The Gammel Strand themes

Introduction

The aim of this chapter is to summarise the results from the phases into various themes. These themes will be organised into sub-chapters and link with the other Metro Cityring excavations and are also stand-alone discussions on the excavation themselves. For Gammel Strand the sub-chapters will focus on four areas; the buildings of Gammel Strand, Gammel Strand as a boundary, trade and the fisher wives of Copenhagen.

The first theme will focus on the buildings of Gammel Strand, where the archaeological remains of the structures will be discussed in more detail with the known buildings in the area and using both historical records and maps and plans. The first theme section will focus on the boundary theme of Gammel Strand. It will involve a discussion the southern maritime boundary of Copenhagen, how the area was created, functioned, and the lives of the inhabitants in regards to the artefactual evidence and natural science remains.

Representing the networks and connections results will be the sub-chapter on trade. This will look at the process of trade, diffusion of ideas and networking by analysing the provenance of artefacts, types of artefacts traded, and seeing how this process changes over time. The artefacts will be discussed relating to important events in Denmark and outside of Denmark.

The final sub chapter, the fisher wives, will discuss the origin of the harbour as a fisher port, and how the harbour developed into the fishing harbour that became so popular on Gammel Strand in the 19th and early 20th Centuries.

The buildings at Gammel Strand

As described in the chronological chapters above, a number of building remains were found during the Gammel Strand excavations. As part of the work of interpreting and identifying these remains, the relevant historical maps of the area were assessed and used. Some buildings are seen on the maps dating back to around 1600, and written sources provide plenty of information regarding buildings and houses in the area. The challenge is, however, to identify the mentioned buildings on the maps and *vice versa*, as mapped buildings are not always mentioned in written sources, and mentioned buildings are not always mapped – and of course both source types need to be treated with caution.

In the following, a wide selection of relevant maps and sources for identifying the buildings and other physical remains at Gammel Strand are presented. The excavated drains and sewers can in some instances be linked to the building plots north of the excavation area, which will also be touched upon and finally information on the people working and living in the area is presented.

Relevant maps and sources

A number of historical maps are relevant for the description of the topographical development of Gammel Strand during the Renaissance and later periods. Unfortunately no contemporary maps of Medieval Copenhagen exists, but it is often assumed that the map from around AD 1600 gives an impression of the city at least in terms of streets, churches and limitation/fortification during the later Medieval period as well. Further knowledge about Medieval Copenhagen and the Copenhageners can be obtained from the preserved written sources as well as from the archaeological excavations undertaken in recent years.

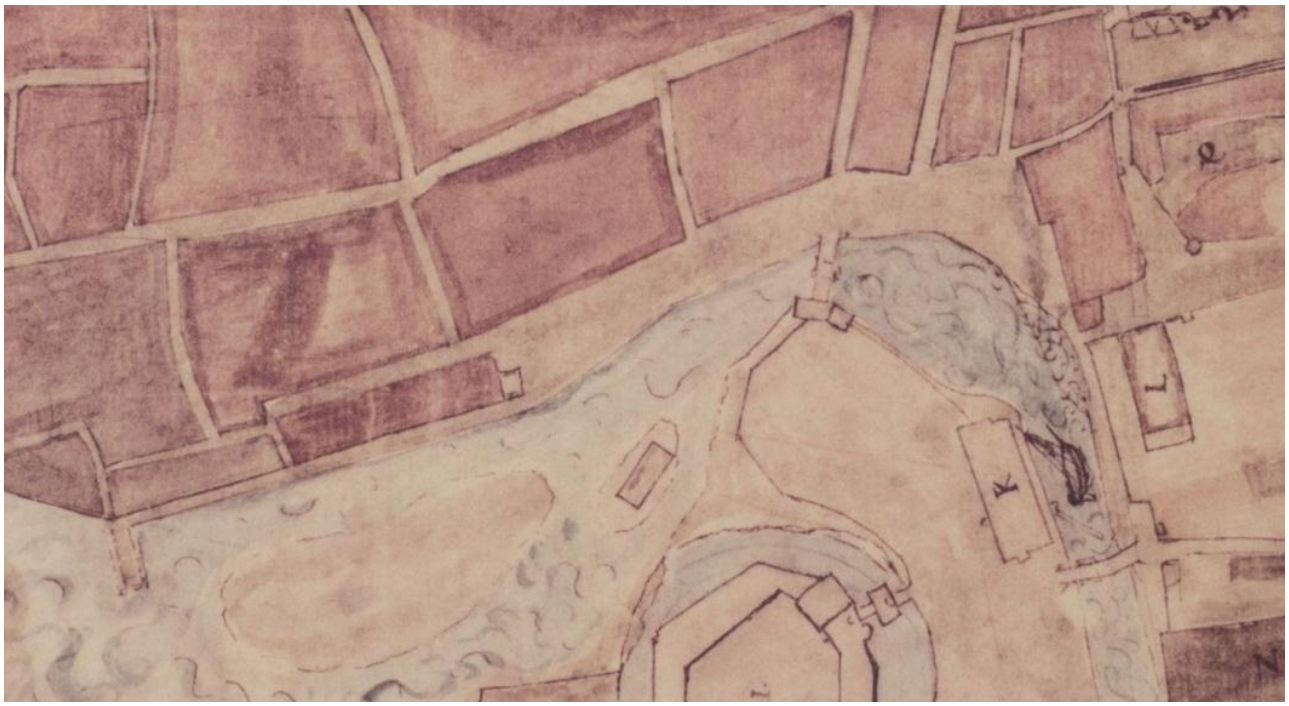

Fig. 156 Section of the earliest map of Copenhagen (cropped and turned) showing the Gammel Strand area. North is almost upwards. Original at the Royal Library

The earliest map depicting Copenhagen is from the years around AD 1600 (based on knowledge of when certain depicted buildings were erected) and the producer of the map and the intensions for making it are unknown. The map shows the main outline of the city with fortifications, streets, churches and few other public buildings. For Gammel Strand, however, only one, rectangular building is shown in the westernmost end of the area (with no signature) and there are no details on bulwarks or bridge structures. The areas around the city are drawn as fields and gardens and the coastal areas – with a different outline than today – are not shown in great detail.

Peder Hansen Resen's Map from 1674 is a depiction of both the older and newer parts of Copenhagen. Whereas the latter is not depicted very accurately, with a number of never-realised plans of buildings, it is believed that the former, the older parts of the city, are shown as a more accurate depiction of the outline of streets and buildings – though the buildings themselves are merely signatures than realistic depictions. In the Gammel Strand area, both street names and certain buildings can be identified in the legend, which is written in German. The original of Resen's 1674 map are part of the Resen's *Atlas Danicus*, a collection of copper engravings, kept by the Danish Royal Library and published in part by I. R. Kejlbo in 1974.

Fig. 157 Resen's map of Copenhagen, 1674. This section showing the Gammel Strand Area. North is downwards. The Danish Royal Library, Kejlbo 1974

A document from 1683, depicting and describing plans for changing certain structures at what is now the Gammel Strand square is stored at the Copenhagen City archives (*Stadsarkivet*). The map includes a lot of interesting information about current and future lay out of the area and seems to be issued and signed by the King, Christian the 5th. The text at the top of the map outlines the plans for creating a street in the alignment of Naboløs, running towards the Canal. This would in 1683 require the tearing down of slaughter booths and other buildings in the westernmost end of nowadays Gammel Strand.

The transcribed text is as follows: *"Voris allernaad (iste) villie og befalinger effter denne affridtzning skal imellom Veyer huuset og begyndelsen aff Snaregaden ned til Canalen, gaer een gade, som skal Være atten alen bred tet (tæt) forbi de Vaaninger, som ligger imellom Snarregade og Canalen. Paa dend anden side Ved Veyer huuset bliffver een pladz, lige saa bred og saa lang som Veyer huusets bygninger, som byen beholder at bygge paa, og som er i linie med begge ender aff Veyer huset uden for hvilken pladzes begreb alle Slagterboder og fieleboder skal strax nedbrydis, for at haffde een magelig fart faa husene Ved Stranden, giennem ommeldte nye gade, langs med med Canalen. Vor effter de ved kommende sig aller unded(anigst) haffver at rette skreffe(t) paa Vort Slott Kiøbenhaffn di 7. April 1683. Christian (V)".*

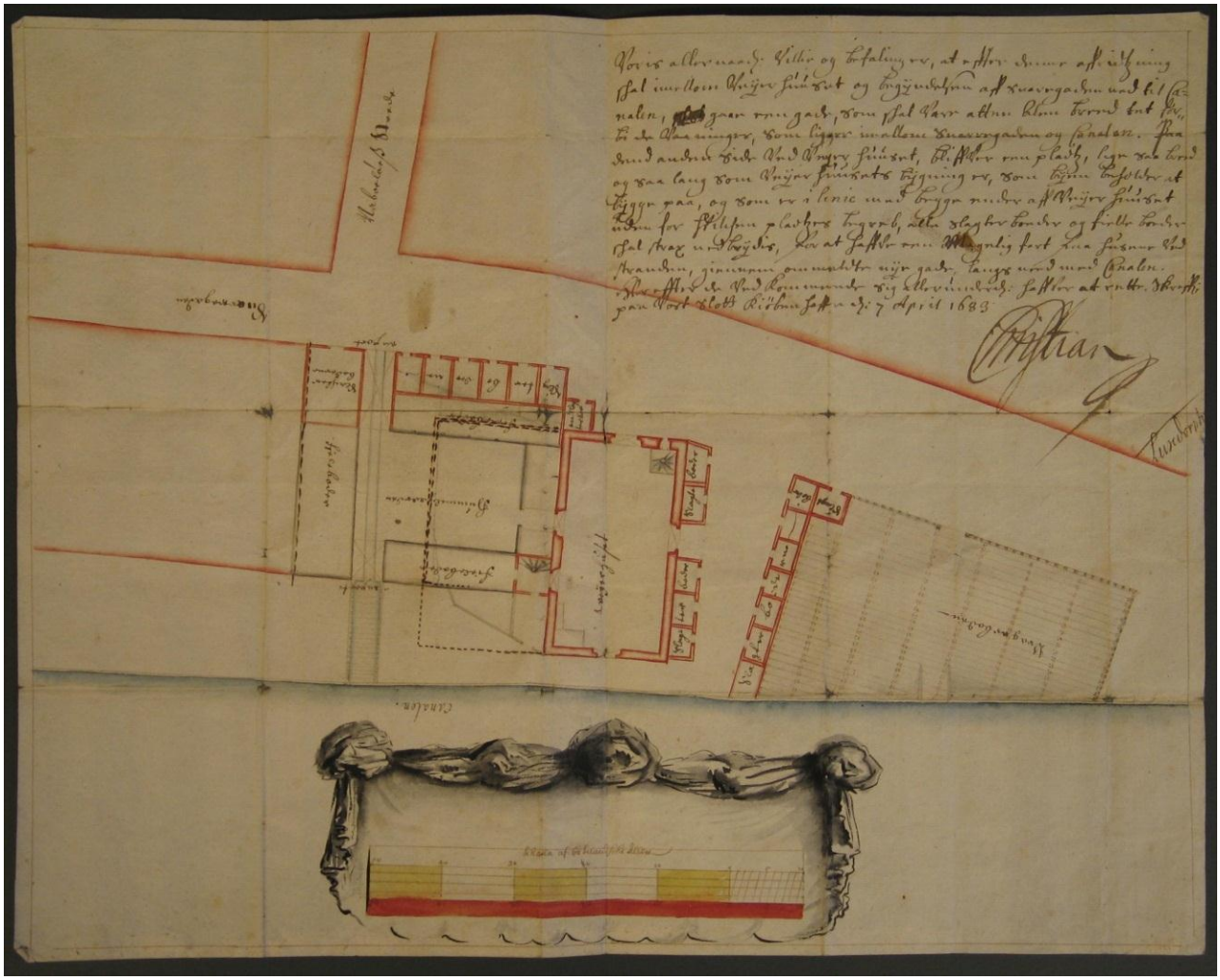

Fig. 158 Map of plans of changing the area of current Gammel Strand in 1683. NW is upwards. Copenhagen City Archive

As a result of the great Copenhagen fire in 1728, Engineer officer Christian Gedde was appointed to draw new maps of the Copenhagen plots and buildings in the 1750's. The maps covered the 12 Kvarterer (different parts) of Copenhagen. Two of these maps are relevant for the Gammel Strand area, as the buildings on the northern side of what is now the square Gammel Strand in the 1750's were part of Strand Kvarter, whereas the building complex in the western end of the area was part of Snaren's Kvarter. Later (between 1756 and 1806), the area was re-organised and the buildings in the western part were included in Strand Kvarter.

