Fur, Gunlög. 2006. *Colonialism in the Margins: Cultural Encounters in New Sweden and Lapland*. The Atlantic World 9. Leiden: Brill.

Gammelbo, Poul. 1960. *Dutch Still-Life Painting from the 16th to the 18th Centuries in Danish Collections*. Copenhagen: Munksgaard.

Gardelin, Gunilla. Forthcoming. 'Reuse in Wooden Architecture.' In *For My Descendants and Myself, a Nice and Pleasant Abode' – Agency, Micro-History and Built Environment. Buildings in Society International BISI III, Stockholm 2017*, edited by Göran Tagesson, Per Cornell, Mark Gardiner, Liz Thomas, and Kathrine Weikert. Oxford, UK: Archaeopress.

Garellick, Robert. 1997. *Göteborg Före Grävskoporna : Ett Bildverk*. Stockholm : R. Garellick.

Giddens, Anthony. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley: University of California Press.

———. 1989. *Sociology*. Cambridge: Cambridge : Polity Press.

Giles, Kate. 2014. 'Ways of Living in Medieval England.' In *Dwellings, Identities and Homes: European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen, 13–28. Jutland Archaeological Society Publications 84. Højberg: Jutland Archaeological Society.

Glassie, Henry H. 1975. *Folk Housing in Middle Virginia: A Structural Analysis of Historic Artifacts*. Knoxville: Univ. of Tennessee P.

Godal, Jon Bojer, Steinar Moldal, Trond Oalann, and Embret Sandbakken. 2018. *Beresystem i eldre norske hus*. 3. utg. Bergen: Fagbokforl.

Gokee, Cameron, and Jason De León. 2014. 'Sites of Contention: Archaeological Classification and Political Discourse in the US-Mexico Borderlands.' *Journal of Contemporary Archaeology* 1 (1): 133–163. https://doi.org/10.1558/jca.v1i1.133.

Goldish, Meish. 2017. *Colonial Williamsburg*.

Grälls, Annika. 1989. 'Dalarna, Falun, Kvarteret Slaggen 1.' Slutundersökning DNR 2575/89. Falun: Dalarnas Museum.

Grauers, Sven. 1923. *Nya Lödöse Tänkeböcker (1586-1621)*. Göteborg.

Grenander Nyberg, Getrud. 1974. *Lanthemmens vävstolar: studier av äldre redskap för husbehovsvävning*. Nordiska museets handlingar, 84. DissStockholm: Univ.

Grøn, Ole. 2014. 'Human Spatial Behaviour in Dwellings and Social Psychology.' In *Dwellings, Identities and Homes: European Housing Culture from the Viking Age to the Renaissance*, edited by Mette Svart Kristiansen and Kate Giles, 29–38. Højberg: Jutland Archaeological Society.

Guldberg, Cathrine. 2014. 'The Smith on the Edge of Worlds. New Perspectives on Technology and Ideology in the Late Norwegian Iron Age.' Master´s thesis, Oslo: Department of Archaeology, Conservation and HistoryUniversity of Oslo.

Gullbrandsson, Robin. 2011. 'Kyrkboden i Ingatorp : Sveriges äldsta profana byggnad.' *Fornvännen, Journal of Swedish Arntiquarian Research* 106 (4): 342–44.

Gustav Adolfs akademien, ed. 1957. *Atlas över svensk folkkultur: Atlas of Swedish folk culture*. Uppsala: Lundequistska bokh. (distr.).

Habermas, Jürgen. 1991. *The Structural Transformation of the Public Sphere: An Inquiry Into a Category of Bourgeois Society*. Vol. 1. Cambridge, Mass: MIT.

Hædersdal, Ebbe. 2012. 'On Buildings Archaeology in Denmark (and Sweden).' In *Across the North Sea : Later Historical Archaeology in Britain and Denmark, c. 1500-2000 AD*, 105–18. Odense: University press of Southern Denmark. https://www.worldcat.org/title/across-the-north-sea-later-historical-archaeology-in-britain-and-denmark-c-1500-2000-ad/oclc/939760411&referer=brief_results.

Hägglund, Martin. 2002. *Kronofobi: essäer om tid och ändlighet*. Eslöv: B. Östlings bokförl. Symposion.

Hagvall, Jan. 1970. *Bostäder och boende bearbetning av bostadsräkningarna 1960 och 1965*. Rapport / Byggforskningen, 1970:17. Stockholm. http://hdl.handle.net/2077/44740.

Hallberg, Per-Ola. 1989. 'Östra Centrum, Kålgården Och Liljeholmen i Jönköping.' Kulturhistorisk utredning och förslag till bevarandeprogram. 1989:20. Jönköping, Sweden: Jönköpings kommun, Stadsarkitektkontoret 4/86.

Hallén, Per. 2018. 'The Dual Town 1730-1815: Trade as a Transformation Force of the Early Modern Town - the Case of Göteborg and Majorna.' In *Urban Variation - Utopia, Planning and Practice.*, 189–211. Gothenburg: LULU.COM.

Hallenberg, M. 2015. 'The Premodernity of Modern Times. Rupture, Continuity and the Longue Duree.' *Scandia* 81 (2): 26–40.

Hallenberg, Mats, and Magnus Linnarsson. 2014. *Politiska rum: kontroll, konflikt och rörelse i det förmoderna Sverige 1300-1850*. Lund: Nordic Academic Press.

Hansen, Gitte. 2005. *Bergen c 800- c 1170 : The Emergence of a Town*. Bergen: Bergen : Fagbokforl.

Hanson, Julienne. 1998. *Decoding Homes and Houses*. Cambridge: Cambridge University Press.

Hansson, Anton, and Hans Linderson. 2017. 'Dendrokronologisk Analys Av Prover Från Ciselören 1&2 Samt Komministern 2 i Eksjö - Komplettering II.' Dendrokronologisk analys 2017:27. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2018a. 'Dendrokronologisk Analys Av Prover Från Dahlströmska Huset, Gatenhielmska Reservatet, Göteborg.' 2018:68. Lund: Department of Quaternary Geology, Lund University.

———. 2018b. 'Dendrokronologisk Analys Av Prover Från Gatenhielmska Huset, Göteborg.' Dendrokronologisk analys 2018:14. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2018c. 'Dendrokronologisk Analys Av Prover Från Hälleberget A, Gatenhielmska Reservatet, Göteborg.' 2018:66. Lund: Department of Quaternary Geology, Lund University.

———. 2018d. 'Dendrokronologisk Analys Av Prover Från Jedeureska Huset, Gatenhielmska Reservatet, Göteborg.' 2018:69. Lund: Department of Quaternary Geology, Lund University.

———. 2018e. 'Dendrokronologisk Analys Av Prover Från Kullen, Gatenhielmska Reservatet, Göteborg.' 2018:70. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2018f. 'Dendrokronologisk Analys Av Prover Från Smedjegatan 22, Jönköping.' 2018:71. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2018g. 'Dendrokronologisk Analys Av Prover Från Ulfsparregatan 2, Jönköping.' 2018:72. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2018h. 'Dendrokronologisk Analys Av Prover Från Vinskänken 2 & Kv. Ciselören 5, Eksjö.' 2018:73. Lund, Sweden: Department of Quaternary Geology, Lund University.

Hansson, Hans. 1956. 'Stockholms Stadsmurar.' Stockholm: Diss. Stockholm : Högskola.

Hansson, Hans, Bo Gyllensvärd, and Margareta Cramér. 1960. *Med Tunnelbanan till Medeltiden : Vad Fynden Berättar Om Stockholms Historia*. Stockholm: Bonnier.

Hansson, Martin. 2011. *Medeltida Borgar : Maktens Hus i Norden*. Lund : Historiska media.

Harris, Edward C. 1979. *Principles of Archaeological Stratigraphy*. Studies in Archaeological Science. London: AcadP.

———. 1993. *Practices of Archaeological Stratigraphy*. London: Academic Press.

Harris, Edward C, Marley R Brown, and Gregory J Brown. 1993. *Practices of Archaeological Stratigraphy*. London; San Diego: Academic Press. http://books.google.com/books?id=1TNmAAAAMAAJ.

Harris, Richard. 1989. 'The Grammar of Carpentry.' *Vernacular Architecture* 20 (1): 1–8. https://doi.org/10.1179/vea.1989.20.1.1.

———. 1993. *Discovering Timber-Framed Buildings*. Discovering Series ; No.242. Princes Risborough: Shire.

Hazelius-Berg, Gunnel. 1962. *Gardiner Och Gardinuppsättningar : En Kulturhistorisk Studie*. Stockholm: Stockholm : Nordiska museet.

Hedström, Peter, and L. Udéhn. 2009. 'Analytical Sociology and Theories of the Middle Range.' In *The Oxford Handbook of Analytical Sociology*, edited by Peter Hedström and Peter Bearman. Oxford: University Press.

Hellberg, Erik. 2004. *Historical Variability of Deciduous Trees and Deciduous Forests in Northern Sweden: Effects of Forest Fires, Land-Use and Climate*. Acta Universitatis Agriculturae Sueciae Silvestria 308. Umeå: Swedish University of Agricultural Sciences.

Helle, Knut. 1982. *Bergen Bys Historie. Bd 1, Kongssete Og Kjøpstad : Fra Opphavet Til 1536*. Bergen: Bergen.

———. 2006. *Norsk Byhistorie : Urbanisering Gjennom 1300 År*. Oslo : Pax.

Helmfrid, Björn, Salomon Kraft, Tom Söderberg, Erik Gullberg, Viggo Loos, and Norrköpings kommuns historiekommitté. 1968. *Norrköpings historia. 4, [avsnitt] 7-9, Tiden 1719-1870*. Norrköping: Utg: Stadsarkivet distr.

Henriksson, Gunnar. 1997. *Swedish Bole Houses : From Medieval Times to the Present*. Stockholm: Stockholm : Swedish Council for Building Research Byggforskningsrådet : Svensk byggtjänst distributör.

Herdin, K.W. 1932. *Bygga Och Bo. Äldre Tiden*. Vol. 1. Bidrag till Uppsala Stads Byggnadshistoria I. Uppsala.

Hildebrand, Karl-Gustav. 1946. *Falu Stads Historia 1641-1684*. Falun.

Hiller, Nancy R. 2015. 'Dovetail Lap Joint.' *Woodcraft Magazine, Joinery*, no. 67.

Hjertman, Martina, Sari Nauman, Maria Vretemark, Anders Kjellin, and Gwilym Williams. 2018. 'The Social Impacts of War: Agency and Everyday Life in the Borderlands during the Early Seventeenth Century.' Edited by Per Cornell and Christina Rosén. *International Journal of Historical Archaeology* 22 (2): 226–44.