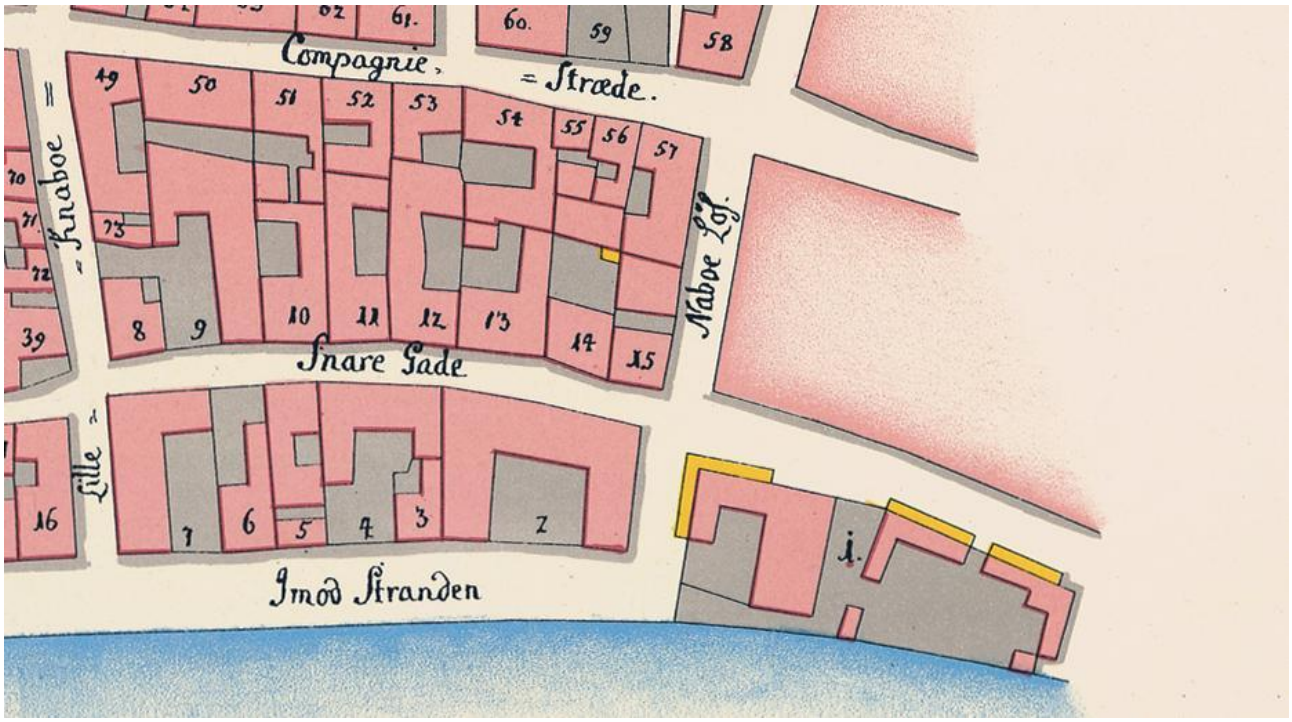

Fig. 159 Section of Gedde's 1757 map of Snaren's Kvarter. North is upwards. Copenhagen City Archive

In 1761 Gedde had his 12 area maps assembled as one big map of Copenhagen. This map is known as Gedde's elevated map as the buildings were depicted more or less three dimensionally. However, even though the map was made very carefully and accurately there are certain bias' – for instance, some of the buildings are "turned around" to show their facades in stead of their rear sides. It is not clear how accurately the map depicts the single buildings in the Gammel Strand area, but it appears certain that the buildings indicated would have been present in 1761. Both Gedde's Kvarter maps of 1750's and the elevated maps are stored at Copenhagen City Archives (Stadsarkivet), but can be accessed online: http://www.kbharkiv.dk/udforsk/kobenhavn-1761 (accessed October 25th 2016).

The Copenhagen plot registers are valuable sources to the development of the city from late 17th Century and till today. Based on the plot registers are digitized maps made either from contemporary plot maps (e.g. Gedde's maps from the 1750s) or from reconstruction maps, based on the plot descriptions (e.g. Ramsing's work with the 1689 plot registers). The plot register maps can be accessed online, via: http://www.kbharkiv.dk/kbharkiv/collections/matrikelkort/ (accessed October 25th 2016) and to help follow the development of the plots, a thorough database, known as the Copenhagen *Jævnførelsesregister* can also be found online: http://www.kobenhavnshistorie.dk/bog/matrikel/ (accessed October 25th 2016).

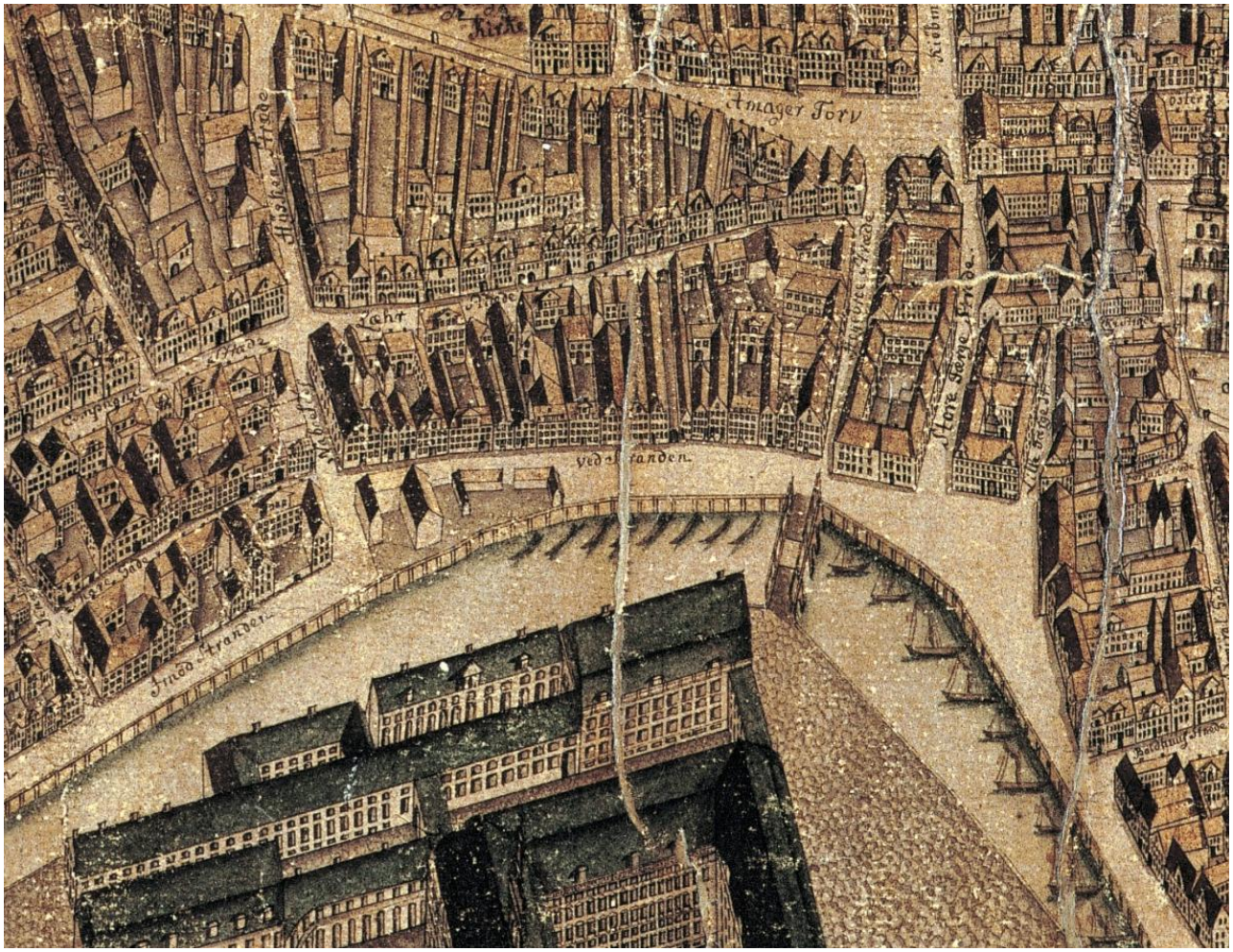

Fig. 160 Gedde's 1761 Elevated map. Section showing the Gammel Strand area. North is upwards. Copenhagen City Archive

Buildings on Gammel Strand

Prior to the 2012-11 excavations at Gammel Strand, some archive work was undertaken, resulting among other things in the finding of a map of structures at Gammel Strand around the middle of the 19th Century. Unfortunately only parts of the map was then photographed, and it was not noted, where the original map was found or if there was other information to support the date deciphered from the scribbles in the lower left corner of it, 1839. It has subsequently not been possible to re-find the map, and of course this has bearing on the source value of it, but it has been included here, as it in many ways provides a missing link between the buildings mentioned in written sources and the layout of the buildings.

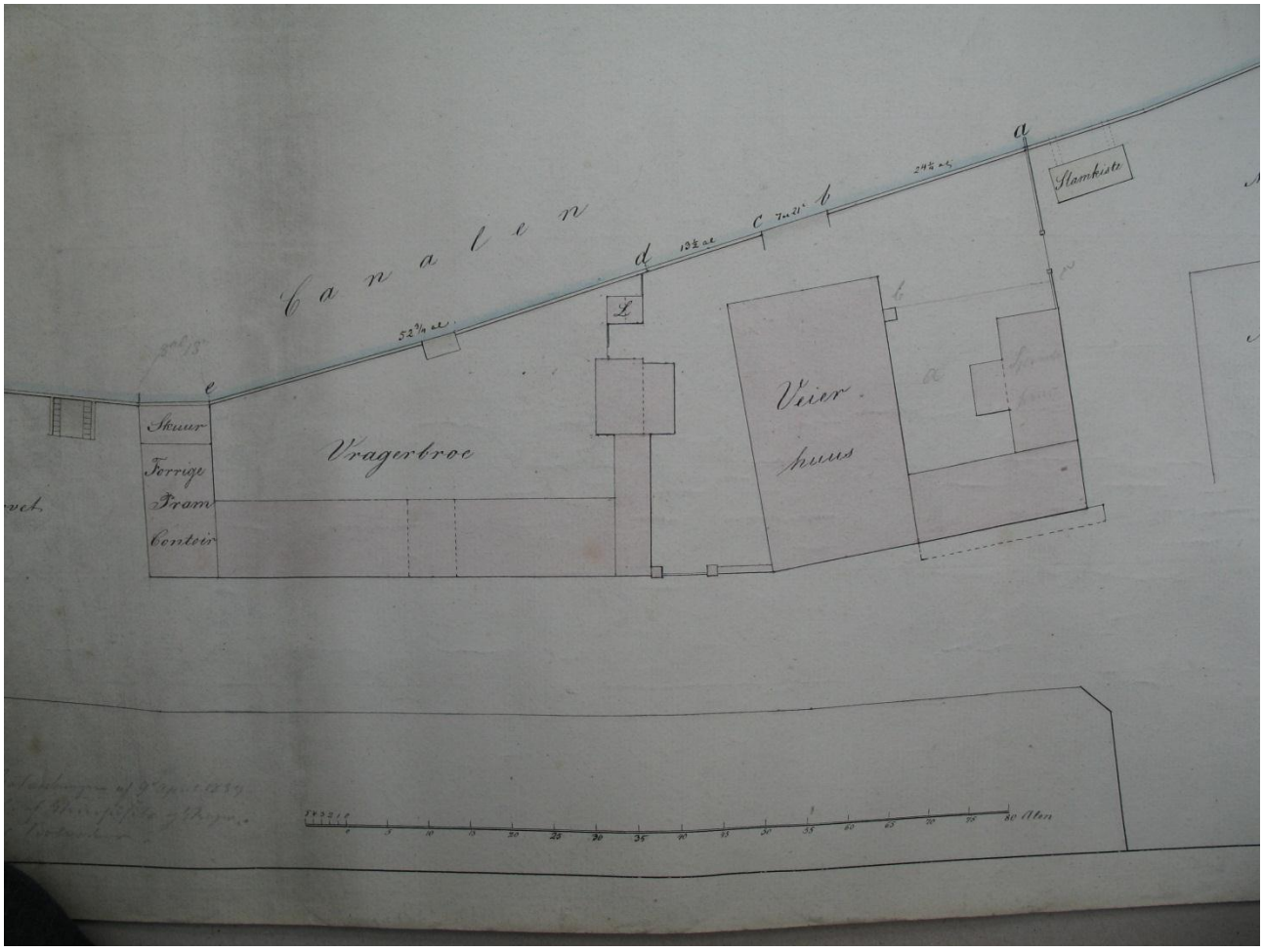

Fig. 161 Map of structures at Gammel Strand, presumably from 1839. SSE is at the top of the plan. Source unknown

The Weight house

Already in 1281, the reason for establishing a weight house was presented in a document from the Bishop, giving the "*Fogeden*" (bailiff) and the town council the authority to establish anything that may benefit the town and the inhabitants – especially in terms of weighing, controlling and price assessment of goods and with special reference to the measurement of German beer, as this had been sold with too much inaccuracy – resulting in loss for the buyers and destruction of the salesmen's souls. This was confirmed in the 1443 town privileges, issued by Christopher of Bavaria, but it is not clear whether such a building actually existed at the time or if it is just planned for. However, at some point a weight house must have

been erected and O. Nielsen stated that the old weight house was situated between present day Kompagnistræde and Snaregade – later Nielsen revised this to be on the southern side of Snaregade, on the corner of Naboløs.

From the early 16th Century onwards the written sources mentioning the weight house are a little more numerous, and indicating where the weight house would have been placed at the time, in that the location of other buildings are related to the location of the weight house in the deeds.

In 1580 the old weight house seems to have fallen in decay, and this among many other issues was complained about by the citizens. In April 1581 the King issued a document – the so-called Fredrik II's *Stadsret* (privileges) – settling the dispute between the Magistrate and the citizens. In this, the weight house was to be rebuilt by the mayors and the town council at their expense and the town and the citizens should not be troubled with this. In December 1581 the King declared that the mayors and council were exempted of taxation (*siisefrij*) of 100 "*læster*" (a number of barrels) of Rostocker beer while the rebuilding and mending of the weight house was undertaken.

In the document called "Christopher Valkendorfs credits of the town" it is stated that in 1581, Valkendorf let the beautiful weight house be built on (or into) the beach, "where no one would have thought a house would ever be built" (own translation). The rather odd wording may be seen in the connection with the location of one of the public toilets, *Østre Mag*, (the eastern latrine) which allegedly was placed near Hyskenstræde and even given the name to this street. As the new weight house was built at the end of Naboløs, the later name for the southern part of Hyskenstræde, it may have been placed where a former latrine was and thus where no one would have expected it to be built.

On the earliest map of Copenhagen only one building like signature is depicted and there is nothing written to indicate which building it is representing. However, it seems reasonable to assume that the mapped building is the Weight house from the late 1500's, though depicted more square in plan than it was in reality. On Resen's map from 1674, the letter "V" is placed in the street Snaregade, west of Gammel Strand. In the legend this refers to "*die Waage und die neue Fleich-Buden*" (the weight and the new slaughter booths). In correspondence with this, on Gedde's 1757 map of Snaren's Kvarter, plot number 1 is listed as owned by "*Stadens Vejerhus med Slagterboderne og Pramlaugets Hus*" (the Town's Weight House with the slaughter booths and the Bargemen's Guild house).

The exact location of the late 16th Century Weight house is well known as the building existed until 1857, when it was torn down along with all other buildings in what is now the square Gammel Strand. The Weight house was placed in the western end of today's Gammel Strand square, south of current Gammel Strand 50. The building was a stout, brick built house with three floors and an attic, as seen from a Daguerreotype photo from 1840.

Vragerbro/Vragerbod

Occasionally the term "*Vragerbod*" or "*Vragerbro*" is mentioned in the written sources. The "*vrager*" or "*wrager*" is an old Danish term used for a person who did quality assessment of trading goods (internet source: http://ordnet.dk/ods/ordbog?query=Vrager, assessed August 10th 2016).

On Resen's 1674 map, the letter "X" seems to be surrounded on three sides by a structure or fence and is placed east of the Weight house. In the legend to the map, "X" refers to "*Waage-Brücke*", which could be

directly translated to "weight-bridge", but must be identical to what is labelled *Wragerboden* on the map from 1683. Here, a rhomboid area is limited on the western side by slaughter booths and judging from the sketch-like drawing, it could consist mainly of a timber platform. On Gedde's maps from 1757 and 1761 an area of the same shape and size seems delineated by buildings, but there are no references to Vragerbro on these. On the above mentioned map, presumably from 1839, the area between the buildings east of the weight house is labelled "*Vragerbroe*", indicating that it was an open space, delineated by buildings.

In 1635 The King Chr 4th hired a hop "*vrager*" to assess the hop. It is not clear whether this refers to hop imported into Copenhagen or if is was grown either in the town or near by, and neither is it clear if this was in any way related to the Vragerbro or if it took place somewhere else.

In a document from 1581, listing properties in Copenhagen, a number of additions seem to have been made in 1656. Among these, *Wragerbroen* is mentioned as placed east of the weight house. If the date of the note is correct, this is the earliest mentioning of *Vragerbroen* on what is now Gammel Strand.

In a document from 1689, instructions for what a new *vrager* must do were described. The instructions indicate a highly specialized work area with advanced division of labour in the harbour. The *vrager* was responsible for the quality assessment of the goods that came in (all kinds of salted fish, salted meat, as well as train oil and tar) – and he had to make sure that no non-quality proofed goods were offered for sale. Only goods which were already taxed were to be proofed. Along with the *vrager*, two coopers worked with packing the goods after the quality had been checked. The goods were put onto the *Vragerbro* using a *Vippe* (probably a crane) operated by two workers. Four carrier men took turns, two at the time, to work with the goods, while the other two were to guard the *Vragerbro* area. If any merchant violated the rules, his goods would be assigned to *Børnehuset*, which was an orphanage and later a jail house. The quality assessment was in many ways a strongly rationalized, public task related to the protection of legal rights of both buyers and sellers.

It is not very clear which type of structure this *Vragerbro* would have been, but it seems probable that it was at least partly timber built as it seemed to stretch all the way out to the harbourfront and was possibly interlinked with the bulwark. In some of the maps the area seems to have been delineated by buildings on three sides, but it is not clear from the sources, if these buildings would have been related directly – physically as well as functionally – to the *Vragerbro* area, or if they would have served other purposes as slaughter booths etc.

Pramlaugets Hus – The Bargemen's Guild House

A structure referred to as *Pramlaugets Hus*/*Kontor* (The Bargemen's Guild house or Office) seems to have been present at Gammel Strand, at least from the middle of the 18th Century, when Gedde drew his map of Snarens Kvarter. The building is not depicted on the 1683 map and in the plot correspondence registers (*Københavnske Jævnførelsesregistre*), the Bargemen's Guild house is not mentioned in 1689, but it is in 1756. At this point the plot (the large plot number 1 in Snarens Kvarter) is listed as owned by the Weight house, the Slaughter booths and the Bargemen's Guild House. Later (but before 1806) the plot was split into several plots, where number 1A of Snarens Kvarter is listed as owned by the Bargemen's Guild, but unfortunately we have no maps depicting which of the buildings this is. In 1806 the plots were re-organized and the former plots 1A-1D in Snarens Kvarter were now divided into plots 55-60 in Strand Kvarter (though

on the digital plot register map the whole complex is still seen as one, plot number 55). *Pramlaugets Hus* was by then plot 55.

From the written sources, it is a little difficult to identify the Bargemen's Guild house. In 1783 N. Jonge, a contemporary writer, described the *Pramlavets Contoir* as a small one storey building placed at the western end of the fish market, across the pavement next to the Gammel Strand Canal. From the probable 1839 map, the "former Barge office" (*Forrige Pram-Contoir*) seems to be the easternmost of the buildings in the complex at the western end of Gammel Strand – and the building depicted in the foreground to the right on the painting from around 1820 and the Daguerreotype from 1840. This was in other sources (tax assessments, see below) from the early 19th Century described as belonging to *det ophævede Pram- og Steenfører Laug* (the former/dissolved Barge- and Stone transport Guild):

Twice, in 1811 and again in 1822 the building and its outhouses were assessed and valuated (records in the Copenhagen city archive, *Stadsarkivet, Vurderinger til prioritetsefterretninger, Strand 46-55*). In both instances the building was described as consisting of a basement, a first and a second floor and a floor under the roof. The building was brick built and the width of the building was five bays towards the square (meaning east) and two bays towards the street (meaning north). As the width of the bays was not recorded, it can only be estimated that the building would probably have been approximately 4 by 10 m. In the basement level there was a brick floor (in the 1822 source called S*teengulve,* stone floors, which can probably mean either a brick floor or a stone floor) and both a bilægger-ovn (a type of oven/stove), a kitchen with an open chimney as well as a two level wind oven with pipe (*to etagers vind ovn med rør/tromle*) – the latter probably the same as also mentioned on the first and second floor. In the descriptions are also some outhouses, but nothing is described as the annex with the rounded roof as seen on the southern side of the building on the picture from 1840 and on the painting from around 1820. It is possible, however, that it is identical to the building described just as a small yard room with cobblestones.

In Villads Christensen's accounts of the city 1840-1857, written in 1912, what must be the same building is referred to as built by a huckster named Seith in 1823 after being granted Royal permission to build in this area (source not found) and in the middle of the 19th Century owned by a bar keeper named Hansen. However, it seems more probable that Seith was given permission to rebuild an existing building and did not build a completely new one.

From the discrepancies of the descriptions, it is possible, that there would have been two different buildings owned by the Bargemen's Guild – or that the one, Jonge mentioned in 1783, would have been later rebuilt into the structure seen on the 19th Century photos.

Other buildings on and near Gammel Strand

The row of houses along the northern side of the square Gammel Strand was spared by the fire in 1728, but was unfortunately ruined by the other great fire in 1795. According to H. Fabricius (2006), the buildings on Gammel Strand were during the Medieval and Renaissance periods large merchants' and noblemen's estates, and though the houses were located right next to the harbour, the maritime professions do not appear on the lists of who lived in these buildings. Such people working with rope-making and other maritime related crafts, ships clerks, skippers etc. primarily lived in the streets leading towards the harbour. At Gammel Strand there were however public houses and bars also.

In O. Nielsen's synthesis over the history of Copenhagen 1536-1660, it is mentioned that the old weight house (see above) was turned into a "*humlegaard*" (a hop farm?), where probably the imported hop would have been quality assessed. In the Grundtaxt from 1668, the Weight house by the hop garten (?) is mentioned and value estimated 400 rdl. Likewise in a document from 1581 with notes added in 1656, "*Hommelgaarden*" (the hop farm?) is mentioned, but it is not clear if it is a building or merely an area, where the former weight house was once situated. In the map from 1683, an area called "Humlegaarden" is depicted just west of the later weight house. According to the map, this was to be torn down to make room for a broad street or space leading from the Naboløs street to the Canal.

On Resen's 1674 map there seems to be a signature just north of the Weight house – this is either something to indicate a large gate with wheel tracks – or could it be "ll" (two small L's) which in the legend refers to "the old East-India house". In a deed from 1627, the King, Christian the 4th, conveyed a building to the East India Company. It was indicated that the company already owned another building next to this and they were placed at Ved Stranden. Together these two must have been of considerable size – when the King sold his part to one of the directors of the company, Roland Crappe, in 1639, this part of the building was described as being 50 alen (=100 feet) wide towards the harbour. It is not clear exactly which of the buildings on Gammel Strand this covered, as the plots were changed since then, but it was in the western end of the area, on either the eastern or the western side of current Gammel Strand 48.

Booths for selling salt, fish and meat are mentioned several times in the written sources, but it is not very clear where these would have been situated, or what types of buildings they were. A document from 1609 witnesses that a lot of illegal booths, sheds and other light structures had started to crowd the streets of Copenhagen. At Gammel Strand (called Ved Stranden in Snarens Kvarter), drinking booths, cellar/basement booths and other booths are mentioned, but the exact location is not given. It seems probable, however, that these would have been erected along the facades of the houses on the northern side of todays square. In 1683 it seems to have been prohibited to build timber sheds near the streets and squares – the buildings should have masonry outer walls. According to the above mentioned map from 1683 with orders from king Christian the 5th, a number of wooden booths (*fjelleboder*) and slaughter booths were to be removed to fulfil the plans of making a wide street leading towards the harbour west of the weight house. On the eastern side of the weight house, slaughter booths are mapped, as well as delimiting the western side of the *Vragerbro*-area. On Gedde's 1757 map of Snarens Kvarter, the yellow markings seem to indicate wooden booths, placed on the northern and western side of the weight house and Vragerbro complex.

As part of the Weight house complex a *sprøjtehus* (engine house) is mentioned to have been built to contain material for fire fighting. It is not clear when the engine house itself was built, but by 1792 it must have been supplemented by a *brandskur* as well as a *vandskur* (sheds for fire equipment). From the possible 1839 map the engine house seems to be placed on the western side of the weight house, which is supported by the description of the city's fire fighting equipment in a publication from 1835 describing the location as "by the weight house in the wall towards Assistenshuset".

West of the excavation area, in Nybrogade 2, a large building, known as *Assistenshuset* has since 1962 housed the Danish Ministry of Culture. The building was originally a three winged structure, built in 1729-30 after the large fire in 1728 had demolished this part of the area (though sparing the weight house and Bargemen's Guild house). The building was bought in 1757 by the *Assistenshuset* (by then a Royal

institution for privileges functioning as a pawnbroker) and the fourth wing towards the canal was built in 1765.

Drains and sewers

As seen in the outline of the chronological phases of the development of Gammel Strand, a large number of drains, culverts and sewers were found to lead into the canal from somewhere beyond the northern limits of the excavation. The earliest drains found at Gammel Strand were already functioning during Phase 2 of the harbour area, while the vast majority of the drains, culverts and sewers appear to have been constructed and used during Phase 4. A few later structures were also found to be constructed and used in Phase 5.

Using the direction of the drain pipes, they can in most cases be linked to the building plots north of the excavation. By doing so, the drains and thus the waste can even be linked to the people owning and living in these buildings in the 18th and 19th Century, when cross references to the plot registers are made.

An example is the drain, G708 in the western end of the excavation, mentioned in the Phase 4 chapter above. The dendrochronological analysis revealed that this drain was built after 1750 – and possibly even after 1778 as it was placed above foundations with dendrochronological dates to 1778. This was supported by the finds of a clay pipe made in 1753-55 in the fill inside the drain pipe. The direction of the drain points towards the eastern side of the building which today is Gammel Strand 44. The current building was built in 1797 (and rebuilt in 1855 and 1930), but before then, the eastern side was registered as plot number 13 in Strand Kvarter. According to *Københavnske jævnførelsesregistre*, this was in 1756 owned by a Jewish man named Amsel Jaob Meyer, and in 1806 by a tradesman named Simon Jacob. Whether any of these people was the direct or indirect link between Gammel Strand and the numerous finds of exotic cowrie shells retrieved from the fill of the drain is not known, but the thought is tempting.

Life on the boundary

The Southern boundary of Copenhagen

Gammel Strand, for many years of its existence was the southern boundary of Copenhagen by sea, but as a harbour it was the boundary to the Sound (*Øresund*), the Baltic, Europe and the world. The boundary location was never constant, it was slowly moving south every 30-100 years, as seen from the either dendrochronological dates of the harbourside or from the historical records.

From the Gammel Strand excavation results, we follow the creation of a new southern boundary containing part of a new harbour and land behind in the 1400s. This process continued, although the boundary has basically stayed the same since 1880 and till today. From the creation of the harbour area of Copenhagen, Gammel Strand forms only part of the boundary, as from the area between *Læderstræde* and Gammel Strand there lies both posts and bulwarks dating from 1200-1400, suggesting the creation of land between those dates. This follows the general trend in European urban harbour regions.

There were at least 6 construction phases (containing possibly two more harbour phases within Phase 1) of Gammel Strand being part of the southern boundary of Copenhagen. Whilst the boundaries around Copenhagen has been suggested as being fixed in the north, west and east, protected and enclosed by a physical defensive boundary from the 1200s to the early 1600s, only the southern area could have been expanded. This was seen with an expansion southwards, and the incorporation of *Bremerholm* (then *Gammelholm*) and *Slotsholmen* into the south east side of the city during the 1500s. This process was followed by the establishment of *Christianshavn* in the early 1600s.

The ferry point

The ferry area was located east of Gammel Strand, and east of the Højbro (High Bridge). The street named Ferry Street or *Færgestræde* was first mentioned in the written sources from the 1400s. H. Fabricius writes that in 1526, *Færgebroen* (the Ferry Bridge) was first recorded as the ferry point to Scania and Amager. This was the local and regional ferry point with the bridge or pier for the ferries. The area became a storage area, ropewalk and ship building area in the late 1500s, so the ferry point may have moved elsewhere. Where the ships for longer voyages would have been stationed is not known, but is probable that they would have paid for passage on merchant ships that would have been unloading around Gammel Strand and the surrounding areas.

Economic boundary

Gammel Strand was part of the economic boundary of Copenhagen. From the mid 1400s until the mid 1600s, Gammel Strand comprised a weighing house (*Vejerhus*), customs and excise house (*Accisehus* – from the 1580s incorporated into the new weighing house) and later also the Vragerbro (quality assessment area) and Bargemen's Guild house (*Pramlaugets hus*). Presumably, but still to be researched, the toll house (placed opposite Gammel Strand, on *Slotsholmen*) dealt with tax on ships using the harbour, and then the weighing house was used with taxing goods and *Accisehus* specifically with wine and beer. The bargemen or ferrymen were used with guiding ships and transporting goods around via the harbour.

Living near the boundary

The buildings that were exposed during the excavations appear to have been primarily administrative buildings, linked to different functions of the harbour. Thus, they were probably not fully inhabited. In contrast to this, the buildings along the north side of today's Gammel Strand were owned by privately. From written sources it appears that mostly wealthy people owned and inhabited these buildings. People with professions linked to the harbour probably lived in the streets north and west of the Gammel Strand area itself.