Hjertman, Martina, and Andrine Nilsen. 2014. 'Re-Evaluating City Margins through Correct Documentation – Questions of Time, Social and Spatial Aspects in Archaeological Storytelling.' In *CHNT 18 2013-Proceedings*. International Conference on Cultural Heritage and New Technologies | Vienna | 2013. Vienna: CHNT. http://www.chnt.at/wp-content/uploads/Hjertman_Nilsen_2014.pdf.

———. 2015. 'Notes in the Margin: Everyday Life in Central and Peripheral Gothenburg.' Glasgow.

Hjørungdal, Tove. 2016. 'Stefanie Klooß, Mit Einbaum Und Paddel Zum Fischfang. Holzartefakte von Endmesolithischen Und Frühneolithischen Küstensiedlungen an Der Südwestlichen Ostseeküste. Untersuchungen Und Materialien Zur Steinzeit in Schleswig-Holstein Und Im Ostseeraum Volume 6. Wachholtz, Kiel, Hamburg 2015. ISBN 978-3-529-01858-9. 431 Pages, 313 Figures and 104 Tables, 57 Plates.' 94 (1–2): 285–87.

Hoffsummer, Patrick, Rachel Touzé, Jean-Daniel Pariset, Francois Calame, and Jérôme Eeckhout. 2011. *Les Charpentes Du XIe Au XIXe Siècle : Grand Ouest de La France : Typologie et Évolution, Analyse de La Documentation de La Médiathèque de l'architecture et Du Patrimoine*. Architectura Medii Aevi 5. Brepols: Turnhout.

Høgseth, Harald Bentz. 2007. *'Håndverkerens redskapskasse': en undersøkelse av kunnskapsutyelse i lys av arkeologisk bygningstmmer fra 1000-tallet*. Trondheim: Norges teknisk-naturvitenskapelige universitet, Det historisk-filosofiske fakultet, Institutt for arkeologi og religionsvitenskap.

Holmberg, August, and Göteborgs universitet. 2006. *August Holmbergs Byggnadslära*. Stockholm: Nordiska museets förlag.

Holmlund, Sofia. 2013. 'Fattig, Husvill Och Sönderslagen - Änka Och Fyrabarnsmor i 1800-Talets Järfälla.' In *Usla, Elända Och Arma : Samhällets Utsatta under 700 År*, edited by Sofia Holmlund and Annika Sandén, 141–64. Stockholm: Natur & Kultur.

Holmquist, Hjalmar, and Hilding Pleijel. 1935. *Svenska Kyrkans Historia. Bd 5, Karolinsk Kyrkofromhet, Pietism Och Herrnhutism, 1680-1772*. Stockholm: Stockholm : Sv. kyrkans diakonistyr.

Hörfors, Olle. 2008. 'Medeltid Bakom Posten i Söderköping. RAÄ 14, Kv Engelbrekt 10.' Arkeologisk förundersökning 2008:28. Söderköpings stad och kommun, Östergötlands län: Östergötlands Länsmuseum.

Hornborg, Alf, and Gerard Delanty. 2017. 'Artifacts Have Consequences, Not Agency.' *European Journal of Social Theory* 20 (1): 95–110.

Hoskins, W. G. 1953. 'The Rebuilding of Rural England, 1570-1640.' *Past & Present*, no. 4 (November): 44–59. https://doi.org/10.2307/649896.

Houbrechts, David. 2013. 'Pan de Bois et Identité Culturelle. Le Cas Du Bassin de La Meuse Moyenne.' In *La Construction En Pan de Bois - Au Moyen Age et á La Renaissance*, edited by Clément Alix and Frédéric Epaud, 17–30. Presses universitaires François-Rabelais, Presses Universitaires de Rennes.

Houltz, Anders. 2016. 'Brandförsäkringsverkets Arkiv. 230 År Av Bebyggelsehistoria Digitaliserat Och Sökbart.' *Bebyggelsehistorisk Tidsskrift*, no. 71.

Hubka, Thomas. 1986. 'Just Folks Designing: Vernacular Designers and the Generation of Form.' In *Common Places: Readings in American Vernacular Architecture*, edited by Dell Upton and John Michael Vlach. University of Georgia Press.

Huhtamies, Mikko, and Gunner Lind. 2006. 'Knektar Och Bönder. Knektersättare Vid Utskrivningarna i Nedre Satakunda under Trettioåriga Kriget.' Edited by Mikko Huhtamies and Gunner Lind. *Scandinavian Journal of History* 31 (3–4): 351–53.

Hülphers, Abraham. 1762. *Dagbok Öfwer En Resa Igenom de, under Stora Kopparbergs Höfdingedöme Lydande Lähn Och Dalarne År 1757*. Wästerås: Wästerås: Tryckt hos Joh. Laur. Horrn.

Hülphers, Abraham Abrahamsson, and Ivar Nilsson. 1928. *Beskrivning över staden Trosa*. Trosa.

Ihr, Anna. 2014. 'Becoming Vitrified.' Doctoral thesis in archaeology, Gothenburg, Sweden: University of Gothenburg.

Ingold, Tim. 2000. 'The Perception of the Environment Essays on Livelihood, Dwelling and Skill.' 2000. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=74072.

Jansson, Kristina. 1999. 'Hammaren Och Skäran. Arkeologisk Undersökning Av Medeltida Bebyggelse Inom Hammaren 2, Jönköpings Stad, Jönköpings Län, Jönköpings Läns Museum.' Arkeologisk rapport 1999:09. Jönköping, Sweden: Jönköpings Läns Museum.

Jeffrey, Sonia. 1984. 'Kv. Gamla Teatern.' Arkeologisk slutundersökning. Göteborg: Göteborgs stadsmuseum.

———. 1985. 'Kv. Polismästaren 3. Slutundersökning 1985.' Arkeologisk slutundersökning 1985:24. Göteborg, Sverige: Göteborgs arkeologiska museum.

Jerer, Conny, and Stefan Westerberg. 2004. 'Knubbhus. Murade Trähus - Resurssnålt Självbyggeri Med Spillvirke.' In .

Johansson, Bengt O. H. 1997. *Den stora stadsomvandlingen: erfarenheter från ett kulturmord*. Stockholm: Arbetsgruppen för arkitektur och formgivning, Regeringskansliet.

Johansson, Mikael. 2000. 'Skeppsbron - Ett Arkeologiskt Tvärsnitt Genom Stormaktstidens Stockholm. Gamla Stan, Skeppsbron, Fornlämning 103, 1994-96.' Arkeologisk rapport 2000:11. Stockholm, Sweden: Stockholms Stadsmuseum.

Johnson, Matthew. 1993. *Housing Culture: Traditional Architecture in an English Landscape*. London: U. C. L. Press.

———. 1997a. 'Rethinking Houses, Rethinking Transitions: Of Vernacular Architecture, Ordinary People and Everyday Culture.' In *The Age of Transition, The Archaeology of English Culture 1400-1600*, edited by David Gaimster and Paul Stamper, 145–56. Oxford: The Society for Medieval Archaeology Monograph 15, Oxbow Monograph 98.

———. 1997b. 'Vernacular Architecture: The Loss of Innocence.' *Vernacular Architecture* 28 (1): 13–19. https://doi.org/10.1179/030554797786050653.

———. 1999. *Archaeological Theory: An Introduction*. Oxford ; Malden, Mass: Blackwell Publishers.

———. 2010. *English Houses, 1300-1800: Vernacular Architecture, Social Life*. Harlow, England; New York: Pearson Longman.

Jönsson, Lars-Erik. 2007. 'Ett Betydelselöst Monument? Om Sigurd Erixons Svensk Byggnadskultur.' *RIG-Kulturhistorisk Tidskrift* Vol 90 (nr 4): 194–205.

Jorgensen, Dolly, Finn Arne Jorgensen, and Sara B Pritchard. 2013. *New Natures: Joining Environmental History with Science and Technology Studies*. Pittsburgh: University of Pittsburgh Press.

Karlsson, Bo E. 1996. 'Bebyggelse i Jönköping 1612-1870.' In *Produktion, Rekreation*. Jönköping, Sweden: Jönköpings läns museum.

Kayser, Kjeld. 1985. *Københavner bindingsværk*. København: Nationalmuseet.

Kelley, Stephen J. 2000. *Wood Structures : A Global Forum on the Treatment, Conservation, and Repair of Cultural Heritage*. ASTM Special Technical Publication 1351. West Conshohocken, PA: ASTM.

Kent, James A, James Albert Kent, Emil Raymond Riegel, and Emil Raymond Riegel. 2010. *Kent and Riegel's Handbook of Industrial Chemistry and Biotechnology*.

King, Preston, and Gabriella Slomp. 2002. 'Thinking Past a Problem. Essays in the History of Ideas.' Edited by Preston King and Gabriella Slomp. *History of Political Thought* xxiii (1): 186–87.

Kinlund, Daniel. 2015. 'Rivningsvågen Sveper In.' In *Berättelser Från Gamlestaden. En Stadsdels Kuturarv i Blickfånget.*, edited by Louise Bengtsson Rylander, Anna Gustavsson, Pernilla Hjelt, Thomas Hjelt, Liza Ketill, and Jonas Ruud. Göteborg, Sverige: Rio Göteborg Natur- och kulturkooperativ och Aldir kulturkooperativ.

Kjellberg, Sven T. 1924. *Gamla Svenska Städer.* Edited by Sigurd Wallin. Vol. 8. Gamla Svenska Städer. Stockholm, Sweden: Generalstabens Litografiska Anstalts Förlag.

Kjellin, Maja. 1959a. *Kvarteret Frimuraren i Göteborg*. Göteborg: Sv. Handelsbanken.

———. 1959b. *Kvarteret Frimuraren i Göteborg : Ett Göteborgskvarters Historia Från Grundläggningen till Nuvarande Tid*. Göteborg : Sv. Handelsbanken.

Klinge, Christian G. 2014. 'Medieval Houses in Aalborg, Denmark - a Study of Excavated Timber Houses.' In *Dwellings, Identities and Homes : European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen, 211–22. Højberg: Højberg : Jutland Archaeological Society.
Kostoff, S. 1991. *The City Shaped: Urban Patterns and Meanings through History.* Boston: Bullfinch.
Kühltreiber, Thomas. 2014. 'The Investigation of Domesticated Space in Archaeology - Architecture and Human Beings.' In *Dwellings, Identities and Homes : European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen, 39–51. Højberg: Højberg : Jutland Archaeological Society.
Kullman, Leif. 2013. 'Treeline (Pinus Sylvestris) Landscape Evolution in the Swedish Scandes – a 40-Year Demographic Effort Viewed in a Broader Temporal Context.' *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography* 68 (3): 155–67.
Lagerstedt, Anna. 2019. 'En Stad Växer Fram - Människor Och Bebyggelse i Kvarteret Fältskären, Enköping 1050-1350. Arkeologisk Undersökning, RAÄ 26:1-2, Centrum 22:3-12, Enköpings Socken Och Kommun, Uppsala Län.' Arkeologisk undersökning 2019:2673. Enköping: Arkeologikonsult.
Laitinen, Riitta, and Dag Lindström. 2008. 'Urban Order and Street Regulation in Seventeenth-Century Sweden.' *Journal of Early Modern History* 12 (3–4): 257–287. https://doi.org/10.1163/157006508X369884.
Lamm, Jan Peder. 1973. 'En folkvandringstida kammargrav vid Torsätra.' http://samla.raa.se/xmlui/handle/raa/2191.
Landström, Lillemor. 1971. *Östra Mariaberget: de boende inför restaureringen*. Stockholms generalplanearbete, 9. Stockholm.
Larsen, Arne J. 1992. *Footwear from the Gullskoen Area of Bryggen*. Bergen, Norway]; Oslo, Norway: University of Bergen ; Scandinavian University Press [distributor.
Larsson, Daniel. 2015. *Kolera: samhället, idéerna och katastrofen 1834*. Stockholm: Carlssons.
Larsson, Ellinor, Stefan Gustafsson, Johan Berg, Agneta Flood, Mikael Johansson, and Anna Hed Jakobsson. 2019. 'En Stad Växer Fram - Människor Och Bebyggelse i Kvarteret Fältskären, Enköping 1050-1350.' Arkeologisk undersökning 2019:2673. Uppsala: Arkeologikonsult.
Larsson, Erik. 1999. *Skogsallmänningar och kronoparker i Skaraborg under slutet av 1600-talet: vägledning till källmaterialet om skogskommissionerna*. Mariestad: Skogsgruppen i Mariestad.
Larsson, Stefan. 2014. 'Valnötsträdet 8, Kalmar Gamla Stad. Arkeologi Och Gestaltning. Småland, Kalmar Län, Kalmar Kommun, Kalmat Socken, Valnötsträdet 8, Fornlämning Kalmar 94.' Arkeologisk förundersökning 2014:51. Kalmar: Riksantikvarieämbetet, UV Syd.
———. 2018. 'Urbanism, Early Modernity and the Case of Kalmar, Sweden.' In *Urban Variation - Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, Andrine Nilsen, and Richard Potter. Gothenburg, Sweden: LULU.COM.
Larsson, Stefan, and Riksantikvarieämbetet. 1995. 'Nedbrytningen Av Urbana Kulturlager.' Arkeologisk rapport 1104-6244;10. Arkeologiska Rapporter Från Lund. Lund: Kulturen.
Larsson, Stefan, and Magnus Stibéus. 2017. 'Valnötsträdet 8 Kalmar Gamla Stad. Kalmar Län, Småland, Kalmar Stad Och Kommun, Valnötsträdet 8, Fornlämning Kalmar 94.' Arkeologisk undersökning 2017:2. Malmö.
Lassen, Ulrik Hjort. 2014. *The Invisible Tools of a Timber Framer - A Survey of Principles, Situations and Procedures for Marking*. https://gupea.ub.gu.se/handle/2077/35598.
Le Corbusier. 1962. *Vår Bostad*. Stockholm: Stockholm : Prisma.
Le Roy Ladurie, Emmanuel. 1978. *Montaillou: The Promised Land of Error*. GBraziller,. http://hdl.handle.net/2027/mdp.39015048771425.
Lefebvre, Henri. 1991a. *The Production of Space*. Oxford: Basil Blackwell.
———. 1991b. *The Production of Space*. Oxford: Basil Blackwell.
Leijonhufvud, Hans S:son. 1965. *Varuhusens segertåg*. Stockholm: Rabén & Sjögren.
Leone, Mark P. 2010. *Critical Historical Archaeology*. Walnut Creek, Calif.: Walnut Creek, Calif. : Left Coast Press.
Leroi-Gourhan, Andre. 1993a. *Gesture and Speech*. Cambridge, Mass: October Books, MIT Press.
———. 1993b. *Gesture and Speech*. October Books. Cambridge, Mass: MIT Press.
Levi, Giovanni. 2019. 'Frail Frontiers? *.' *Past & Present* 242 (Supplement14): 37–49. https://doi.org/10.1093/pastj/gtz037.
Lilja, Sven. 1995. 'Small Towns in Sweden and Finland.' In *Small Towns in Early Modern Europe*, edited by Sven Lilja and Peter Clark, 50–76. Cambridge: Cambridge : Cambridge University Press.
———. 2000. *Tjuvehål Och Stolta Städer : Urbaniseringens Kronologi Och Geografi i Sverige (Med Finland) ca 1570-Tal till 1810-Tal*. Stockholm: Stockholm : Stads- och kommunhistoriska institutet.
Linaa, Jette. 2007. *Keramik, kultur og kontakter: køkken- og bordtøjets brug og betydning i Jylland 1350 - 1650*. Højbjerg: Jysk Arkæologisk Selskab.
———. 2015. 'Consumption: Meals, Miracles, and Material Culture in the Later Middle Ages.' *The Saturated Sensorium*, 226–45.

Linderson, Hans. 2002a. 'Dendrokronologisk Analys Av Prover Från Kv. Vaxblekaren 13.' Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2002b. 'Dendrokronologisk Analys Av Tre Byggnader i Eksjö.' 2002:21. Lund, Sweden: Department of Quaternary Geology, Lund University.

———. 2016. 'Dendrokronologisk Analys Av Fastigheten, Vinskänken 2 i Eksjö.' 2016:7. Lund, Sweden: Department of Quaternary Geology, Lund University.

Lindgren, Astrid. 1997. *Emil och soppskålen*. Stockholm: Rabén & Sjögren.

———. 2000. *Madicken*. 8. uppl. Stockholm: Rabén & Sjögren.

———. 2001. *Alla vi barn i Bullerbyn*. 22. uppl. Rabén & Sjögrens guldböcker. Stockholm: Raben & Sjögren.

Lindgren, Joakim. 2010. *Spaces, Mobilities and Youth Biographies in the New Sweden: Studies on Education Governance and Social Inclusion and Exclusion*. Akademiska Avhandlingar Vid Pedagogiska Institutionen, Umeå Universitet 94. Umeå: Department of Education, Umeå universitet.

Lindström, Dag. 2020. 'Families and Households, Tenants and Lodgers: Cohabitation in an Early Modern Swedish Town, Linköping 1750–1800.' *Journal of Family History* Vol.45 (2): 228–49.

Linn, Björn, Gunilla Enhörning, Hans Fog, and Riksbankens jubileumsfond. 2001. *Staden, Husen Och Tiden : Rapport Från Seminarieserien Staden - Allas Rum, Samt Reflektioner Om Stadens Egenart*. Stockholm: Stockholm : Riksbankens jubileumsfond.

Linné, Carl von. 1957. *A Catalogue of the Works of Linnaeus Issued in Commemoration of the 250th Anniversary of the Birthday of Carolus Linnaeus 1707-1778*. Stockholm: Stockholm.

———. 1964. *Göteborg*. Göteborg: Konstindustriskolan.

———. 1984. *Carl von Linnés Dalaresa*. [Ny utg., ny Uppl.] / efterord av Hans Krook. Stockholm: Stockholm : Natur och kultur.

Linscott, Kina. 2017. ''Interpretations of Old Wood - Figuring Mid-Twelfth Century Church Architecture'.' Doctoral thesis in Conservation, Gothenburg: University of Gothenburg.

Linscott, Kina, and Andrine Nilsen. 2018. 'Building with Wood in the Early Modern Town.' In *Urban Variation - Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, and Andrine Nilsen, 799–850. Göteborg: LULU.COM Department of Historical Studies, University of Gothenburg.

Lloyd, Avis. 2013. 'The Wiltshire Dendrochronology Project 2009-2011: Summary of Results.' *Vernacular Architecture* 2013 (44): 62–73.

Lönnroth, Gudrun, Staffan Westergren, Göteborgs stad (Sverige :. Stadsbyggnadskontoret, and Göteborgs stadsmuseum. 2003. *Hus för hus i Göteborgs stadskärna*. Göteborg: Stadsbyggnadskontoret : Göteborgs stadsmuseum.

Lorentzi, Maria, and Maria Lundgren. 2004. 'Lappskon Större 8: Bastugatan 6, Pryssgränd 8, 10A Och B, Söder Mälarstrand 15-19: Byggnadshistorisk Inventering 2004:2. Stockholm.' Byggnadshistorisk inventering. 2004:2. Stockholm, Sweden: Stockholms Stadsmuseum.

Lorentzson, Mona. 1983. 'Kv. Polismästaren. Göteborg 216, Bebyggelselämningar Och Kulturlager, Nyare Tid.' Fynd, Rapporter 1983. Göteborg.

Lorenz, Chris. 2014. 'Blurred Lines. History, Memory and the Experience of Time.' *International Journal for History, Culture and Modernity* 2 (1): 43–62. https://doi.org/10.18352/hcm.462.

Lübcke, Poul, Arne Grøn, Jan Bengtsson, Peter Pagin, and Dag Prawitz, eds. 1988. *Filosofilexikonet: [en uppslagsbok]: [filosofer och filosofiska begrepp från A till Ö]*. Translated by Jan Hartman. När-Var-Hur-serien. Stockholm: Forum.

Lundberg, Erik. 1928. *Topografiska Stadsundersökningar*. Stockholm: Kungl. Vitterhets-, historie- och antikvitetsakademien.

———. 1935. *Herremannens Bostad : Studier Över Nordisk Och Allmänt Västerländsk Bostadsplanläggning = L'habitation Seigneuriale : Études Sur La Disposition de l'habitation Dans Le Nord Scandinave et En Occident*. L'habitation Seigneuriale. Stockholm: Stockholm : Kungl. Vitterhets-, historie- och antikvitetsakad.

———. 1942. *Svensk bostad: dess utveckling och traditionsbildning*. Handbok / Samfundet för hembygdsvård, 3. Stockholm: Nordisk Rotogravyr.

———. 1945. *Arkitekturens Formspråk : Studier Över Arkitekturens Konstnärliga Värden i Deras Historiska Utveckling*. Stockholm: Stockholm : Nordisk rotogravyr.

———. 1971. *Trä Gav Form : Studier Över Byggnadskonst Vars Former Framgått Ur Trämaterial Och Träkonstruktion*. Stockholm: Norstedt.