Examples of the people owning houses at Gammel Strand in the 17th and 18th Century can be retrieved from the plot registers and by using the *Københavnske Jævnførelsesregistre*. Among these is Mayor Bartholomæus Jensen, who owned plot number 1 in Strand Kvarter (now Gammel Strand 22) in 1689. The same building was in 1756 owned by *vintapper* (wine bottler/bar owner) Johan Mathias Rose. Plot nr. 3, which is today Gammel Strand 26, was in 1689 owned by an English shoemaker named Johan Reinholt, while the building in 1756 was owned by a man surnamed Duus, who is registered as *Vejermester* – the weight master. A wine salesman, Henrik Verner, owned the neighbouring house, Strand Kvarter plot nr 4 in 1689, while in 1756 this was owned by a barber called Christopher Baltzer. What is today Gammel Strand 34 was earlier split into two plots, Strand Kvarter plot nr. 7 and 8, which in 1689 was owned by skipper Christen Morgensen and merchant Claus Reimer, respectively. By 1756 the two plots had been turned into one and were owned by the hat maker Jacob Lyders. Current Gammel Strand 38 was in 1689 owned by barber master, Christian Franch, in 1756 by glass merchant called Meer and in 1806 by a copper smith named Christian Petersen. Another *vintapper,* Evert Funch, owned plot number 10 in 1689, which is today the Gammel Strand 40. In 1756 this had been taken over by the Royal engraver (David?) Aron Jacobsen, who rebuilt the house in 1799-1800. Plot number 11, which is today's Gammel Strand 42, was in 1689 owned Rudolf Boldevin, who was the king's furrier. In 1756 the building was owned by a Thomas Morville and in 1806 by a so-called *urtekræmmer* (selling vegetables, pharmaceuticals etc.), S. M. Salomonsen.

Of course the owners of the buildings would not have lived there alone – they would have had households, which would have included maids and possibly even tenants living in the houses as well. Further study into the wide array of preserved written sources from the 17th to 19th Century – e.g. inventories and insurance documents would provide a greater level of detail and a link between the archaeological findings and the past.

The usage layers recorded in front of the different harbourfronts or bulwarks are believed to reflect the activities in the immediate surroundings of the area – the occasional dropping of personal belongings or goods into the harbour along with sand from the barges as well as the illegal, yet deliberate, dumping of garbage and other un-wanted material into the water.

However, the large amounts of waste retrieved from the land reclamation material in the harbour reflect a much wider population. It is believed that in the Medieval period, and a large part of the Renaissance period, that the finds reflect the inhabitants of the neighbourhood, though the sheer amounts of material dumped into the water as land reclamation may suggest also, that not all the rubbish and other materials came from the immediate vicinity. In the 1600s the appointment of a *Brofoged* (street or bridge bailiff), a position that managed the pavements and the rubbish discarded onto the streets. This may then suggest that the discarding of rubbish became more organised and thus rubbish used to backfill the areas behind

the new harbour constructions may reflect rubbish from all over the city, not just from the neighbourhood of Gammel Strand.

In the following, a selection of artefacts representing different aspects of society is presented.

Personal Identity

Certain artefacts from Gammel Strand help us to understand the former societies in Copenhagen. One such artefact type is clothes, shoes and other artefacts of attire which help us to identify the individual. From Gammel Strand artefacts representing clothes are seen throughout the chronological phases and by analysing the various finds over time we may start to see evidence of fashion. In this short section we will see various examples which will be shown through examples such as copper alloy hoods and leather shoes.

Copper Alloy head dresses

Copper alloy Head dresses are just one part of a large French hood style fashion of the Late Medieval and Early Renaissance period. The style was originally said to have started in France, which had then spread over other parts of Europe. It comprised a single wire head frame of which was attached a scarf or cloth, and then set in place in place by using hundreds of copper alloy pins. The remains of the French hood fashion is usually found in the ground as separate pieces, either as head frame fragments or as copper alloy pins, rarely are either finds type seen with the cloth attached. These type of fashion artefact represents clothing of an elite lady, and would have had needed a few people to create the style of clothing. These artefacts have been found on other excavations at Kongens Nytorv and Rådhuspladsen, and would have been the style of choice for high status women through out Europe.

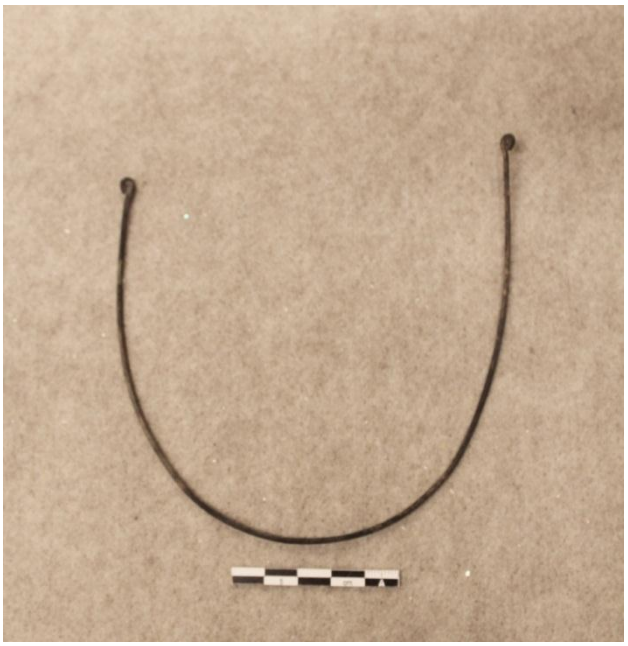

Fig. 162 Head dress FO215337. SD37640, G663. Phase 3. Museum of Copenhagen

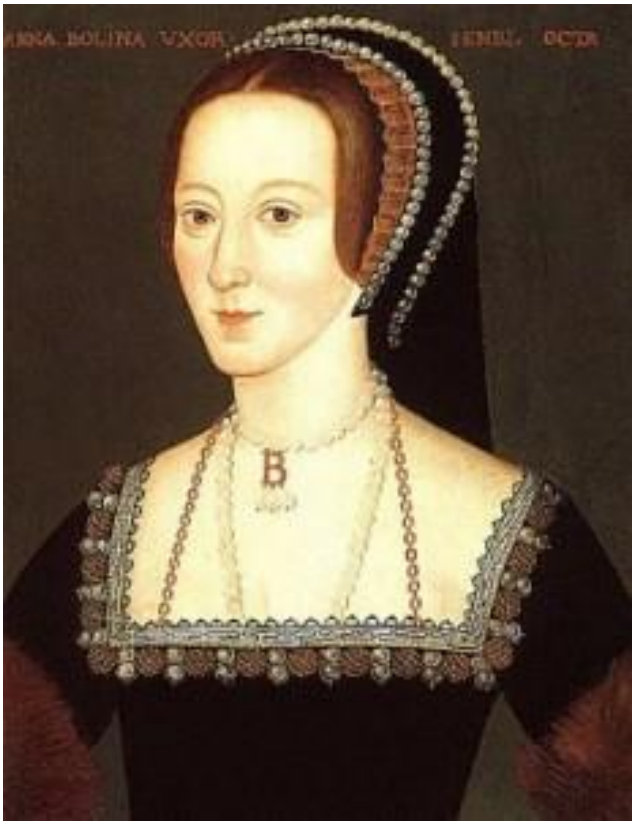

Fig. 163 Queen of England, Anne Boleyn, wearing a French hood head dress. Source: National Portrait Gallery

Leather shoes

By Vivi Lena Andersen

When finding an object in an archaeological excavation it is not always possible to link the item to an individual person of the past. But when recovering pieces of garments and personal accessories the link is more straightforward. The shoes and mittens from Gammel Strand tell the personal stories of adults and children, men and women, boys and girls.

The shoes found in the excavations in Copenhagen, do not appear to excel in climate adaption. On the contrary, the typical footwear design of for example the 17th century was a high heeled, suede shoe with low cut quarters and decorative holes and cut-outs on the vamp and at the side seams. Vanity becomes more distinct both seen from the development in adornment of the footwear and from the willingness to wear fashionable footwear that caused physical pain. Due to the footwear fashion and shoe construction of especially the 17th and 18th century shoes foot deformities were common. Flat footedness, bunions and hammertoes are deformities Copenhageners lived with at that time according to the wear and alterations on the found shoes. In comparison shoes from the medieval Copenhagen do not show the same level of foot defects. The inventions around 1600 of the high heel and symmetrical and narrow shoe design take the blame for the foot defects in the 17th century and onwards. One had to suffer for the ideal of a small foot and to fit in as a fashionable inhabitant in an urban environment.

Fig. 164 Mule with wear at the one side of the vamp that could be the result of the wearer hyper pronating or a bunion at the root of the big toe, FO218268. Photo: Museum of Copenhagen

A foot deformity can leave traces on the vamp, sole or heel of the shoe. Hammer toe is a deformity that causes your toe to bend or curl downward instead of pointing forward. It usually develops over time due to wearing ill-fitting shoes, e.g. shoes being too tight, narrow or wearing high heels that put pressure on the

front of the foot. These are all elements that are integrated and are an unavoidable part of the 17th century footwear idea, which also provoked bunions.

Flatfoot or hyper pronation is another foot defect that leaves traces on the shoes of the wearer. Former studies show that flat footedness was a very normal defect as it still is today. Some are born with the defect, some develop it through childhood and for others the defect is triggered by the use of improper footwear. Flatfoot was a very normal feature on the majority of the shoes. Flatfoot and bunions can leave a severe wear on the inner side of the shoe´s sole and/or heel, as e.g. seen on the FO218268 (see photo). In order to prevent the shoes from wearing out too fast in this area the Gammel Strand finds show signs of reinforcement features, e.g. repair patches attached with pegs or the area being reinforced with several wooden pegs.

Fig. 165 Man´s shoe from the second half of the 17th century, FO218186. A slit is cut in the middle of the vamp, presumably to make room for a large foot or foot deformity. Photo: Museum of Copenhagen.

FO218186 is an example of a shoe from the second half of the 17th century with a slit cut through the middle of the vamp. This feature is seen on other shoes from Copenhagen and was a way to make room in the too narrow shoes for a large or a damaged foot or foot deformity that could not fit into a normal shoe.

Professions

Many finds from Gammel Strand represent professions of former positions in society. These can be seen from certain tools which denote various craftsmen, rings denoting merchants or even fishing equipment representing fishermen. An example of a profession that can be shown from an artefact is the merchant's ring, which is presented below.

Merchants

The ring (as seen below) represents a merchant, perhaps from Copenhagen, dating from the early 1600s. The role of a merchant appears to have been central in Copenhagen and is even reflected in the name of Copenhagen, Merchant's harbour, recorded in 1188. Merchants were the middlemen in the process of trade, buying and selling goods to consumers, and if wealthy, transporting the goods over seas. The merchant class grew in importance in Copenhagen from the Late Medieval period (as in most European cities) becoming an important level and place of society in-between the elites and the workers, farmers or craftsmen. The role of the merchant in Copenhagen was of great importance as the trade undertaken or sponsored by the merchant class became one of the main catalysts for the development and growth of the city, and the transformation of Copenhagen into becoming a global city. Lead ring FO211653 probably belonged to one such merchant and comprises a merchant's mark stamp. This mark or design would have been used by merchants, artisans or guild members to authenticate and identify them, rather like a trademark today. The merchant ring was probably lost, rather than discarded as it is expected that if it was no longer needed, it would have been melted down. This type of ring was commonly used by owners in the Late Medieval and early Post-medieval/ Renaissance period. An object of this type would be expected in Copenhagen.

Fig. 166 FO211653 Lead ring with Stamp SD44563, G651. Phase 3. Pre-conservation photo. Museum of Copenhagen

The example here is a lead stamp seal ring. The lead ring is fairly well preserved, but slightly distorted in shape. The stamp seal has a reverse depiction of * L * B * followed by a wave, followed by a marker´s mark of two reverse triangle split by a line and flanked by half moons. The motif is set within a circular band.

Status/wealth

Various artefacts within the Gammel Strand assemblage show differences in wealth within the local neighbourhood and the city itself. Good examples includes the gold ring, described below in the Trade sub-chapter, the leather gun holster and leather book binding.

Leather Gun holster

A single gun holster was retrieved from the excavation, representing a former wealthy owner. The gun holster would have formerly been attached to a saddle. Due to the date of the gun holder it is believed to have contained a matchlock gun, (although flintlock guns became available in the 1640s according to Foard 2012, 41). It is not known whether the holster was used for hunting or military use, but the gun holster was linked to the Dragoon type of soldier in this period. The style of this holster, with it being attached to a horse, represents wealth, as horses were expensive to buy and also own. The artefact is produced from only one fragment and it consists of folded-over leather, which is funnel shaped with a rand type seam. The former attachments to the saddle are missing though. The gun holster was retrieved from a deposit thrown into the harbour in the middle of the 17th Century, and due to the anaerobic condition of the soil, it is in a good condition.

Fig. 167 Gun holster FO213540, SD40474, G664. Museum of Copenhagen

Leather book binding

By Vivi Lena Andersen

One book binding was recovered from Gammel Strand. Some book bindings can be found with both back, cover and bark plates intact and some with only a fragment of one side. The book binding from GLS is not intact and has secondary cut marks. Yet it is easy to see, that the size of the book it once covered was quite large (compared to contemporary standards). The other known finds of book bindings from the Metro Cityring excavations are all quite small – possibly hymn books and small bibles. The book binding from GLS is only about ¼ preserved from one side the cover, but the estimated original size tells us it once covered a more extraordinary type of book. Perhaps this was related to an institution (church, monastery, city hall etc.). Some book bindings are visually simple and plain. The found example from GLS is on the contrary ornate with advanced decoration in a variety of patterns in bands. See picture below.

Fig. 168 Detail of book binding, FO213533. Decorated with a variety of patterns in bands. Museum of Copenhagen

Trade

Within this sub chapter of trade we will discuss trade, diffusion of ideas and networking in the context of Gammel Strand. This discussion will be undertaken with using both the artefactual and natural science results. With the archaeological sequence, believed to start from the 1400s to the present day, and an artefactual sequence starting earlier from the mid-1300s from residual pottery Development over time can be viewed. Change in trade routes and the amount of trade from certain areas can be seen and quantified. This sub chapter will first contain aspects of both the glass and ceramic trade with articles ceramics that delve in a deeper history and knowledge of the artefact type. It will then highlight various finds linked to different periods of trade which represent connections and networks, from which information on a myriad of subjects was spread. It will also include various natural science remains that represent the known and lesser known trade routes as well as work undertaken for provenance.