Lundkvist, Sven. 1999. *Sveriges Krigs- Och Fredsmål under Trettioåriga Kriget.*

Lundmark, Jan-Erik. 1986. *Skogsmarkens Ekologi : Ståndortsanpassat Skogsbruk. D. 1 Grunder*. Jönköping : Skogsstyr.

Lundqvist, Pia. 2016. 'Taste for Hot Drinks – the Consumption of Coffee and Tea in Two Swedish Nineteenth-Century Novels.' *History of Retailing and Consumption* 2 (3): 171–92.

Magalotti, Lorenzo. 1968. *Relazioni di viaggio in Inghilterra, Francia e Svezia*. Scrittori d'Italia, 241. Bari.

———. 1986. *Sverige under år 1674*. Faks.-utg. Stockholm: Rediviva.

Malmstedt, Göran. 1999. 'Gud Bevare Oss För Papister Och Turkar. Omvärldsbilder Och Kollektiv Identitet i Svenska Böndagsplakat under 1600-Talet,' 89–100.

———. 2002. *Bondetro Och Kyrkoro. Religiös Mentalitet i Stormaktstidens Sverige*. Nordic Acadeic Press Lund.

Masalu, Desiderius C. P. 2002. 'Coastal Erosion and Its Social and Environmental Aspects in

Tanzania: A Case Study in Illegal Sand Mining.' *Coastal Management* 30 (4): 347–359. https://doi.org/10.1080/089207502900255.

Meador, Michael R., and April O. Layher. 1998. 'Instream Sand and Gravel Mining: Environmental Issues and Regulatory Process in the United States.' *Fisheries* 23 (11): 6–13. https://doi.org/10.1577/1548-8446(1998)023<0006:ISAGM>2.0.CO;2.

Meigs, Arthur I, Arthur E Newbold, and Meigs & Howe Mellor. 1925. *An American Country House: The Property of Arthur E. Newbold Jr. Esq., Laverock Pa.* New York: Architectural Book Pub. Co.

Melin, Karl-Magnus. 2011. 'Hantverkskunskap Rörande Skånsk Byggnation Med Lera På Landet.' 2011:1. Kristianstad: Knadriks kulturbygg AB, Albo Härads Hembygdsförening.

Melin, Karl-Magnus, Ingmar Melin, and Therese Melin. 2014. 'Vårdplan Bondrumsgården - Abo Härad Hembygdsförening.' Byggnadsvårdsrapport 2014:3. Tomelilla kommun: Knadriks Kulturbygg AB.

Menghin, Oswald. 1940. *Weltgeschichte der Steinzeit.* Wien: A. Schroll.

Merton, Robert C., Monica Billio, Mila Getmansky, Dale Gray, Andrew W. Lo, and Loriana Pelizzon. 2013. 'On a New Approach for Analyzing and Managing Macrofinancial Risks.' *Financial Analysts Journal* 69 (2): 22–33. https://doi.org/10.2469/faj.v69.n2.5.

Merton, Robert K. 1968. *Social Theory and Social Structure.* 1968 enl. ed. New York: Free press.

Modén, Eva. 2003. 'Vattnets Väg Mellan 1932 Och 1480 På Linköpings Slott. RAÄ 148, Linköpings Stad Och Kommun, Östergötlands Län.' Byggnadsarkeologisk dokumentation 106:2003. Linköping: Östergötlands museum.

Modh, Birgit. 1996. *Eriksbo: lokalt engagemang och bebyggelseförändringar i ett av miljonprogrammets bostadsområden i Göteborg*. BoACTH 1996:1. Göteborg: Chalmers tekniska högskola.

Möhlenbrock, Sigurd. 1965. *Göteborg - Stad i Förändring : Data Och Synpunkter i Kommunalpolitiken*. Göteborg: Göteborg : Utg.

Moir, Andy, Rod Wild, and Richard Haddlesey. 2013. 'An Internet-Accessible Building Archaeology Research Database (BARD).' *Vernacular Architecture* 2013 (43 (1)): 1–6.

Montelius, Oscar. 1885. *Om Tidsbestämning Inom Bronsåldern Med Särskildt Afseende På Skandinavien.* Stockholm: Stockholm : Kongl. Vitterhets-, historie- och antiqvitetsakademien.

———. 1919. *Vår forntid*. [3., Omarb. uppl.]. Stockholm: Norstedt.

Morrison, Hugh. 1987. *Early American Architecture: From the First Colonial Settlements to the National Period*. New York: Dover.

Moss, Roger W. 1991. *The American Country House*. New York: H. Holt.

Mrozowski, Stephen. 1999. 'Colonization and the Commodification of Nature.' *International Journal of Historical Archaeology* 3 (3): 153–65.

Myrdal, Gunnar. 1932. *Das politische Element in der nationalökonomischen Doktrinbildung.* Sozialwissenschaftliche Studien. Berlin: Junker und Dünhaupt.

Näringslivets byggnadsdelegation. 1967. *Bra bostäder genom samordning och konkurrens: en skrift från Näringslivets byggnadsdelegation.* Stockholm: Näringslivets byggnadsdelegation.

Nauman, Sari. 2017. 'Ordens Kraft : Politiska Eder i Sverige 1520-1718.' Diss. Göteborg : Göteborgs universitet, 2017.

Nicolaysen, Nicolay. 1881. *Kunst Og Handverk Fra Norges Fortid*. 2. Pl. 80. Christiania Foreningen til norske fortidsminnesmerkers bevaring.

Niklasson, Nils. 1962. 'Gamla Majpojkars Förbund.' In *Göteborg Förr Och Nu.*, 113–15. Göteborgs Hembygdsförbunds Skriftserie 2. Göteborg, Sverige.

Nilsen, Andrine. 2011. 'En Komparativ Undersökning Av Medeltida Träbebyggelse i Stadslager.' Fil. Master, Göteborg, Sverige: Göteborgs Universitet.

———. 2013. 'En Jämförande Studie Av Stadsrummet i Uppsala, Jönköping Och Karlstad under Medeltid - Tidigmodern Tid Med Utgångspunkt i Arkeologiska Undersökningar Från Åren 1998-2010.' In , 55–91.

———. 2014. 'Metodutveckling För Analys Av Träbebyggelse Över Och under Mark: En Fallstudie Med Exempel Från Falun, Säter Och Eksjö.' In *Med Hjärta Och Hjärna. En Vänbok till Professor Elisabeth Arwill-Nordbladh.*, edited by Henrik Alexandersson, Alexander Andreeff, and Annika Bünz, 563–76. Göteborg, Sverige: Institutionen för Historiska Studier, Göteborgs universitet.

Nilsson, S., and L. Kallerskog. 2008. 'Kvarteret Gripen. Arkeologisk Undersökning Med Anledning Av Nybyggnation i Kvarteret Gripen Nr 1, 2, 4 Och 6, Sofia Församling, Jönköpings Stad, Jönköpings Län, Jönköpings Läns Museum.' Arkeologisk rapport 2008:55. Jönköping, Sweden: Jönköpings Läns Museum.

Nilsson Schönborg, Göte. 1992. 'Medeltida Byggnadstegel i Västra Sverige, Om 1200- Och 1300-Talens Tegelarkitektur i Svensk-Norsk Gränsbygd.' In *Borgar Från Forntid Och Medeltid i Västsverige*. Göteborg: Göteborg : Göteborgs arkeologiska museum.

———. 2001. *Kinesiskt Importporslin i Göteborg Sett Ur Ett Arkeologiskt Perspektiv*. Göteborg: Göteborg : Göteborg Univ., Dept of Archaeology.

Nilsson, Sten Åke. 1982. *Carl August Ehrensvärds Resa i Skåne*. Lund: Signum.

Norborg, Lars Arne, and Roland Hentzel. 1955. *Kungsord. Från Gustav Vasa till Gustav VI Adolf. Redaktion, Lars-Arne Norborg och Roland Hentzel.* Stockholm.

Nordman, Ann-Marie. 2010. 'Kv. Graniten. Arkeologisk Förundersökning Inom Fornlämning 50. Jönköpings Stad, Jönköpings Län, Jönköpings Läns Museum.' Arkeologisk undersökning 2010:67. Jönköping, Sweden: Jönköpings Läns Museum.

———. 2014. 'Grundläggningen - Att Bygga En Ny Stad.' In *Stormaktsstaden Jönköping : 1614 Och Framåt*, edited by Mikael Nordström, Claes Pettersson, and Ann-Marie Nordman, 53–70. Jönköping: Jönköping : Jönköpings läns museum.

Nordman, Ann-Marie, Mikael Nordström, and Claes Pettersson, eds. 2014a. *Stormaktsstaden Jönköping : 1614 Och Framåt*. Jönköping: Jönköping : Jönköpings läns museum.

———. 2014b. 'Svanesång Och Återkomst - Stadsdelen Öster under 1900-Talet.' In *Stormaktsstaden Jönköping*, 447–56. Jönköping, Sweden: Jönköpings läns museum.

Nordman, Ann-Marie, and Claes Pettersson. 2009. 'Den Centrala Periferin. Arkeologisk Undersökning i Kvarteret Diplomaten, Faktori- Och Hantverksgårdar i Jönköping 1620-1790.' Slutundersökning 2009:40. Jönköping: Jönköpings läns museum.

Nordström, Annika, and Göran Tagesson. 2009. 'Stadslager Inom Kv Magistern På Kvarnholmen Kv Magistern 3, 5, 6 Och 15 RAÄ 93 Kalmar Stad Och Kommun, Kalmar Län.' Arkeologisk förundersökning 2009:30. Linköping: Riksantikvarieämbetet. Avdelningen för arkeologiska undersökningar.

Nyborg, Mats. 1986. 'Vatten - Lera - Torv. En Geologisk Resa Genom Tiden.' In *Livet i Det Gamla Göteborg*, edited by Stina Andersson, Eva Jönsson-Kihlberg, and Björn Broo, 118–21. Göteborg: Göteborg : Göteborgs arkeologiska museum.

Ólafsson, Guðmundur, Hörður Ágústsson, and Sigrún Kristjánsdóttir. 2006. *The Reconstructed Medieval Farmhouse in Þjórsárdalur and the Development of the Icelandic Turf House*. Reykjavik: National Museum of Iceland.

Olofsson, Veronica. 2014. 'Antikvarisk Förundersökning Inför Om- Och Tillbyggnad. Kv. Bryggaren 2 Och 24, Kalmar Stad Och Kommun, Kalmar Län, Småland.' Byggnadsantikvarisk rapport. Kalmar läns museum.

Olsson, Martin. 1968. 'Erik Dahlbergs Bilder Av Kalmar Gamla Stad Och Deras Värde Som Historisk Källa.' *Fornvännen, Journal of Swedish Arntiquarian Research* 31: 31–48.

Olstad, Tone Marie, Jan Michael Stornes, and Thomas Seip Bartholin. 2015. 'When Dendrochronology Corroborates Art History.' *European Journal of Science and Theology* 11 (2): 159–69.

Orser, Charles E. 2011. 'Beneath the Surface of Tenement Life: The Dialectics of Race and Poverty during America´s First Gilded Age.' *Historical Archaeology* 2011 (45): 11–165.

Outola, Iisa, Reijo Pehrman, and Timo Jaakkola. 2003. 'Effect of Industrial Pollution on the Distribution of 137Cs in Soil and the Soil-to-Plant Transfer in a Pine Forest in SW Finland.' *Science of The Total Environment* 303 (3): 221–30. https://doi.org/10.1016/S0048-9697(02)00402-3.

Palm, Lennart Andersson. 1989. *Oxar, Vadmal Och Brännvin: Studier Kring Näringar Och Bebyggelse i Bergums Socken ca 1500-1860*. Göteborg: Göteborgs univ., Historiska inst.

———. 1993. *Människor och skördar: studier kring agrarhistoriska metodproblem 1540-1770*. Skriftserie / Institutet för lokalhistorisk forskning 4. Göteborg: Historiska institutionen, Univ. [distributör].

———. 1998. *Ett Föränderligt Agrarsamhälle: Västsverige i Jämförande Belysning*. Västsvensk Kultur Och Samhällsutveckling Genom Tiderna 8. Göteborg: Humanistiska fakulteten, Univ.

———. 2001. *Livet, Kärleken Och Döden: Fyra Uppsatser Om Svensk Befolkningsutveckling 1300-1850*. Göteborg : Visby: L. Palm ; Books-on-demand [distributör].

———. 2012. *Sverige 1630: Åkerbruk, Boskapsskötsel, Befolkning*. Göteborg: Institutionen för historiska studier, Göteborgs universitet.

Palm, Lennart, and Jenni Toivanen. 2003. 'Livet, Kärleken Och Döden: Fyra Uppsatser Om Svensk Befolkningsutveckling 1300-1850.' Edited by Lennart Palm and Jenni Toivanen. *Scandinavian Economic History Review* 51 (1): 94–95.

Palmblad, Samuel. 2003. 'Idun 5. Växjö Domkyrko Församling. Växjö Kommun. Besiktningsprotokoll Byggnadsvård. Smålands Museum. Diarienummer 1502005-00103.' Besiktningsprotokoll byggnadsvård. Växjö: Kulturparken Småland, Smålands museum.

Palmsköld, Anneli, Johanna Rosenqvist, Gunnar Almevik, and Göteborgs universitet, eds. 2016. *Crafting Cultural Heritage*. Göteborgs Universitet, Institutionen För Kulturvård. Gothenburg: University of Gothenburg, department of Conservation.

Paulsson, Gregor. 1938. *Träbyggnadskonst*. Stockholm: Lindfors.

———. 1943. *Konsthistoriens Föremål*. Uppsala: Uppsala.

———. 1950. *Svensk stad*. Stockholm: Bonnier.

———. 1959. *The Study of Cities : Notes about the Hermeneutics of Urban Space*. København: København : Munksgaard.

Persson, Boel, and Anna Jakobsson. 2011. 'Vårdplan För Göholms Park Och Trädgård.' Vårdplan 2011:14. Landskap, Trädgård, Jordbruk. Sveriges Lantbruksuniversitet, Fakulteten för landskapsplanering, trädgårds- och jordbruksvetenskap.

Petersen, Jan. 1951. *Vikingetidens Redskaper*. Oslo: Dybwad. http://urn.nb.no/URN:NBN:no-nb_digibok_2008112403007.

Petré, T. 1958. *Uppsala under Merkantilismen Och Statskontrollens Tidsskede 1619-1789*. Vol. 3. Uppsala Stads Historia. Uppsala.

Pettersson, Björn. 2014a. 'Kvarteret Marknaden. Nyare Tid. Fornlämning Trosa-Vagnhärad 281:1, Fastigheten Marknaden 6,.' Arkeologisk förundersökning 2014:04. Trosa-Vagnärad socken, Trosa stad & kommun, Södermakands län.: Sörmlands museum.
———. 2014b. *Trähus Och Stadsgård. Ett Aros Blir En Köping - Arkeologi i Åkroken Och Nyköping. Sörmlands Museum.* Nyköping: Sörmlands Museum.
Pettersson, Claes. 2014. 'De Osynligas Rum.' In *Stormaktsstaden Jönköping*, 433–46. Jönköping: Jönköpings läns museum.
———. 2018. 'With Our Meager Resources... Jönköping - an Unfinished Fortified Town of the Seventeenth Century.' In *Urban Variation - Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, and Andrine Nilsen, 478–504. Göteborg: LULU.COM Department of Historical Studies, University of Gothenburg.
Pettersson, Claes, Ann-Marie Nordman, and Jens Heimdahl. 2010. ''På Denna Blöta Grund' - 2,5 Meter Stadsarkeologi i Ett Kärr. = 'On This Wet Ground' - 2,5 Meters of Urban Archaeology in Marshland.' *SKAS* 2: 11–23.
Pilø, Lars, Espen Finstad, Christopher Bronk Ramsey, Julian Robert Post Martinsen, Atle Nesje, Brit Solli, Vivian Wangen, Martin Callanan, and James H. Barrett. 2018. 'The Chronology of Reindeer Hunting on Norway's Highest Ice Patches.' *Royal Society Open Science* 5 (1). https://doi.org/10.1098/rsos.171738.
Pleijel, Hilding. 1925. *Herrnhutismen i Sydsverige.* Stockholm: Stockholm : Svenska kyrkans diakonistyr.
Price, Neil. 2010. ''James His Towne' and Village Nations: Cognitive Urbanism in Early Colonial America.' In *The Urban Mind: Cultural and Environmental Dynamics*, edited by Paul J. J. Sinclair, Christian Isendahl, Gullög Nordquist, and Frands Herschend, 471–98. Uppsala: African and Comparative Archaeology, Department of Archaeology and Ancient History, Uppsala University.
Qviström, Linda. 2009. 'Kvarteret Ladu - Sentida Lämningar Och Fyllnadsmassor. Fjärdingen 1:4, RAÄ 88, Uppsala Stad, Uppland.' Arkeologisk förundersökning 2009:22. Uppsala: Upplandsmuseet.
———. 2019. 'Rum Utan Utsikt. Fönster Och Ljus i Medeltida Byggnader.' Doctoral thesis in archaeology, Stockholm, Sweden: University of Stockholm.
Råberg, Marianne. 1987. 'Visioner Och Verklighet.' Diss. Stockholm : Univ.
Rahme, Lotta, Jack C Thompson, and Dag Hartman. 2001. *Leather: Preparation and Tanning by Traditional Methods*. Portland OR: Caber Press.
Raihle, Jan. 2009. *Sveriges Äldsta Bevarade Boningshus Av Timmer : [Eldhuset På Zorns Gammelgård Daterat till År 1237]*. Falun: Dalarnas fornminnes och hembygdsförbund i samarbete med Dalarnas museum.
Rapoport, Amos. 1969. *House Form and Culture*. Foundations of Cultural Geography Series. Englewood Cliffs: Prentice-Hall.
———. 1982. *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Beverly Hills: Sage.
———. 1988a. 'Levels of Meaning in the Built Environment.' In *Cross-Cultural Perspectives in Non Verbal Communication*, edited by F. Poyatos, 1988:317–36. Toronto: C.J. Hogrefe.
———. 1988b. 'Spontaneous Settlements as Vernacular Design.' In *Spontaneous Shelter: International Perspsectives and Prospects*, edited by C.V. Patton. Philadelphia: Temple University Press.
———. 1990. 'Systems of Activities and Systems of Settings.' In *Domestic Architecture and the Use of Space: An Interdisciplinary Cross-Cultural Study.*, edited by S. Kent, 9–20. Cambridge, UK: New directions in archaeology. Cambridge University Press.
Rentzhog, Sten. 1967. 'Stad i trä. Panelarkitekturen. Ett skede i den svenska småstadens byggnadshistoria.' [Lund]: [Berlingska Boktryckeriet].
———. 1970. 'Den svenska trästaden: en inventering.' *Sju uppsatser i svensk arkitektur historia.*, 147–74.
———. 1971. *Falu rödfärg*. Solna: Seelig].
———. 1984. *Jämtland*. [Stockholm]: AWE/Geber.
———. 1998. *Museerna inför 2000-talet: rapport från seminarium arrangerat med anledning av Sten Rentzhogs 60-års dag den 10 april 1997.* Stockholm: Nordiska museet.
———. 2007. *Friluftsmuseerna: en skandinavisk idé erövrar världen*. Stockholm; Östersund: Carlsson ; Jamtli förlag.
Riley, Phil M., and Frank Cousins. 1920. *The Colonial Architecture of Philadelphia*. Boston: Project Gutenberg. http://www.gutenberg.org/ebooks/29334.
Róbertsdóttir, Hrefna. 2018. 'Permanent or Seasonal Settlements? Communities and Settlement Patterns in Iceland in Early Modern Times.' In *Urban Variation: Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, Andrine Nilsen, and Richard Potter, 329–88. Gothenburg: LULU.COM Department of Historical Studies, University of Gothenburg.
Rodhe, Staffan. 2002. *Matematikens utveckling i Sverige fram till 1731*. Uppsala dissertations in mathematics, 24. DissUppsala: Univ.
Roede, Lars. 2001. 'Byen bytter byggeskikk: Christiania 1624-1814.' Oslo: Arkitekthøgskolen i Oslo.
Roesdahl, Else, ed. 2003. *Bolig Og Familie i Danmarks Middelalder*. Jysk Arkæologisk Selskabs Skrifter 44. Højbjerg: Jysk Arkæologisk Selskab.
Romedahl, Helén, and Göran Tagesson. 2010. '1600- Och 1700-Talslämningar På Kvarnholmen i Centrala Kalmar. Sju Undersökta Tomter i Kv Magistern. RAÄ 93, Kv Magistern 6 Och 15. Kalmar, Kalmar Kommun.'

Särskild arkeologisk undersökning 2010:26. Linköping: Riksatikvarieämbetet, Arkeologisk uppdragsverksamhet (UV).

Roos, Johanna, and Victoria Ask. 2014. 'Gatenhielmska Kulturreservatet. Vård- Och Underhållsplan Del 1 Värdebeskrivning Och Historik.' Antiquum AB.

Ros, Jonas. 2009. *Stad Och Gård : Sigtuna under Sen Vikingatid Och Tidig Medeltid = Town and House : Sigtuna during Late Viking Age and Early Medieval Period*. Uppsala: Uppsala : Institutionen för arkeologi och antik historia, Uppsala universitet.