Trade involving Gammel Strand can be found to have occurred locally (in and around Sjælland and the Oresund), regionally (from different areas of Denmark) and finally internationally. The overall picture of Gammel Strand shows the area contains, as expected, large quantities of finds and a large percentage, in all periods from regional or local production centres. This was seen in many daily life goods. From international areas, various production centres within the location of modern Germany contributed greatly to the overall Gammel Strand finds assemblage from all phases. The next biggest trading partner was the Netherlands which became very important in Phases 2-4 (even though they were a lot of finds in phase 1, from truncated areas, and from phase 5, from residual finds). Other trading areas include England, and to a lesser degree, Scotland, Norway and Sweden. Mediterranean manufactured objects are very small in quantity from ceramic vessels to food remains.

Fig. 169 Global trade as seen in the painting A view of Tranquebar. Tranquebar and the fortress Dansborg. Painted ca. 1650. Skokloster slott, Sverige

Global finds are restricted to Chinese porcelain, cowrie shells from the Indian Ocean, shellfish and turkeys from North America (which should include tobacco but that has not survived) and a single ring from South America. Incorporated as well are also the structural items, as where possible, these objects were analysed for provenance, e.g. wood and stone. The pottery has also been provenanced, but by ICP analysis on the clay matrix of the soil. Pottery, like most offer finds are then typologically and stylistically dated.

Finds representing trade and connections

With the rise of the merchants and middle classes in the Late Medieval period, a new type of urban networking was occurring. Through trade, political and marriage, links between urban societies were becoming far more obvious. It is best viewed through luxury goods as these were used to cement ties as well as the contest to obtain the best objects. It can be viewed at Gammel Strand from cloth seals, with cloth imported from Hamburg in Phase 1 and London in Phase 2. It can be seen from glass, with rare vessels from Bohemia, then western Germany in phase 1 with the import of *Façon de Venice* and possible a Venetian vessel itself amongst the imports. Through pottery we have Pingsdorf from central Germany, a rare find, even if it is residual from a later phase context. Ceramics are also upgraded with decorated Siegburg stoneware, then Chinese porcelain, Majolica from Spain and Italy and parts of amphorae containing wine or oil from Portugal. From special finds we have a merchant ring representing the merchant class, a gold emerald ring from Colombia for the extreme wealthy, and the early period clay pipes from the Netherlands representing new elite social hobby of smoking. We have bear skins for fashion along with copper alloy French hoods and French type shoes, and finally in the small example section we have fig seeds from the Mediterranean, which were imported not only for their taste but for their medicinal qualities. These finds represent a small quantity of what remains, and a tiny amount of what was traded. What they do represent is a trading journey sometimes outside of the normal trade route and shows the extra effort needed to obtain certain objects not for functionality but for special reasons. They also represent the scope and contact with the Gammel Strand harbour, and the people living in and around Gammel Strand.

The aim of this sub-chapter is to present certain types of finds and natural sciences that represent trade, and show how they helped to build the new picture of trade and connections, as seen from Gammel Strand.

Ceramics

The ceramic assemblage on Gammel Strand was split between two reports, Medieval pottery dating from 1000-1535, and Post-medieval pottery from 1536-present day. Ceramics are important artefacts as they can be used as a dating tool (by typology, morphology, fabric and style amongst other things) so by comparing the assemblage per context, a relative date may be obtained. The material not only provides evidence of status, fashion, production and technology, but also trade. By analysing the provenance of various ceramics per phase we can observe trade routes, and through quantity, the popularity of trade routes. A picture of trade can then be created, and after comparing the various trade routes we can start understanding how and perhaps why trade routes change over time and then start building up knowledge of networks to and from Copenhagen, and Copenhagen's connections with the regional and global world

As with the natural science remains, the ceramics (along with all the bulk finds) were prioritised with an emphasis on sherds from deposits dating to the Medieval and Early Post-medieval phases. The quantity of

finds that were analysed decreased in the later periods, so, by Phase 6, only a few bags were registered. The non prioritised finds were stored in the archives for future analysis.

Selected below are three difference examples of ceramics portraying provenance as examples of how we have used the material to identify networks and trade routes.

Decorated Westerwald sherd FO218800

A fragment of Westerwald ware is the first example of ceramics and their provenance. The sherd depicts the French King's coat of arms with the three lilies and a profile portrait of a woman dressed in Renaissance dress and headgear. The richly decorated type of jug, a baluster formed jug, was produced in Westerwald, Germany in the first decades of the 17th Century but similar examples from Siegburg also exist. Due to the very light fabric, this may be a Siegburg jug. The sherd shows a Renaissance scene of France with the French style of fashion, which became common all over North and Western Europe. The mould in the depiction was then added onto pottery fired and fashioned in western Germany, and it was then traded to Copenhagen (either directly or indirectly via a transfer of cargo in other harbours. It is probable that it was used by people in the neighborhood of Gammel Strand, and discarded at some point in the 17th Century. It was deposited into the harbour area, along with other small rubbish deposits from the surrounding area in the creation of the late 1600s harbour. The sherd portrays the trade with western Germany, but also the areas' connection with France from the sherd design.

Fig. 170 A fragment of decorated Westerwald ware. FO218800, SD12895, G414. Phase 4. Museum of Copenhagen

High Medieval Flemish ware, FO218601

This small fragment of Flemish ware represents a trade and network connection within the period between the years 1200-1350. This sherd was discarded with other rubbish at the base of the harbour in a deposit that contained both High Medieval and Late Medieval pottery. Although this artefact is earlier than when the harbour base deposits were created, it represents rubbish from an earlier part of the city dumped into the harbour after a development within the city. The importance of the sherd (along with other Flemish ware sherd from the Metro Cityring excavations) is that it represents an earlier trade route that has not been greatly represented before, and helps to recreate former urban connections.

Fig. 171 Flemish ware neck sherd, FO218601 covered with roller stamp decoration. Lead glaze. 1200-1350. SD37646, G647, Phase 1.

Ligurian Faience, FO217281

These two fragments of Ligurian ware represent a trade in luxury items from Northern Italy to Denmark, and perhaps to one of the inhabitants of the Gammel Strand neighbourhood. Within the early to mid 1600s, it has become more obvious within the assemblages of sites in Copenhagen of new trade routes and connections with countries and cities within the Mediterranean. Although the quantity of finds from these regions is small in comparison to other vessels from other cities within Northern Europe it represents a trade of special items to enrich the households of certain individuals within this period. It was within this period that some parts of society was noticeably changing within Copenhagen and from the remains we can see glimpses of how households were competing with luxurious objects, furniture and food to impress visitors to the household and to dinner parties. This find and other similar imported luxurious objects represent this process.

Fig. 172 Liguria, yellow blue plastic ware, faience dating from1600-1650. FO217281 ,SD52177, G601. Phase 4. Museum of Copenhagen

Clay pipes

By Mie Pedersen

Clay pipes are one of the most common Post-medieval finds. The white fragments are easy to spot in the soil, and because they are hard fired clay they are often very well preserved. On the Gammel Strand site there has been collected 8619 fragments weighing about 37 kg. Some 580 fragments are from the Guide Wall Excavation, and those fragments are not as detailed registered as the ones from the Main Excavation. The clay pipes from the Guide Wall Phase are not included in this report.

From Gammel Strand, a total of 272 FO-numbers belongs to the Guide Wall Phase, and the remaining 1860 FO-numbers belongs to the Main Excavation. Not surprisingly, most of the pipes found at Gammel Strand are Dutch, but this site is the first of the major Metro sites to contain pipes from Denmark, Scotland and Germany. A single English pipe was recognized from Rådhuspladsen, but from a Gammel Strand total of 30 pipes has been recognized as being English. The overall dating of all the fragments appears to date to date from the early 1600s up until the early 1900s. Most of the pipes are however, date wise, and clustered around the second half of the 17th Century. There were also two porcelain pipes collected from this site and they are also included in the main report.

Clay pipes are important artefacts as their provenance can be found from historical records helping to show connections and trade routes. This combined with their ability to act as a dating tool from a mixture of morphology (whose styles are dated by a relative typology) and from various stamps known as maker's marks one can attribute either their name or design to clay pipe production sites. By using stratified archaeological layers, it can be seen how trade routes change over time and from quantity, consumption and import from certain areas.

Fig. 173 Jonas type pipes from Gouda, Netherlands, ca. 1640. Left: Green glazed pipe FO215135. Right: Pipes FO213121-23. All from SD37640, G663. Phase 3. Museum of Copenhagen

It is believed that the earliest pipes in Denmark were brought here around 1606. But in fact that year corresponds with a written source with information about an estate in Helsingør (Elsinore) where the owner had a small, well-stocked shop with all sorts of items. The declaration of estate mentions all sorts of goods such as knives, buttons, spices and also tobacco pipes. The year the first pipes were brought to Denmark is still unknown, but it is commonly thought to have been brought to Helsingør by sailors in the late 16th Century. We do not know either when the first pipes came to Copenhagen, but early 17th Century pipes have been found at e.g. Rådhuspladsen (KBM3827) and now at Gammel Strand.

Most of the pipes in Copenhagen are imported, mostly from the Netherlands. Attempts were made to produce pipes locally, but none were very successful.

Around the 1680s-1690s at least three different men were given privileges to start a pipe production in Copenhagen, but there is no information where the factories were placed or for how long they existed. They haven't been proved archaeologically either. But throughout the 18th Century there were several factories, and some of them have been proved archaeologically too. But even though locally made pipes were available we rarely see the pipes in archaeological contexts. Various bans were made to help the sale of these locally made pipes, but they didn't have the desired effect and Dutch pipes were still brought to Copenhagen in large amounts.

As far as is known from written sources and iconographic material (such as paintings) both men and women smoked, perhaps men more than women. The different qualities in the pipes could indicate that a broader selection of smokers had access to the pipes; which means that no matter your social status you would be able to purchase pipes.

On a more fashion-related note there weren't many options to stand out with your pipe. During the 17th and 18th Century the pipes only came in that white fired clay, but you could get your pipe glazed with e.g. a green lead glaze. Not many did that and finds of glazed pipes are rare.

Rings

A total of seven rings of gold, copper alloy and iron and glass were registered and analysed as part of the personal finds assemblage. Two rings were of particular interest for differing reasons. Lead ring FO211653 comprised a merchant's mark stamp and has been discussed already (see Life on the border section).

The final ring is an exquisite artefact, not only for its design and the materials used to craft it, but for the story. The gold and emerald ring FO208396 resembles a similar ring found near Florida in 1622, made from gold and emerald from Colombia. The Gammel Strand ring is believed to have also been made in Columbia as the emerald also comes from emerald mines in Columbia. The ring was found in the backfill layers behind the construction of the new 1690s harbour extension. It is possible that the ring was accidently lost and then thrown in with all the other rubbish. The ring was of 14-18 carat gold with a square setting with an emerald bezel. It is believed that the Columbian provenance for the emerald also contained gold from the same Muzo area mines. It probably dated to the 17th Century and perhaps belonged to one of the inhabitants around Gammel Strand. The ring represents the local elite surrounding Gammel Strand taking advantage of the new period of globalisation where goods were now imported from the Americas, Africa and Asia for the elites. Gammel Strand was the centre of the global harbour of Copenhagen, the biggest and most important harbour in Denmark, dealing with this type of trade.

Fig. 174 Gold ring with emerald bezel FO208396 SD53452, G713. Phase 4. Museum of Copenhagen

Cloth seals

This small assemblage from Gammel Strand comprised 11 lead cloth seals. Cloth seals were attached to the fabric and were used for quality control and taxation purposes from the 13th to the 19th Century. The identified ones are all of foreign provenance representing international trade. Cloth seals were fashioned from lead and stamped with a myriad of designs representing either coat of arms, letters, numbers or symbols for identification of the fabrics quality and origin.

The *Gammel Strand* seals are quite evenly distributed over the chronological phases: one in Phase 1 and 2, two in Phase 3 and 4 and five in Phase 6. However, since most deposits are re-deposited, the true ages of the items are not always obvious.

Lead cloth seal (FO211629)

Lead cloth seal (FO211629) contains a legend containing the town gate comprises three towers motif which probably relates to Hamburg, Germany, and one of the main cities within the Hanseatic League. The reverse has a legend: ..AMBU../...KR.../...AL.../ and perhaps afleur-de-lis? This seal is obviously older than the 20th Century deposit and probable dates to the 16th or 17th Century. The trading network with north west Germany was very popular in the Medieval and early Post-medieval period, even though Denmark had been in a trade and military war with the Hanseatic League for many years of its Medieval and early Post-medieval history.

Fig. 175 Post-medieval cloth seal (FO211629) before conservation. SD20146, G636, Phase 6. Museum of Copenhagen

Lead cloth seal (FO211650)

Lead cloth seal FO211650 consists of only one disc dating to the early 17th Century style seal. The obverse shows a shield of arms with a ridged cross and a sword, and has a surrounding legend: DE: LONDI:NO, depicting the name London with the crest representing the coat of arms of the city of London. The reverse is blank. Similar seals are seen in British Museum, London, are dated 1633 and 1634. The cloth seal represents the network and trade with London, which was also exporting clay tobacco pipes and tobacco to Copenhagen in this period.

Fig. 176 Lead cloth seal from London. FO 211650, SD38150, G664, Phase 3. Museum of Copenhagen

Zoological material representing trade and connections

By the Zoologisk museum, University of Copenhagen

For the excavation, due to the very large quantity of zoological material (perhaps consisting of 500,000 fragments) it was decided that the remains would be heavily prioritised, and a scientific sample was undertaken from the assemblage. The remaining non prioritised material was then given to the Zoologisk museum for future analysis and research. The entire prioritised collection from Gammel Strand was analysed, which included a total number of 47080 fragments equalling 230405 grams (230 kg) of amphibians, crustacean, bird, mammal and fish bones divided among 5 phases from both the Guide Wall excavation and the Main Excavation.

The faunal collection from Gammel Strand included a minimum of 75 species/families of which 39 were fish, 2 were crustacean, 1 was amphibian, 14 were bird and 19 species or families were mammalian. In Number of Identified SPecimens (NISP) fish dominates the collection with 28203 fragments followed by 17904 mammals, 881 bird, 5 amphibian and 87 crustacean fragments, see table 1 for the entire list.

The extremely good preservation of the collection in general can clearly be seen by the presence of bones from the lump sucker, which has bones that are paper-thin and extremely fragile.

Zoological analysis is a very important aspect of the archaeological process. The material not only provides evidence of diet, but the environment, status, fashion, craft working and trade. In this section the trade aspect will be discussed and shown through the remains of the turkey, and from the mollusc section, the cowrie shell and soft shell clam.