Rosander, Göran. 1986. *Knuttimring i Norden : Bidrag till Dess Äldre Historia*. Falun: Falun : Dalarnas museum.

Rosberg, Karin. 2009a. *Vikingatidens byggande i Mälardalen: ramverk och knuttimring*. Aun 39. Uppsala: Department of Archaeology and Ancient History, Uppsala University.

———. 2009b. *Vikingatidens Byggande i Mälardalen: Ramverk Och Knuttimring*.

Rosén, Christina. 1999. *Föremål Och Social Status i Halmstad ca 1550-1750*. GOTARC 26. Göteborg: Institutionen för arkeologi, Göteborgs univ.

Rosén, Christina, and Daniel Larsson. 2017. 'Burghers, Soldiers, and Widows: Social Building Blocks at Nya Lödöse.' *International Journal of Historical Archaeology*, April. https://doi.org/10.1007/s10761-017-0392-7.

Rosén, Christina, and Mattias Öbrink. 2017. 'Stadsgård 1–4. Gata a Och b Samt Vretar. Arkeologiska Undersökningar i Gamlestaden. Västergötland, Göteborgs Stad Och Kommun, Göteborg 218.' 2017:1. Göteborg. http://samla.raa.se/xmlui/handle/raa/11299.

Rosling, Hans. 2018. *Factfulness: tio knep som hjälper dig att förstå världen*. Första upplagan. Stockholm: Natur & Kultur.

Roth, Stig. 1935. 'Rådhustomten. Arkeologisk Rapport.' Arkeologisk rapport 1935:1. Göteborgs historiska museum.

Rydergård, Evy, and Hugo Larsson. 2002. 'Garvaregården i Trosa. Vård Och Underhållsplan 2002-2004.' Vård och underhållsplan, Kulturmiljövården. Nyköping: Sörmlands museum.

Rydqvist, Anette, Björn Olsson, Anna Andersson, and Åsa Karlsson. 2006. *Var finns rum för våra barn? en rapport om trångboddheten i Sverige*. Edited by Martin Hedenmo. 1. uppl. Karlskrona: Boverket. http://www.boverket.se/globalassets/publikationer/dokument/2006/var_finns_rum-for_vara_-barn.pdf.

Sahlström, Nils. 1961. *Stadsplaner Och Stadsbild i Falun 1628-1850*. Falu Stads Historia. Falun: Falun : Drätselkammaren.

Sandberg, Robert. 1991. 'I Slottets Skugga : Stockholm Och Kronan 1599-1620.' Diss. Stockholm : Univ.

Sartre, Jean-Paul. 1960. *Critique de La Raison Dialectique: (Précédé de Questions de Méthode.)*. Bibliothèque Des Idées. Paris: Gallimard.

———. 1991. *Critique of Dialectical Reason*. [Rev. ed.]. London: Verso.

Schama, Simon. 1998. *Skog: landskap och minne : en civilisationshistoria*. [Ny utg.]. Stockholm: Wahlström & Widstrand.

Scheele, Adam, and Anders Simonsen. 1999. *Lejonet Och Skeppet. 1737 Och 1741 Års Beskrivningar Av Göteborg Och Strömstad Jämte Kommentarer Och Utblickar.* Göteborg: Historiska institutionen, Univ. [distributör].

Schia, Erik. 1987. 'De Arkeologiske Utgravninger i Gamlebyen, Oslo.' In *Søndre Felt: Stratigrafi, Bebyggelserester Og Daterende Funngrupper.*, edited by Erik Schia. Vol. 3. Oslo: Øvre Ervik, Alvheim & Eide Akademisk Forlag.

———. 1988. 'Oslo foer brannen i 1624.' *Årbok / Foreningen til Norske Fortidsminnesmerkers Bevaring / Foreningen til Norske Fortidsminnesmerkers Bevaring.*, 107–20.

Schietzel, Kurt. 1981. *Stand der siedlungsarchäologischen Forschung in Haithabu: Ergebnisse und Probleme.* Berichte über die Ausgrabungen in Haithabu, 16. Neumünster: Wachholtz.

Schmid, Christina. 2014. 'The Investigation of Domesticated Space in Archaeology - beyond Architecture.' In *Dwellings, Identities and Homes : European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen, 53–64. Højberg: Højberg : Jutland Archaeological Society.

Schmidt Sabo, Katalin, and Riksantikvarieämbetet. 2001. *Vem Behöver En by?: Kyrkheddinge, Struktur Och Strategi under Tusen År*. 1. [uppl.]. Skrifter / Riksantikvarieämbetet, Arkeologiska Undersökningar 38. Lund: Riksantikvarieämbetets förl.

Seppänen, Liisa. 2002. 'The Houses of Townsmen in Medieval Turku (14th-16th) Century Some Aspects on the Living Conditions and Town Planning.' *Centre, Region, Periphery: Medieval Europe. Basel* 1: 357–62.

———. 2012. 'Rakentaminen Ja Kaupunkikuvan Muutokset Keskiajan Turussa.' Doctoral thesis in archaeology, Åbo, Finland: Åbo Akademi.

———. 2014. 'Brick Buildings, Chimneys,and Windows with Glass – A Chain of Changes in Medieval Housing in Turku.' *Finskt Museum, Finlands Fornminnesförening*, no. 118.

Sereni, Emilio. 1961. *Storia Del Paesaggio Agrario Italiano*. Rome/Bari.

———. 1967. 'Villes et campagnes dans l'Italie préromaine.' *Annales* 22 (1): 23–49. https://doi.org/10.3406/ahess.1967.421501.

Setälä, H., R.D Bardgett, K. Birkhofer, and M. Brady. 2013. 'Urban and Agricultural Soils: Conflicts and Trade-Offs in the Optimization of Ecosystem Services - ProQuest.' *Springer Science Business Media Nwe York*.

Sidén, Per Gunnar. 2008a. 'Hur Tyska Var de Svenska Städerna under Högmedeltiden?' In .

———. 2008b. 'Hur Tyska Var de Svenska Städerna under Högmedeltiden?' In . Lund.

Simondon, Gilbert. 1964. *L' individu et sa genèse physico-biologique: (l'individuation à la lumière des notions de forme et d'information)*. Paris: Presses universitaires de France.

Sjöberg, Maria. 2001. *Kvinnors jord, manlig rätt: äktenskap, egendom och makt i äldre tid*. Hedemora: Gidlund.

———. 2008. *Kvinnor i fält: 1550-1850*. Möklinta: Gidlunds.

———, ed. 2012. *Bildligt talat: kvinnligt, manligt i 3,2 miljoner år*. Göteborg: Makadam.

Sjömar, Peter. 1988. *Byggnadsteknik Och Timmermanskonst: En Studie Med Exempel Från Några Medeltida Knuttimrade Kyrkor Och Allmogehus*. Arkitekturens Teori Och Historia, 1988:1. Göteborg: Chalmers tekniska högsk.

Sjömar, Peter, Erik Hansen, Hans Ponnert, and Ola Storsletten. 2000. *Byggnadsuppmätning: Historik Och Praktik*. 1. [uppl.]. Stockholm: Riksantikvarieämbetets förl.

Sjöström, Ingrid, Marja Terttu Knapas, Ola Storsletten, Museiverket, and Riksantikvarieämbetet. 2000. *Kyrka af träd: kyrkobyggande under 1600- och 1700-talen i Finland, Norge och Sverige*. 1. uppl. Stockholm: Riksantikvarieämbetet.

Skoglund, Per. 2015. 'Industrihistoria i Stockholm, Inventering Av Fabriker Och Verkstäder Som Har Funnits i Stockholmsområdet - Stockholm, Nacka, Lidingö, Solna, Sundbyberg - Från 1800-Talet Och Framt Ill 1970-Talet. Stockholm.' Stockholm.

Smith, Michael. 2011. 'Empirical Urban Theory for Archaeologists.' *Journal of Archaeological Method and Theory* 18 (3): 167–192. https://doi.org/10.1007/s10816-010-9097-5.

Smith, Michael E. 2007. 'Form and Meaning in the Earliest Cities: A New Approach to Ancient Urban Planning.' *Journal of Planning History*, no. 3: 3–47.

Söderberg, Bengt. 1992. 'Kvarteret Uttern.' Arkeologisk rapport 1992:2. Sölvesborg, Blekinge: UV Syd Riksantikvarieämbetet & Statens Historiska Museum.

Söderlund, Kerstin. 2011. 'Kring Mynttorget, Gamla Stan, Stockholms Stad. Arkeologisk Undersökning 1993-1994, SR 1301.' Arkeologisk undersökning 2011:4. Stockholm: Stockholms Stadsmuseum.

———. 2012. 'Storkyrkobrinken, Gamla Stan, Stockholms Stad, RAÄ 103. Arkeologisk Undersökning 1993-1994.' Arkeologisk undersökning 2012:19. Stockholm, Sweden: Stockholms stadsmuseum, Kulturmiljöavdelning.

Söderlund, Kerstin, Mikael Johansson, Johanna Karlsson, Anna Källström, and Magnus Källström. 2011. 'Kring Mynttorget. Gamla Stan, Stockholms Stad. Arkeologisk Undersökning 1993-1994. SR 1301.' Arkeologisk rapport 2011:4. Stockholm: Stockholms stadsmuseum.

Sæther, Tor. 1987. 'Branner i Oslo.' In *De Arkeologiske Utgravninger i Gamlebyen, Oslo. Sødre Felt: Stratigrafi, Bebyggelserester Og Daterende Funngrupper.*, edited by Erik Schia and Ervik Øvre, Bind 3:23–40. Oslo: Alvheim & Eide Akademisk Forlag.

Sørensen, Einar. 1991. 'Hovedbyggningen På Fiskum i Øvre Eiker.' *Årbok / Foreningen Til Norske Fortidsminnesmerkers Bevaring / Foreningen Til Norske Fortidsminnesmerkers Bevaring.*, 27–48.

Stadsholmen. 2013. 'Örby Gård 2, Örby Slott, Örby Slottsväg 24, Alvsjö.' Faktablad. Stockholm, Sweden: Stadsholmen, Stockholms stad, Stadsmuseet.

Stattin, Jochum. 2006. *Från gastkramning till gatuvåld: en etnologisk studie av svenska rädslor*. [Ny utg.]. Stockholm: Carlsson.

Stefánsson, Hjörleifur. 2003. *Af norskum rótum: gömul timburhús á Íslandi*. Reykjavík: Mál og Menning.

Sternegård, Sofia, and Mattias Ek. 2016. 'Dihlströms 1: Dihlströmska Huset, Södermalm, Stockholm.' Bebyggelsehistorisk inventering. Stockholm: Stockholms Stadsmuseum.

Stibéus, Magnus. 2015. 'Kalmar Slott – Bebyggelse Och Fynd Från 1100–1800-Talen.' Särskild arkeologisk undersöknng och förundersökning 2013 och 2014 2015:54. Småland, Kalmar kommun och stad, Kalmar slott, RAÄ 53 Dnr 3.1.1-01320-2013 och 3.1.1-02721-2013 (RAÄ): Stockholms historiska museer.

Stibéus, Magnus, Annika Konsmar, and Arne Åkerhagen. 2016. 'En 1600-1800-Talsgård Vid Storgatan i Kalmar. Kalmar Län, Småland, Kalmar Stad Och Kommun, Kalmar Domkyrkoförsamling, Kv. Bryggaren 23, RAÄ 93.' Arkeologisk förundersökning 2016:18. Kalmar: Arkeologerna.

Stibéus, Magnus, and Göran Tagesson. 2008. 'Bebyggelse Och Kulturlager Från 1600-Tal Fram till Idag Vid Norra Munksjöstranden RAÄ 50 Kv Ansvaret 5 Och 6 Jönköpings Stad Och Kommun Jönköpings Lä.' Arkeologisk förundersökning 2008:4. Jönköping, Sweden: Riksantikvarieämbetet UV Öst.

Stoklund, Bjarne. 1996. *Det Færøske Hus i Kulturhistorisk Belysning*. København: København : Reitzel.

Storsletten, Ola. 1993a. *En arv i tre: de norske stavkirkene*. Oslo: Aschehoug.

———. 1993b. *Takverk i steinkirker fra middelalderen*. FOK-programmets skriftserie, 5. Oslo: Norges forskningsråd.

Streiffert Eikeland, Katarina. 2006. *Indigenous Households: Transculturation of Sicily and Southern Italy in the Archaic Period*. GOTARC 44. Göteborg: Dept. of Archaeology and Ancient History, Univ.

Streiffert, Jörgen. 2005. 'Gårdsstrukturer i Halland under bronsålder och äldre järnålder: Farm Structures in Halland in the Bronze Age and Early Iron Age.' Göteborg University Göteborg.

Stridsberg, Einar, and Leif Mattsson. 1980. *Skogen genom tiderna: dess roll för lantbruket från forntid till nutid*. Stockholm: LT.

Strömbom, Sixten. 1924a. *Forskningar på platsen för det forna Nya Lödöse (1915-1918): stadskrönika, grävningsberättelse, fyndkatalog*. Skrifter utgivna till Göteborgs stads trehundraårsjubileum genom jubileumsutställningens publikationskommitté, 5. Göteborg.

———. 1924b. *Forskningar På Platsen För Det Forna Nya Lödöse (1915-1918) : Stadskrönika, Grävningsberättelse, Fyndkatalog*. Göteborg: Göteborg.

Sundt, Eilert. 1859. *Fortsat Beretning om Fantefolket. [1]*. Christiania.

———. 1968. *Om Piperviken og Ruseløkbakken: Undersøgelser om arbeidsklassens kår og sæder i Christiania*. Tidens tema, 14. Oslo.

———. 1976a. *Verker i utvalg. 4, Om sædeligheds-tilstanden i Norge*. Fakkel-bøkene, 314. Oslo: Gyldendal.

———. 1976b. *Verker i utvalg 6 Om bygnings-skikken på landet i Norge*. Fakkel-bøkene, 316. Oslo: Gyldendal.

———. 1978. *Verker i utvalg. 11, Om fattigforholdene i Christiania*. Fakkel-bøkene, 338. Oslo: Gyldendal.

Sundt, Eilert Lund. 1852. *Beretning om Fante- eller Landstrygerfolket i Norge: Bidrag til Kundskab om de laveste Samfundsforholde*. 2. Opl. Christiania: trykt hos JChrAbelsted.

Svahnström, Gunnar. 1972. 'Bislag.' *Gotländskt Arkiv* 44: 95–104.

Svensson, Eva. 2014. 'The Rural Home. Local or 'European' Style?' In *Dwellings, Identities and Homes : European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen. Højberg: Højberg : Jutland Archaeological Society.

Sverige. Byggnadsstyrelsen. 1954. *Saneringsfrågan: betänkande om förnyelsen av stadssamhällenas bebyggelse*. Statens offentliga utredningar, 1954:31. Stockholm.

Szołtysek, Mikołaj. 2015. 'Households and Family Systems.' In *The Oxford Handbook of Early Modern European History, 1350-1750.*, edited by Hamish Scott, 1st ed. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199597253.013.11.

Taavistainen, Jussi-Pekka. 2008. 'Turko-Åbo, Staden under Förändring.' In *De Første 200 Årene- Nytt Blikk På 27 Skandinaviske Middelalderbyer.*, edited by Hans Andersson, Gitte Hansen, and Ingvild Øye. Bergen, Norway: Arkeologisk institutt, Universitetet i Bergen.

Taawo, Kjell, and Roger Larsson. 1997. 'Kv. Baderskan 3, Hus 2, Trosa. Dokumentation Av Rivning 1997. Södermanlands Museum.' Trosa: Södermanlands museum.

Tagesson, Göran. 2013a. 'Drömmen Om Det Nya Kalmar Arkeologi På Kvarnholmen.' Riksantikvarieämbetet UV Öst, Kalmar läns museum.

———. 2013b. 'Vore Bäst Alle Huus Vore Lijka - Makt, Ideologi Och Modernitet i Den Tidigmoderna Staden.' In *Visioner Och Verklighet- Arkeologiska Texter Om Den Tidigmoderna Staden.*, edited by Ersgård, Lars, 76:127–49. GOTARC.Arkeologiska Skrifter,The Early Modern Town No. 1, Serie C. Göteborg: Institutionen för Historiska Studier, Göteborgs universitet.

———. 2014. 'Tidigmoderna Rum - Hus, Gård Och Rum i 1600- Och 1700-Talets Jönköping.' In *Slaktarens Kaj, Apotekarens Trädgård Och Fällberedarens Gård. Arkeologi På Tre Gårdar i 1600- 1700-Talens Jönköping*, edited by Magnus Stibéus, 95–126. Stockholm: Riksantikvarieämbetet.

———. 2016. 'Onkel Adams Gård, Hunnebergsgatan 30, Linköping. En Byggnadshistorisk Studie. Hus Och Hushåll i Svenska Städer 1600-1800.' Meddelanden från östergötlands museum 2. Linköping: Östergötlands museum.

———. 2018. 'The Early Modern Town as Power, Ideology and Modernity.' In *Urban Variation: Utopia, Planning and Practice.*, edited by Per Cornell, Lars Ersgård, Andrine Nilsen, and Richard Potter, 103–45. Gothenburg: LULU.COM Department of Historical Studies, University of Gothenburg.

———. 2019. 'Hus Och Hushåll i Svenska Städer 1600-1850. Rapport 6. Hus i Fem Tidigmoderna Städer. En Arkeologisk Studie.' Arkeologisk studie. Linköping: Arkeologerna, Statens Historiska Museum.

Tagesson, Göran, and Annika Jeppsson. 2015. 'Varmt Och Skönt: Och Iögonfallande Modernt: Kakelugnar Som Social Konsumtion i Det Tidigmoderna Sverige.' *Fornvännen, Journal of Swedish Arntiquarian Research* 110: 111–25.

Tagesson, Göran, and Dag Lindström. 2016. 'Ägande, Boende Och Hushåll På Kvarnholmen under 1700-Talet.' In *Kalmar Mellan Dröm Och Verklighet : Konstruktionen Av Den Tidigmoderna Staden*, edited by Göran Tagesson and Peter Carelli, 202–23. Linköping]: Linköping.

Tagesson, Göran, Dag Lindström, Hans Linderson, and Mattias Hallberg. 2017. 'Hus Och Hushåll i Svenska Städer 1600-1800. Rapport 1. Hunnebergsgatan 5-7-9 i Linköping. En Byggnadshistorisk Studie.' Arkeologisk rapport. Linköping: Arkeologerna.

Tagesson, Göran, and Andrine Nilsen. 2018. 'Houses and Buildings - on Physical and Social Space in Early Modern Swedish Towns.' Edited by Liz Thomas and Jill Campbell. *Buildings in Society International Studies in the Historic Era*, 39–50.

Thaastrup-Leth, Anne Katrine. 2014. 'Burned-down Timber-Framed Houses in Medieval Odense, Denmark.' In *Dwellings, Identities and Homes : European Housing Culture from the Viking Age to the Renaissance*, edited by Kate Giles and Mette Svart Kristiansen, 223–30. Højberg: Højberg : Jutland Archaeological Society.

Theselius, Mats. 1993. *Miljonprogrammet*. Stockholm: Mama Magasin för modern arkitektur.