Turkey *Meleagris gallopavo*

By Zoologisk Museum

From the excavation, one of the most noteworthy species was perhaps the three bone fragments from a turkey. They include a part of a calvarium and a distal and a proximal part of one or two humeri, both from the left side of the bird. According to historical records, the turkey arrived in Germany in 1530 from the Americas and probably reaches Denmark shortly thereafter. The first written source of its arrival is a letter from 17th of May 1575 where the dean of Herlufsholm, Hans Michelsen, wrote to Christopher Gøye and offered him some turkey chicks.

The first time the turkey is mentioned as part of a menu, is from the royal court in 1648 and hereafter it is commonly found on the menu. The three turkey bones from Gammel Strand were therefore an early find of this bird in a Danish context dating to the 17th Century. They probably represent the remains of a consumed turkey from the neighbourhood properties which were then discarded as rubbish. Within this period, it is presumed that turkeys were a more luxurious food item on the menu, so it is presumed it may relate to the surrounding area which comprised wealthy inhabitants.

The Brown bear *Ursus arctos*

Of particular interest from Gammel Strand was the rare find of six phalanges from brown bear (Fig. 180). The zoologists suggest that the elements along with the two cut-marks indicates that the brown bear

remains made their way into the archaeological record as the remains of a bear skin and not as a food item, or a by-product of the skinning and butchering process.

The six bones all belong to the extremities, specifically one of the paws. Although brown bear was naturally found in Denmark into the postglacial period, the last confirmed finds of this species belong to around 2500 BCE. It is therefore highly probable that this bear was imported, and, based on the distribution of bones; it is likely that it was imported as a skin and not as a complete and living animal. The use of the bear skin is not known, it may have been used as ostentatious decoration of an internal room of a building or perhaps clothing. At some point in the early to mid 1600s it was discarded, along with urban waste into deposits as part of the land reclamation of the late 1620s western harbour extension in Phase 3.

Fig. 177 Photo of 2 Phalanges III, 2 phalanges II and 2 phalanges I from brown bear animal remains. G640, Phase 3. Photo by Zoologisk museum

The money cowrie- *Cypraea moneta*

By Svend Visby Funder

Migration and invasion of animals and plants into areas where they are not wanted is on a Global scale a major threat to biodiversity and economy, and great efforts have gone into studying the immigration history of invasive organisms (e.g. Convention on Biological Diversity 2016). One of the species in the Gammel Strand collection is considered to be invasive to Europe, the soft-shell clam (*Mya arenaria*).This is an old invader, *i.e*. it arrived several hundred years ago, and now have consolidated its' place in the ecosystems where they both have become dominant in their respective habitats – sandy and muddy bottoms in the littoral zone (soft-shell clam). Their history of expansion in 19th and 20th Centuries is well

known, but the time of arrival in Europe is still a matter of discussion and of interest for understanding the mechanisms behind invasions. Recently DNA studies performed on shells of the specie have shed some light on origin and transport route, but their time of arrival is not well established[1].

The spread of cowrie-economy and its consequences for international trade has been described in detail by Hogendorn & Johnson[2]. The Maldive cultivation of money cowrie goes back over Centuries, or even millennia and the small shells from the Maldives have been used as petty cash for trading, first in areas around the Bay of Bengal, later in all of India, and via the Silk Road in northern China, then, via Southeast Asia, in southern China[3].

Expansion of the trade into Africa goes back maybe for millennia, and the Maldive cowries were used both as currency and adornment in the West African Mali Empire at least as far back as the 11th Century, transported by Arabian merchants and slave dealers after arduous and costly travelling. They were also known both to Romans and Carthaginians, but the European involvement in cowrie trade began in the late 15th Century when Portuguese sea-farers met cowries both as currency in *North* Africa and at their place of origin in The Bay of Bengal. They soon realised that large profits could be earned by transporting the cowries in ocean-going ships and putting them up for auction among Africa-traders in Lisbon. As ballast the small shells rode on a free ticket, because they did not take up precious space in the hold, serving a practical purpose at the same time.

By mid-17th Century the Portuguese were ousted from the Indian trade by Dutch and English trading companies, and the cowries were now landed and put up for sale in Amsterdam and London instead. Here they became closely associated with the European and later also American slave trade, which reached a zenith in the late 18th Century before it was generally abolished in the early 1800s. The annual import of cowries to markets in London and Amsterdam amounted to c. 200 t - or c. 45 million shells.

In spite of attempts first by the Portuguese, and later by the Dutch and English companies to take control of the trade by subjugating the Maldives, the sultans there somehow managed to repel the attacks, and remain in control of the production and transport away from the islands. The cowries were landed in markets on the Bengal coast, and here the European merchants obtained most of the cowries bound for Europe – and eventually Africa.

The cowries at Gammel Strand probably came from this source, and were obtained in Amsterdam or London, although some cowries were traded directly at Trankebar[4]. The cowries at Gammel Strand therefore signal Denmark's entry into colonial and slave trade, and they were an obligatory part of the load in every slave ship that was sent out from Copenhagen, bound for the colonies on the African Gold Coast.

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[1] Cross, M.E., Bradley, C.R., Cross, T.F., Culloty, S., Lynch, S. & McGinnity, P. O'Riordan1, Vartia, S., Prodöhl, P.A. 2016. Genetic evidence supports recolonisation by *Mya arenaria* of western Europe from North AmericaMarine Ecology Progress Series. 549, 99–112.; Lasota, R., Pierscieniak, K., Garcia, P., Simon-Bouhet, B., Wolowicz, M., 2016. Large-scale mitochondrial COI gene sequence variability reflects the complex colonization history of the invasive soft-shell clam*, Mya arenaria* (L.) (Bivalvia), Estuarine, Coastal and Shelf Science, doi: 10.1016/j.ecss.2016.08.033

[2] Hogendorn, J. & Johnson, M. 1986: The Shell Money of the Slave Trade. Cambridge University Press: Cambridge, 230 pp

[3] Yang, B. 2011: The Rise and Fall of Cowrie Shells: The Asian Story. Journal of World History 22, 1-25.

[4] Same as (2)

The need for Maldive cowries in Copenhagen would therefore have been proportional to the number of ships setting out on the Triangular route and the number of slaves that were bought on the Gold Coast.

Fig. 178 "Small Maldives", money cowries (Cypraea moneta) from the Maldives. FO211730, SD28362, G708. Phase 4

Cowries and Danish slave trade

The Danish colonial trade began with the establishment of a permanent trading station, Trankebar, on the Coromandel Coast in south-eastern India in 1620. This was followed by the seizure of the Danish Gold Coast in the Gulf of Guinea, present day Ghana, in 1663, and the annexation and acquisition of three of the Virgin Islands in the Caribbean between 1672 and 1733[5]. This combination of trading stations on three continents enabled the trading companies to enter the highly lucrative triangular trade, involving the exportation of firearms and other manufactured goods to Africa in exchange for slaves, who were then transported to the Caribbean to work the sugar plantations. The final stage of the triangle was the exportation of cargo of sugar and rum back to Denmark. The cowries played their role in the first step in the triangle, closely tied up with slave trade.

As noted by Gøbel[6] the trade along the triangular route out of Copenhagen began c. 1676. However, in the beginning the trade was sluggish with several years without any traffic; only at c. 1730 did the regular shipping begin. The trade reached a maximum with up to 12 ships per year and altogether 25,000 imported slaves in the period from 1793 to 1802 in the years immediately before the slave trade was generally abolished in 1806. The abolishment of slave trade set a stop to triangular route ships. Also, Denmark's catastrophic defeat during the Napoleonic wars was devastating for colonial trade, because it resulted in the loss of the fleet, and British occupation of colonial trading stations.

In summary, the c. 100 cowries from Gammel Strand belong to the species *Cypraea moneta*, money cowry, and most likely originated in the Maldives, following a long journey and shifting ownership before they were obtained by Danish merchants in Amsterdam or London where they were packed in barrels, sailed to Copenhagen. Here they were stocked later to be loaded on ships setting off for the triangular route. Had they not been spilled during handling in Copenhagen harbour they would have ended up on Africa's Gold Coast as part of the pay for some of the 100,000 slaves that were acquired by Danish trading companies bound for the Danish West Indies. This trade began on a small scale around 1675, but picked up speed in the last half of the 18th Century, before it collapsed in 1806. The spilling of our cowries could of course have

[5] Feldbæk, O. 1986: The Danish trading companies of the seventeenth and eighteenth centuries. Scandinavian Economic History Review 34, 204-218.
[6] Gøbel, E. 2011. Danish Shipping along the Triangular Route, 1671–1802: voyages and conditions on board. Scandinavian Journal of History 36, 135–155

happened at any time during the 130 years of Danish slave trade (or later), but the rarity of "triangular-route-ships" in the late 17th Century, could point to an age later in 18th Century – somewhat later than the "1680/90s" age suggested for sample SD39811.

They have been also used by the Danish Life Guard since 1786 as decoration (*snekketøj)* of the horses head collars, and, originally, for protecting the horses from sabre cuts. They are now worn for ceremonial purposes.

The soft-shell clam (Mya arenaria)

The soft-shell clam is a large (up to 15 cm) and conspicuous bivalve, characterized by its gaping posterior end and the hinge with a large chondrophore in the left valve and a corresponding deep receptacle in the other. The soft-shell clam is distributed along Europe's western seaboard from the White Sea in the north to Portugal in the south. It is a burrower in sandy and muddy sea floors in the littoral zone. It is euryhaline and penetrates deep into the brackish Gulf of Bothnia[7]. However, it is absent from kitchen middens from the stone and iron ages, and considered to have emigrated from North America in historical times. The easily accessible clams have been exploited on a small scale for bait, pig's fodder or – in times of famine – human consumption in many European countries, but not in Denmark[8].

In our material the soft-shell clam is represented by a single medium sized intact left valve from Phase 1 (SD54997), a few fragments in a sample from Phase 3 (SD33628), (where it occurs together with a fragment of the related *M. truncata*, which lives in deeper water). Finally there is a large fragment of a left shell in Phase 4 (SD35240). Of interest here is the specimen from Phase which should date it to before 1560, which makes it a very early immigrant to Europe.

Fig. 179 Soft shell clam (Mya arenaria) from Phase 1, on of the first I Europe. Phase 1 SD54997.

[7] Strasser, M., 1999. *Mya arenaria*—an ancient invader of the North Sea coast. Helgolander Meeresuntersuchungen 52, 309–324; Jensen, K. R. 2010.: NOBANIS – Invasive Alien Species Fact Sheet – *Mya arenaria* – From: Identification key to marine invasive species in Nordic waters – NOBANIS www.nobanis.org, Date of access 22/9/2016

[8] MacKenzie, C.L., Burrell, V.G., Rosenfield, A., Hobart,W.L. (editors) 1997. NOAA Technical Report NMFS 129: The History, Present Condition, and Future of the Molluscan Fisheries of North and Central America and Europe, 3: Europe, 240 pp

The soft-shell clam was not only one of the first marine invaders to be recognized as such[9], but also one of the earliest immigrants, although its history in Europe is still far from well understood. As summarized by Esslink *et al*. (in press) the large and conspicuous shells are missing from kitchen middens and refuse. They occur neither in stone-, bronze-, iron-, or Roman-age context. They are also missing from an early authoritative fauna list from France and Germany in 1534. The first record of a living specimen in Europe dates to 1583 in Belgium.

It was therefore a great surprise when a fragment of soft-shell clam from Skagen Odde in northern Denmark came up with an AMS-C14-age in the interval AD 1245-1295[10] – several Centuries before Columbus and regular ship connection between Europe and America. Later this has been followed up with amino aspartic acid racemisation dating of two *in situ* soft-shell clams from the bottom of the Bay of Greifswald, southern Baltic Sea, giving almost identical ages of AD 1310 +/-70[11], and recently soft-shell clam shells from five locations in the coastal landscape of Holland from the Wadden Sea in the north to the Rhine estuary in the south have been C14-dated to between c. 1300 and c. 1450 (Essink *et al*. in press).

This shows beyond doubt that the soft-shell clam was present in Europe before Columbus, but how did it manage to cross the Atlantic? Hessland[12] pointed out that the clams' only way to move over longer distances is in their larval stage, and since this lasts only some three weeks, it is not enough to cross the Atlantic. Ship-transport is needed where the larvae can settle in the bilge water and arrive in Europe in the juvenile stage.

Before Columbus the only known shipping connection between America and Europe were the Viking ships, and Petersen *et al*.[13] suggested that this was the source for the clam fragments found at Skagen, an interpretation that has also been followed by Behrends *et al*. [14] and Essink *et al*. (in press). However, as appealing as this theory may be, it poses some problems. As pointed out by Wolffe[15] there is no record of any Viking ship passing from America to Denmark, or to Europe for that matter, and such a passage is very unlikely, being too long even for Vikings. The expeditions to America that we know of started out and ended in Greenland with a main aim to collect timber for use in Greenland. Ships could be thrown off course, and although it cannot be excluded that a ship from America heading for Greenland or Iceland up in Europe this seems very unlikely – so unlikely that it should have been on record. It should be noted that both Greenland and Iceland were too cold for soft-shelled clams. It should also be noted that while the three first Vinland expeditions, taking place in the early 1000s, were well documented, very little is known about later voyages[16]. Therefore transportation of the clams by Viking ships require a set of rather unlikely coincidences – maybe not more likely than the odd chance for larval dispersal during strong westerly winds.

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[9] Hessland, I. 1946. On the quaternary *Mya* period in Europe. Arkiv for Zoologi 37A: 1-51.

[10] Petersen, K.S., Rasmussen, K.L., Heinemeier, J. & Rudd, N., 1992. Clams before Columbus? Nature 359, p. 679 only.

[11] Behrends, B., Hertweck, G., Liebezeit, G. & Goodfriend, G., 2005. Earliest Holocene occurrence of the soft-shell clam, *Mya arenaria*, in the Greifswalder Bodden, Southern Baltic. Marine Geology 216, 79-82.

[12] Same as (9)

[13] Same as (10)

[14] Same as (11)

[15] Wolff, W.J. 2005. Non-indigenous marine and estuarine species in the Netherlands. Zoologische Meddelingen, Leiden 79, 116 pp

[16] Seaver, K.A. 2010. The Last Vikings: The Epic Story of the Great Norse Voyagers. London: I.B. Tauris, 277 pp

A recent study of DNA in American and European soft-shell clams suggest that colonisation occurred from the north of the eastern North American range[17], which is both where the Norse travelled, and the offset for the shortest passage to Europe for larval dispersal. The closest DNA relationship between American and European clams is between populations in the Gulf of St Lawrence and those in the Netherlands, suggesting that this was the nucleus for further spread in Europe. These investigations also indicated that the colonisation may have been carried out by intermittent movements by small numbers of individuals between America and Europe.