Thörnqvist, Johan. 2018. 'Sjöfartsmuseet Akvariet Majorna 403:3.' http://samla.raa.se/xmlui/handle/raa/12272.
Thun, Terje, Ola Storsletten, and Det norske videnskaps-akademi i Oslo, eds. 1993. *Dendrochronology and the Investigation of Buildings: Proceedings of an International Seminar at the Academy of Science and Letters, Oslo, 1th-2nd November 1991*. Riksantikvarens Rapporter 22. Oslo: Riksantikvaren.
Tilly, Charles. 1998. *Durable Inequality*. Berkeley, Calif.: Univof California Press.
Tussenbroek van, Gabri. 2017. 'Timber-Framed Town Houses in the Northern Netherlands Before 1600. Construction and Geographical Distribution.' *Vernacular Architecture* 48 (1): 44–62.
Ugglas, Carl R. af. 1931. *Lödöse: (gamla Lödöse): historia och arkeologi*. Skrifter utgivna till Göteborgs stads trehundraårsjubileum genom jubileumsutställningens publikationskommitté 4. Göteborg: Medéns bokh. i distr.
Unkown. 1780. *The History of the Remarkable Life of the Renowned Charles XII. King of Sweden*. London]: London : Printed and sold in London.
Unwin, Simon. 1997. 'Analysing Architecture.' 1997. http://cumincad.architexturez.net//doc/und/oai-cumincadworks-id-8c38.
Varenius, B. 2008. 'Lundströms Plats. Arkeologisk Undersökning Inom Området Med Medeltida Kulturlager Och Bebyggelselämningar. Lundströms Plats, Sofia Församling, Jönköpings Stad, RAÄ 50, Jönköpings Kommun, Jönköpings Län, Jönköpings Läns Museum.' Arkeologisk rapport 2008:78. Jönköping, Sweden: Jönköpings Läns Museum.
Verdiani, Giorgio. 2015. 'Churches in Goreme, Kapadokya Utilizing a Digital Survey, 3D Printing, and Augmented Reality.' *Open Archaeology, De Gruyter Open* 1.
———. 2018. 'The Tabarkinian Towns In The Mediteranean Area.' In *Urban Variation: Utopia, Planning and Practice.*, 561–86. Gothenburg: LULU.COM, University of Gothenburg.
Verdiani, Giorgio, and Per Cornell. 2015. *Architecture, Archaeology and Contemporary City Planning: Proceedings of the Workshop, Firenze 16-18th June 2014*. Firenze]: LULU COM.
Vollmer, Roy. 1978. *American Houses 1680-1960: A Study of the Origins, Evolution and Periods of Distinct Popular Styles in American Domestic Architecture*. Department of Architecture, College of Arts and Architecture, Pennsylvania State University,. http://hdl.handle.net/2027/pst.000002554327.
Volmer, Lutz, and W. Haio Zimmermann. 2012. *Glossary of Prehistoric and Historic Timber Buildings: French, English, Dutch, German, Danish, Norwegian, Swedish, Polish and Czech : Französisch, Englisch, Niederländisch, Deutsch, Dänisch, Norwegisch, Schwedisch, Polnisch Und Tschechisch = Glossar Zum Prähistorischen Und Historischen Holzbau*. Rahden/Westf.: VML, Verlag Marie Leidorf GmbH.
Wahrolén, Michelle. 2015. 'Ja Må de Leva Uti Hundrade År!' *Hem & Hyra. Hyresgästföreningens Tidsskrift* 6: 64.
Walaker Nordeide, Sæbjørg. 2005. 'Fra Vernesone Til Risikosone Studier i Middelalderbyene Bergen Og Tønsbergs Randsoner.' NIKU Tema 14. Norsk institutt for kulturminneforskning.
Walker, Helen. 1997. 'Mixed Use Development as an Agent of Sustainability.' In *Reclaiming the City - Mixed Use Development.*, edited by Andy Coupland, 63–86. London: UK: Westminister University.
Wall, Richard. 1986. 'Work, Welfare and the Family. An Illustration of the Adaptive Family Economy.' In *The World We Have Gained: Histories of Population and Social Structure.*, edited by L. Bonfield. Oxford.
Wallin, L. 1983. 'Datering Med Hjälp Av Kritpipor/Dating with the Help of Clay Tobacco Pipes.' *Fornvännen* 78: 128.
Wallqvist, Hjalmar. 1891. *Bostadsförhållandena för de mindre bemedlade i Göteborg: studie sommaren 1889*. Skrifter / utgifna af Lorénska stiftelsen 5. Stockholm: Samson & Wallin.
Wändesjö, John. 2016. 'Ledningsomläggning Vid Slussen. Skeppsbron, Slussplan, Kornhamnstorg, Sjöbergsplan, Hornsgatan, Södermalmstorg, Götgatan Och Katarinavägen. RAÄ 103, Stockholm.' Arkeologisk undersökning 2013-2015 2016:93. Stockholm: Stockholms stadsmuseum.
Warde, Paul. 2006. 'Fear of Wood Shortage and the Reality of the Woodland in Europe, c.1450–1850.' *History Workshop Journal* 62 (1): 28–57. https://doi.org/10.1093/hwj/dbl009.
———. 2009. *Energy and Natural Resource Dependency in Europe, 1600-1900*. https://ideas.repec.org/p/bwp/bwppap/7709.html.
———. 2018. *The Invention of Sustainability: Nature and Destiny, c. 1500-1870*. https://doi.org/10.1017/9781316584767.
Warde, Paul, Libby Robin, Sverker Sörlin, and Henrietta Meire. 2019. *The Environment: A History of the Idea*. Minneapolis, Minn.: Highbridge Audio. https://www.overdrive.com/search?q=A5613404-72A4-46BE-B9C6-6CCEB0CE212E.
Weber, Birthe. 1990. 'Tregjenstander.' In *Dagliglivets Genstander - Del I.*, edited by Erik Schia and Petter B. Molaug, 7:11–180. De Arkeologiske Utgravninger i Gamlebyen, Oslo. Övre Ervik: Aasheim & Eide Akademisk Forlag.
Wehlin, Joakim. 2018. 'Arkeologisk Undersökning, Västra Falun, Schaktning För Garage i Stadslager Falun 68:1, Falu Kommun, Dalarnas Län.' Arkeologisk rapport 2018:6. Falun, Sverige: Dalarnas Museum.
Wehlin, Joakim, Mathias Bäck, Tomas Westberg, Eva Carlsson, David Fahlberg, and Jimmy Axelsson Karlqvist. 2018. 'Västra Falun 11 - 1500- Och 1600-Talsbebyggelse Inom Stadslager Falun

68:1 i Falu Kommun, Dalarnas Län.' Arkeologisk undersökning 20018:14. Falun, Sverige: Dalarnas Museum.

Wennberg, Tom. 2017a. 'Kv. Blomsterkvasten - Arkeologisk Rapport Från Göteborgs Stadsmuseum 2017:8.' http://samla.raa.se/xmlui/handle/raa/10690.

———. 2017b. 'Kv. Snusmalaren IV - Arkeologisk Rapport Från Göteborgs Stadsmuseum 2017:21.' http://samla.raa.se/xmlui/handle/raa/11675.

Werne, Finn. 1980. *Allmogens byggnadskultur: förvandling och upplösning intill 1900-talets början = [The vernacular architecture]: [its transformation and disintegration]*. Doktorsavhandlingar vid Chalmers tekniska högskola 333. Göteborg.

———. 1993. *Böndernas Bygge: Traditionellt Byggnadsskick På Landsbygden i Sverige*. Höganäs: Wiken.

Wingård, Cecilia, and Lars Rydbom. 2008. 'Grebbestad Etapp 1. Kulturhistorisk Bebyggelseinventering i Tanums Kommun - Del 4a.' Kulturhistorisk bebyggelsebeskrivning. Uddevalla: Bohusläns museum.

Wood, Rodger H, and Richard John Wood. 2001. *American Domestic Architecture, 1600-1990*. Mobile, AL: Infosential Press.

Ylimaunu, Timo, James Symonds, Paul R. Mullins, Anna-Kaisa Salmi, Risto Nurmi, Titta Kallio-Seppä, Tiina Kuokkanen, and Annemari Tranberg. 2014. 'Street Mirrors, Surveillance, and Urban Communities in Early Modern Finland.' *Journal of Material Culture* 19 (2): 145–67. https://doi.org/10.1177/1359183514521923.

Zachrisson, Terese. 2017. 'Mellan Fromhet Och Vidskepelse : Materialitet Och Religiositet i Det Efterreformistiska Sverige.' Göteborg: Diss. Göteborg : Göteborgs universitet, 2017.

Zwerger, Klaus. 2015. *Wood and Wood Joints: Building Traditions of Europe, Japan and China*. Basel; Boston: Birkhäuser.

Åqvist, Cecilia. 2006. 'Sanda - En Gård i Södra Uppland.' 2004:15. Stockholm: Riksantikvarieämbetet, UV Mitt.

Århem, Barbro. 2004. 'Gustav Adolfs Torg: Arkeologisk Förstudie 2004.' Arkeologisk förstudie 2004:4. Stockholm, Sweden: Stockholms stadsmuseum, Kulturmiljöavdelning.

Öbrink, Mattias, and Christina Rosén. 2017. 'Stadsgård 1-4. Gata a Och b Samt Vretar. Arkeologiska Undersökningar i Gamlestaden. Västergötland, Göteborgs Stad Och Kommun.' Slutundersökning 2017:1. Göteborg, Sverige.

Öbrink, Mattias, Gwilym Williams, and Andrine Nilsen. 2018. 'Townscapes: Utopia and Practice in a Thematic Comparison of Nya Lödöse and Gothenburg.' Edited by Per Cornell and Christina Rosén. *International Journal of Historical Archaeology* 22 (2): 274–301.

Östlund, Annika, Stig Swedberg, Cecilia Wingård, Lillemor Olsson, and Conny Jerer. 2008. 'Granitindustri. En Förstudie Om Kulturreservat För Stenindustrin i Västra Götalands Län.' Kulturhistorisk rapport 2008:25. Dingle: Rio Kulturkooperativ.

Östlund, Olof. 2005. 'Kungsgropen,Delundersökning. Skellefteå Kaplansbord 2:4, Skellefteå Socken Och Kommun, Västerbotten Län.' Arkeologisk rapport. Skellefteå.

Östnäs, Anna. 1984. *Arkitekterna och deras yrkesutveckling i Sverige*. Doktorsavhandlingar vid Chalmers tekniska högskola Ny serie, 492. Göteborg: Avd för arkitekturens teori och historia, Chalmers tekniska högskola.

Wooden buildings housed the majority of Swedish urban populations during the early modern era, but many of these buildings have disappeared as the result of fire, demolition, and modernisation. They were built during periods of urban transformation; disdained for their rural look and for the fire hazard they represented they were nevertheless valued for being warm, affordable and movable. This study reveals the fundamental role played by the wooden house in the formation of urban Sweden and Swedish history. Wooden buildings were particularly suited to mass production and relocation, which helped to realise the ideal town plan in the transformation of Swedish urban space.Early modern wooden houses feature more as archaeological remains and less as preserved buildings every year, thus examination and comparison of these two distinct datasets combined with historical records is important in this study. The author establishes how log construction, timber framing and post and plank buildings were used for a wide range of functions in both central and peripheral locations, and within all strata of society. New strategies were developed to create affordable warm housing while the housing stock featured both change and continuity of layout; the storeyed house contributed to evolution of the multiple unit structure. Surprisingly, this study establishes that timber-framing was more prevalent geographically and functionally than previous research indicated.

Andrine Nilsen has historical urban buildings archaeology as a special interest and undertook her doctoral studies at the Department of Historical Studies at the University of Gothenburg. Before this she worked in the project *The early modern town - between the local and the global* publishing on the subject of medieval wooden houses and early modern town plans. As part of this project, she co-organized the conference *Urban Variation* in 2013 and co-edited the subsequent publication. The AACCP network, *Architecture, archaeology and contemporary city planning,* grew out of this project and conference. Subsequently she co-organized *Buildings in Society International* in Stockholm in 2017. Nilsen has also explored questions of marginality, centre and periphery with Martina Hjertman in conference presentations and papers. They now aim to develop a project with the historian Joachim Östlund to investigate Gothenburg's role in the early modern transatlantic slave trade.

UNIVERSITY OF GOTHENBURG

ISBN 978-1-78969-677-6

9 781789 696776

ARCHAEOPRESS ARCHAEOLOGY www.archaeopress.com