In any case, the single shell from Gammel Strand joins a small ensemble of scattered finds of soft-shell clam in Northwest Europe that date back to a time before the species had become invasive, which may have happened when large-scale shipping between Europe and America began in the 16th Century.

[17] Cross, M.E., Bradley, C.R., Cross, T.F., Culloty, S., Lynch, S. & McGinnity, P. O'Riordan1, Vartia, S., Prodöhl, P.A. 2016. Genetic evidence supports recolonisation by *Mya arenaria* of western Europe from North AmericaMarine Ecology Progress Series. 549, 99–112.

Dendrochronology

By Aoife Daly

Over three years, from 2013 to 2016, samples from timbers from the archaeological excavation at Gammel Strand in Copenhagen have been analysed dendrochronologically. The excavations were carried out by Københavns Museum in connection with Metro Cityring project, with Stuart Whatley as the excavation leader. The dendrochronological analysis was carried out to enable the precise dating of the felling of the trees used in a series of large quayside constructions and to determine the region where these trees had grown. This analysis thus has provided details of the chronology of the many constructions that were established over several Centuries at the site and has allowed insight into the changes in trade of timber to Copenhagen through the post-Medieval period, both in terms of timber type (genus) and source region.

Fig. 180 Photo of Phase 4 wooden structures, before removal and dendrochronological analysis. Main Excavation, 2014. C02_20140507_9207. Museum of Copenhagen.

A total of 366 samples were submitted for analysis. Some of these were not analysed however, often when they contained less than c. 40 rings. Others were reserved for later analysis if necessary, on the basis of results as they emerged. A number of these remain not analysed. In all then, 320 samples were analysed. A total of 108 of the analysed samples could not be dated. Of the oak, 122 samples are dated and 11 not. For the pines 81 are dated while 86 could not be dated. And 9 of the 20 spruce samples could be dated (see fig 1)

Fig. 181 Posts from the bulwark, ready for packing and then sent for analysis Main Excavation, 2014. Photo: K. K. Tayanin

Methodology

The science of dendrochronology is described extensively elsewhere so this will not be described in extensive detail here[18]. The method utilised the phenomenon that trees, as they grow, form an annual ring. The width of the ring is strongly influenced by the climate affecting the tree, so that two trees growing at the same time, in the same region will display very similar growth, as reflected in the variation, year by year, in their ring width. By measuring the rings widths along an old tree's growth, across the cross-section of a timber, it is possible to compare trees to each other, and find where they cross-match. Due to extensive tree-ring datasets that have been built across Europe by colleagues over the last 50 years or so, it is now possible to compare timbers of unknown age to a range of regional chronologies and precisely date these.

Also, as the climate signal preserved in timber is to a large extent region-specific, the method can also be used to identify the region of origin of the timber, so-called provenance determination.

[18] Baillie, M. G. L. 1982. *Tree-Ring Dating and Archaeology*. London: Croom, Helm; Baillie, M. G. L. 1995, *A Slice Through Time, dendrochronology and precision dating*. London; Daly, A. 2007a, *Timber, Trade and Tree-rings. A dendrochronological analysis of structural oak timber in Northern Europe, c. AD 1000 to c. AD 1650*. Ph.D. thesis submitted February 2007, University of Southern Denmark.

Fig. 182 Photo displaying the use of chainsaw cutting the timbers for analysis. Guide Wall excavation 2012. C19_20121018_4271

In order to carry out the analysis of timbers from Gammel Strand slices through chosen timbers were taken with a chain saw. The criteria for identifying suitable timbers included choosing ones with bark or bark-edge preserved so that the dating of the actual felling year of the tree would be achieved. It was also important to choose timbers with at least 50 rings, usually more, to maximise the possibility of achieving successful dating results. Also, other timbers without sapwood or bark preserved were selected from each construction to enable insight into the timber procurement for each extensive structure. Of course, timbers from all phases that were observed archaeologically were selected, to achieve full detail of the chronology of building activity on the site, and to identify repairs and maintenance to structures over time.

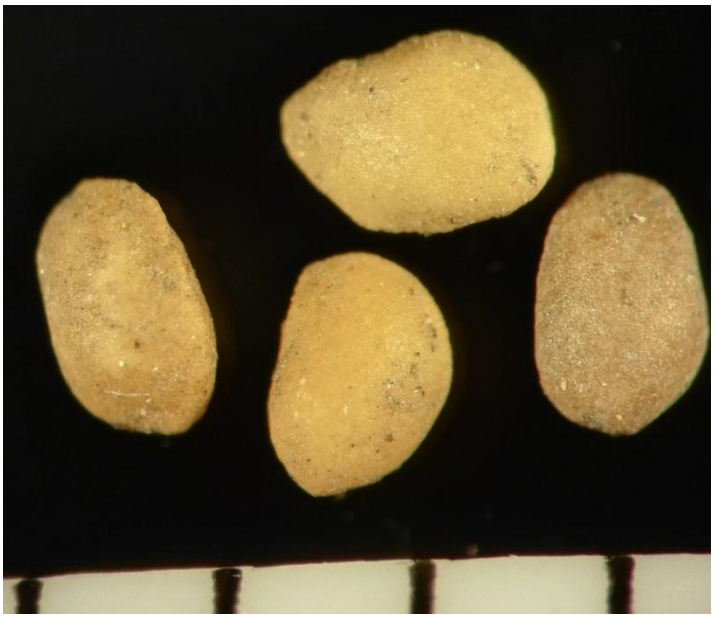
Macrofossil evidence

Whilst macrofossil analysis was used greatly to understand diet, the environment, agriculture and production, it can also identify evidence of trade from the identification of plants with a provenance that doesn't relate to the area. One such plant was the fig.

The Fig – *Ficus Carica*

By Håkan Ranheden

Fig (*Ficus carica*) is an old cultural plant and is today grown in southern Europe and around the Arabic peninsula, particular in Turkey. Seeds from fig are recurrently observed in these samples from Gammel Strand relating to Phases 1 to 4 but lacks totally from Phase 5. They were very frequent in those samples that were collected from inside drains/water pipes which may point out the importance of fig within the house hold and for its laxative effect. In Sweden seeds from fig have been found in latrine remains from the 17th Century Jönköping (southern middle Sweden). They were there noted together with peat-moss (*Sphagnum* sp.), the latter might have been used instead of modern toilet-paper[19].



Seeds from fig (*Ficus carica*) from PM214885 (SD51324, G235). Scale (mm) along the lower edge. Photo: H. Ranheden

The fig represents, in Phases 1 and 2, the transport of luxurious food to Copenhagen for the elites. They represent the increasing evidence of global trade and the import of luxurious objects.

[19] Heimdahl 2009: Bolmörtens roll i magi och medicin under den svenska förhistorien och medeltiden. Fornvännen 104 (2009).

Stone provenance

By Anthony Ruter

The purpose of this analysis was to identify the type of stone and assign as specific a geographic provenance as possible to items, with the expectation that the information could be used to help interpret: 1) the use and identification of the artefacts themselves, 2) the economic activities at the site, and 3) changes in the patterns of trade over time at the site. A wide range of items were selected for analysis including unworked raw materials and artifacts. The report increased the knowledge on stone provenance on Gammel Strand, helping to identify and provenance not only stone goods, i.e. millstone and whetstones, that arrived via trade, but also how all the materials used for structures such as the harbour wall, the possible Weighing houses (1 and 2) and the Bargemen Guild house reached the area.

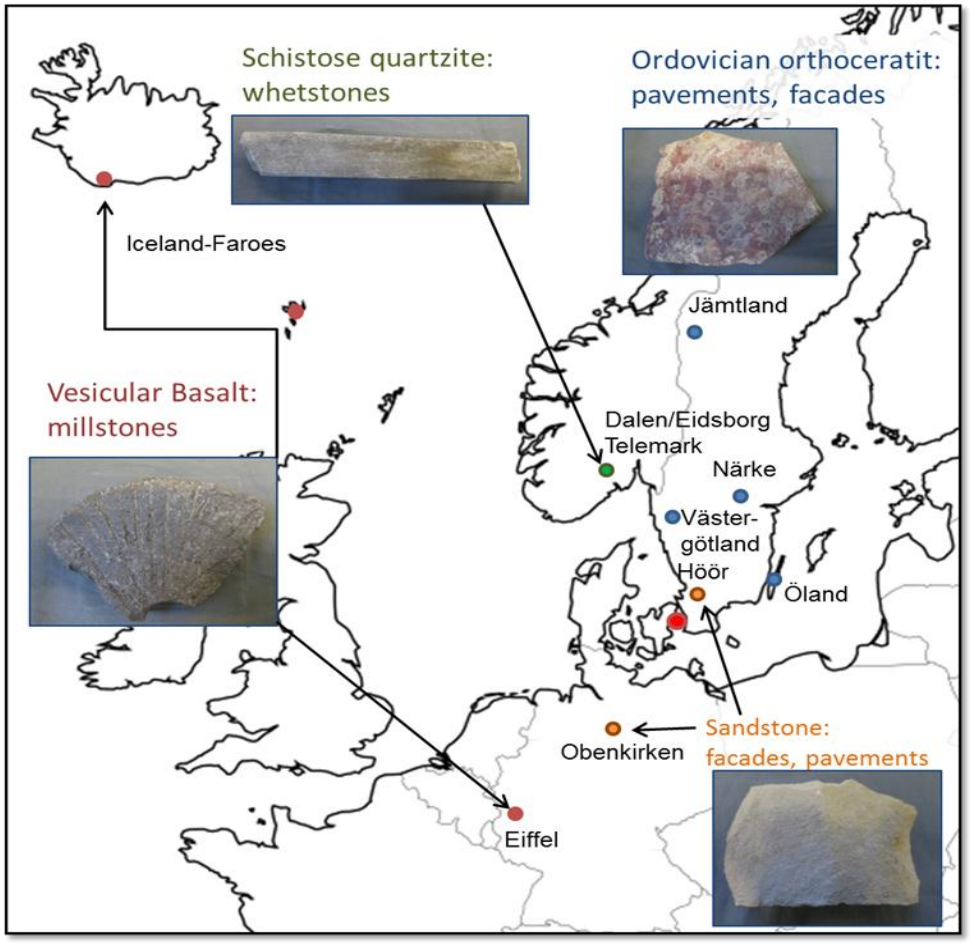


Fig. 183 Map of Northern Europe, with related stones from Gammel Strand

Fragments of Medieval Bohemian glass trade

By Georg Haggrén

Bohemia, located in Eastern Central Europe, became a major glass producing area during the 14th Century. Most of the Medieval glass made in Western Germany was more or less green forest glass named after the colour of the glass and the forest rich regions where it was produced. In contrast to that most Medieval Bohemian glass was more or less colourless, but usually with a greenish, greyish or yellowish tint.

Fig. 184 Bohemian glassworks circa 1420. Sir John Mandeville's travels. British Library

Bohemian glass blowers produced various types of beakers both for domestic use and for export. The glassworks that were involved with trade to the northern markets were located deep in the forests of Ore Mountains (Ger. *Erzgebirge*). Finished glass vessels, mostly beakers, were then carried by wandering peddlers or horse over the mountains to Saxony (Ger. *Sachsen*) where they were transferred to river boats. The River Elbe and some other waterways offered a convenient trade route towards the coastal towns along the southern Baltic. Most probably the same boats also carried loads of German stoneware. In the 14th Century stoneware vessels made in Lower Saxony (Ger. *Niedersachsen*) were popular in the Baltic markets. Later on, during the 15th Century Lower Saxon vessels were replaced by stoneware made in Waldenburg and other places in Saxony.

After a long and time consuming journey through Northern Germany the fragile cargoes of Bohemian glass reached Hanseatic towns such as Hamburg and Lübeck. A great deal of the glass was sold here but some of the beakers were now transferred to deep sea going cogs and hulks by which the Hanseatic merchants shipped a large variety of commodities to destinations along the Baltic and North Sea. All ocean going ship cargoes heading from the Baltic towards the North Sea and Atlantic Ocean were forced to sail through the Øresund. Some of the ships were destined for Copenhagen or the Scanian herring markets, but many others made a halt in the Øresund before continuing the journey over the hazardous North Sea.

The boom of the Medieval Bohemian glass industries came to an end in the early 1420s when religious conflicts called The Hussite Wars took place in Bohemia. Like the 16th Century Protestants, the Hussites challenged the authority of the Roman Catholic Church. This caused a long unsettled era in large parts of Eastern Central Europe. Marauding troops wiped out settlements and industrial plants. All trade not only became difficult but also carried a lot more risk. The Hussite Wars ceased in 1434 but in the 1460s and

1470s they were followed by The Bohemian War. Some glass made in Bohemian tradition was made through the 15th Century but the major flow of Bohemian glass towards the north ceased soon after 1420.

Archaeologists have found Medieval Bohemian glass from all around the Baltic coastline as well as from coastal towns of Western Scandinavia. The finds from Denmark are not numerous but they show how this trade also reached Copenhagen. From Gammel Strand there are several fragments of a Bohemian ribbed beaker decorated by applied glass threads (Ger. *Fadenrippenbecher*). The encircling of the decorative threads was made before the final forming of the vessel with the result that the encircled blue thread has transformed to decorative dots on the ribs covering the body of the beaker. This kind of beaker was difficult to produce and, although these beakers were not rare, they must have been expensive which is shown by the exclusivity of them. Fragments of almost 400 beakers of this type have been found throughout a wide area of Central and North Western Europe but only from prosperous urban sites or aristocratic residences. These beakers were far from affordable for people not belonging to the aristocracy or at least the urban middle class.

Fig. 186 Fragment of ribbed beaker decorated by applied glass threads. Photo G. Haggrén.

In contrast to the common impression glass beakers were not rare items during the Late Middle Ages. Not all the Bohemian glass was exclusive. There were some exclusive glass vessels like the ribbed beakers with applied glass threads, but there were also humble glass vessels that were accessible to common townspeople or even peasants. Base fragments of some small colourless beakers belonging to the Bohemian tradition were also found at Gammel Strand. Instead of being luxury items, these beakers were commodities used by less prosperous merchants or artisans.

Fig. 185 Three base fragments from humble Bohemian beakers. Photo G. Haggrén.

During the 15th Century the Bohemia lost its role as the most important glass producer for the northern markets. The more or less colourless Bohemian glass was replaced by beakers mostly made in Western Germany, in provinces such as Hesse (Ger. *Hessen*) and Rhineland. At Gammel Strand this trade is shown by green fragments of prunted beakers like the cabbage-stalk-glass (Ger. *Krautstrunk*) and optically decorated beakers (Ger. *Kreuzrippenbecher*).

Later, after the series of religious wars and during the early modern era, some Bohemian glass found its way to Copenhagen again. Beginning in the 1650s and 1660s some German and Bohemian glass sellers settled down in Copenhagen. The most important glass sellers lived and had their stores on Østergade. Some itinerant glass sellers from Bohemia and Germany visited Copenhagen too. Especially from the 18th Century, there is a lot of information about the glass that the glass merchants in Copenhagen imported from Bohemia, Saxony, Silesia and Thuringia. However, in contrast to the Late Middle Ages, this time the flow of Bohemian glass is hardly shown in the archaeological record from Gammel Strand.

Renaissance glass produced in Denmark?

By Georg Haggrén

According to the written sources, the first glassworks was founded in Denmark in about 1550 when a noble man called Enevold Jensen Seefeld hired a master glass blower on his estate, Visborggård, in Jutland. Between 1550 and 1660 there were about 20 glassworks in Denmark, mostly in Jutland and Scania. There are some survived written sources concerning most of them, but archaeologists have recently found some previously unknown glass making sites too. One of them is in Glarborg in Zealand. The Danish glassworks concentrated on the production of window glass and green tableware. A rare exception among the Danish glassworks was the short-lived factory in Copenhagen which produced high quality tableware in the Venetian style. This glassworks was located in the vicinity of the former Christiansborg, on Slotsholmen, and in the 1650s it produced high quality glass especially for the court.

In about 1660 almost all glass production in Denmark ceased – Scania was lost to Sweden in 1658 and all the glassworks in Jutland as well as those in Copenhagen were shut down. It was only in Holstein, a North German duchy ruled by the King of Denmark, where Danish glass production continued. An important reason behind the closing down of the glass industry was the common lack of firewood. There was some small scale glass production in Denmark during the late 17th Century but not much is known about this. In the 1690s two short lived glassworks started up in Copenhagen, one in the vicinity of Børsen and another one in Christianshavn It was first in the 1820s when new glassworks were founded in Denmark.

Fig. 187 A still life with a pasglas (cf. e.g. http://levinrodriguez.blogspot.fi/2014/11/common-glassware-in-dutch-still-life.html)

The early glass blowers recruited to Denmark were mostly Germans especially as the connections to Hesse (Ger. Hessen) were close. The glass blowers in Northern Germany and Southern Scandinavia had a common tradition and often same the masters wandered from one glassworks to another.

Actually, the earliest Danish master glass blowers were members of the guild of glass blowers in Hesse. Because of the common tradition, it is very difficult to identify production of certain areas or glassworks. Fortunately, a couple of the sites of Danish glassworks have been excavated and based on the finds from these excavations and some other field studies we know a little about their production.

The most popular glass beaker of the Renaissance was *pasglas* (Ger. *Passglas*). These usually octagonal glasses have got their name from the applied glass threads grouped in a couple of "passes". *Pasglas* were made in several Danish glassworks in Jutland and in Scania as well as in Germany, Sweden and the Netherlands.

According to the account books of the Danish court at least in the late 16th Century thousands of *pasglas* were bought for the needs of the royal court. For example in 1579 there was an order for 4000 *pasglas*. No wonder that from Gammel Strand there are hundreds of sherds of *pasglas*.

Pasglas were decorated by milled or in some cases plain horizontal glass threads. Sometimes these threads were of blue glass but usually they were made of the same light green glass as the entire body of the vessel. At Gammel Strand *pasglas* decorated by blue threads are almost as usual as the green ones. In addition to that, during the first half of the 17th Century people here have also used *pasglas* decorated by very dark brown or violet, almost black threads (for example FO214370), which are unknown from elsewhere.

Fig. 189 *Pasglas* sherds with black threads (FO214370). Photo G. Haggrén.

Pasglas were made in several places in North-western Europe. Large quantities were produced in Northern Germany, the Netherlands and Scandinavia. The earliest ones used in Denmark were probably of German origin but in the late 16th and early 17th Century the Danish production including that of Holstein and Scania has been remarkable too. Some of the *pasglas* found in Copenhagen have been made of glass metal of poor quality containing lots of impurities and air bubbles. These beakers of low quality are hardly imported from distant localities. It is more probable that they are made in Danish glassworks in Eastern Jutland, Zealand or Scania and produced for the needs of domestic townspeople and wealthy peasants. The unique finds of *pasglas* decorated by black threads are probably of Danish origin too.

Fig. 188 Fragments of an igel (FO218504). Photo G. Haggrén.

Another tall beer glass of the Renaissance was the club beaker or igel, as these beakers were called in Denmark. The upper part of the body of these beakers was usually wider than the mouth. Following the design these beakers resembled a kind of club. Like *pasglas* the club beakers were often decorated by a milled horizontal glass thread (cf FO214336, 218504). There are fragments from at least twelve club beakers from Gammel Strand. Club beakers were popular in Denmark during the late 16th Century. In addition to the finds from Gammel Strand there are several finds of club beakers also from Kongens Nytorv but none from Rådhuspladsen, where the majority of the glass finds date to the third quarter of the 17th Century. Based on the popularity of club beakers in Denmark it is probable that many of them were also made in Danish glassworks.

Fig. 190 Fragments of a pedestal beaker (FO214324). Photo G. Haggrén.

An interesting group among the finds from Gammel Strand consists of fragments of large cylindrical beakers with optical decoration made of vertical rims. These pedestal beakers were made of light green glass of poor quality containing many air bubbles and other impurities in the glass metal. Similar beakers were made in the Netherlands and Northern France but the homogenous group found here indicates a Danish origin. For example, from the castle of Rosenholm as well as the glassworks of Rye in Jutland there are parallel finds dating to the late 16th Century. From Gammel Strand there is also a sherd from a ewer decorated with similar rims and made of same kind of glass of poor quality (FO214295).

We can assume that a large part of these *pasglas*, igels and cylindrical beakers originate from Danish glassworks. This would explain the unique finds of *pasglas* with applied threads of black glass as well as the uniform group of cylindrical beakers made of low quality glass. All these beakers are typical beer glasses, in contrast most of the wine beakers used in Gammel Strand seem to have been imported from Germany or the Netherlands while some of them were made in Holstein.

High quality glass in a Venetian style from the Netherlands?

By Georg Haggrén

After the middle of the 16th Century, colourless Venetian glass of high quality called *christallo* gained popularity among the aristocracy and prosperous merchants all over Europe. This new fashion was soon followed in the west. While the older glassworks concentrating on products of more or less green glass were located in forested areas, far from towns, the Italians founded their new glassworks in urban environments.

During the late 16th but especially in the 17th Century the glass blowers in Western European towns made extremely elaborate vessels in the Venetian style. One of the first of the new factories lead by Italian

masters was in Antwerp. This Flemish city became an important centre of glass production during the second half of the 16th Century but soon *christallo* glass of high quality was produced in many other Western European towns such as Brussels, Cologne, Liège, London and Middelburg. In the 17th Century one successful glassworks was in Amsterdam, another factory was in Kiel and even in Copenhagen there was a short lived Italian glassworks in the 1650s.

Glass made by the Italian methods in Western and Central Europe was called glass made in the Venetian fashion or *façon de Venice*. Probably best known examples of this sophisticated production are the winged goblets or *Flügelglas*. Winged goblets have a twisted-cable stem decorated by applied impressed wings and beaks. The stem usually contains coloured filigree canes in opaque white, yellow, red or blue glass. Winged goblets were precious items and were taken care of. As a result dozens of these exclusive items are preserved in European museum collections. It is because of this that sherds of the winged goblets are usually rarely found in archaeology. However, from Gammel Strand there are sherds from more than 15 goblets of this kind. The number is exceptionally high being from one single site but not unique in Copenhagen. For example, a similar number of these finds were found from Rådhuspladsen.

Fig. 191 Fragment of winged goblet (FO214812). Photo G. Haggrén.

Excavations in Gammel Strand also revealed fragments of other kinds of glasses, especially beakers and goblets, made in the Venetian fashion. Among the goblet fragments there are, for example, an elegant cigar shaped stem (FO214535), an inverted-baluster stem (FO214377) and a foot with a massive round knop in the lower end of the stem (FO214267). Similar to the winged goblets these colourless wine glasses were mostly used when drinking red wine. When people drank white wine they preferred prunted green beakers, so called *Röhmer* glasses.

When people drank beer or spirits they usually used beakers instead of goblets. Among the most popular *façon de Venice* -beakers in early 17th Century Copenhagen were those decorated with narrow opaque white trails encircled around the upper end of the bowl. Some other beakers had *vetro á fili* – decoration (FO214657) or vertical opaque white canes covering the body (FO214655).

Fig. 192 Cigar shaped stem (FO214535). Photo G. Haggrén.

Bossed beakers (Ger. *Warzenbecher*) or beakers decorated with optic-blown bosses resembled finer glass of Venetian style even if they were made in German forest glassworks. Bossed beakers were common especially in the Netherlands but also in Germany. From Gammel Strand there are sherds of five bossed beakers, some of them from beakers made of colourless glass of rather high quality and some others from beakers of much lower quality.

Most of the sherds of the *façon de Venice* glass found from Gammel Strand are of colourless but slightly yellowish glass. These sherds indicate a sophisticated bourgeois culture typical for prosperous early modern urban societies in North-western Europe. This culture is thoroughly illustrated in Dutch and Flemish 17th Century paintings in which elegant glasses *a la façon de Venice* are well represented.

High quality 17th Century wine bottles from Holstein

By Georg Haggrén

Bottles were seldom made of high quality glass. They were utility vessels for transporting and storing liquids. It was only in the late 16th Century when glass bottles began to become everyday items, before that they were very rare. Most of the bottle glass found from Gammel Strand is iridized dark green glass but there are some exceptions. Some 17th Century backfills contained well preserved sherds of green bottle glass of high quality. Similar finds are known already from earlier excavations in Copenhagen. Luckily some of these bottles have been equipped by seals showing their origin in the Duchy of Holstein. Today Holstein is the northernmost part of Germany but until the 1860s it was ruled by the King of Denmark.

After 1660 glass was not produced in heartlands of Denmark but in Holstein the production continued. In the late 17th and early 18th Century there was flourishing glass industry in an area around the Lake Plön in southern Holstein. Between 1650 and 1720 the production of bottle glass there was remarkable.

During the 17th Century, glass bottles became more and more important vessels for storing beverages and other liquids. From the middle of the Century, glass makers added applied glass seals to some of the bottles. This tradition began in England in about 1650 followed by glassmakers in Holstein only a few years later. During the second half of the 17th Century, sealed bottles were typical only for England and Holstein but later during the 18th Century they were produced in widespread areas of North-western Europe.

Three seals found from Gammel Strand are from bottles made in Holstein during the second half of the 17th Century. In one of them there is Bacchus, the god of wine, sitting on a barrel with a goblet in his hand (FO214613). The motif is surrounded by a text fragment "…WEL" leftover from the original sentence "PRVFT DE WIEN EN REIS WEL" meaning something like "tasted the wine and travelled well". The motif shows that the seal is from a wine bottle. This seal was used in bottles made in four different glassworks in Holstein between 1660 and 1685. In addition to Holstein similar seals have been found in the Netherlands and Sweden as well as in Copenhagen. Together they illustrate the export of wine bottles.

Another seal found from Gammel Strand has a figure of Fortuna, the goddess of luck, encircled by the text "IOHAN CVNCKEL" (FO218703). Belonging to a famous glassmaker family Johann Kunckel was a master glass blower in the glassworks of Langwedel (1667–1672) and Bossee (1672 – about 1680). Two members of the family, Eberhart and Fritz Kunckel are already mentioned in 1406 when the oldest

Fig. 193 Illustration of bottle seal with Fortuna and the name "IOHAN CVNCKEL". Illustration by Charlotte Firring Jensen.

known glassmakers' guild in Germany was founded in Spessart. Johann Kunckel had a contemporary namesake, Johannes Kunckel. Born in 1629 the region of Plön in Holstein Johannes Kunckel became a famous alchemist and glassmaker employed by Friedrich Wilhelm, the Elector of Brandenburg and Duke of Prussia, and later by Karl XI, the King of Sweden. In 1679 he published a handbook on glassmaking, *Ars Vitraria Experimentalis*.

A third seal with an origin in Holstein is from a bottle directed at customers in the Netherlands. This exceptionally large and impressive seal with a diameter of 60 mm carries the portrait of Prince William III who became the Prince of Orange in 1672 (FO214805). The portrait is surrounded by the text "VIVAT DE PRINCE VON ORANGIEN". The Prince as well as the coat-of-arms of the house of Orange-Nassau was very popular motif in seals put on the bottles made for the export to Dutch markets. These seals have been dated to the period before 1689 when William became the king of England. Bottles with this particular seal have been produced in five glassworks beginning in 1669 to the 1680s. This seal is not unique in Copenhagen, there is at least one similar seal previously found in the city.

Fig. 194 Seal with the portrait of Prince William III, the Prince of Orange (FO214805). Photo G. Haggrén.

During the Metro Cityring excavations in the early 2010s eight seals from bottles made in Holstein were found from Rådhuspladsen. Four of them show the name or initials of a master glass blower, colleagues to Johann Kunckel. Three others carry political symbols made for bottles used by the supporters of Prince

William III, Prince of Orange. A large seal (FO205995) has the Dutch coat of arms and two others personal attributes of the Prince (FO204373, FO208140).

At least during Christian V's reign (1670–1699) some of the bottle production in Holstein was directed to the Danish markets. The excavations in Rådhuspladsen revealed a seal with a monogram "C5" and a figure illustrating the Norwegian lion rampart (FO204390) while some other kinds of seals with the Danish King's monogram have previously been found in Copenhagen.

In addition to the seals, the excavations in Gammel Strand revealed other fragments of glass bottles made in Holstein. There are, for example, several sherds from an exceptionally large square case bottle found together with a neck fragment which is probably from a bulbous wine bottle made in Holstein (FO214121). Round string rings were typical for the late 17th Century wine bottles made in Holstein (FO214610). A folded base rim characteristic for pear shape bottles as well as similar finds from Kongens Nytorv also have the same origin (FO218489; cf. KGN/FO209254, FO221128).

Fig. 195 Three bottle necks from Gammel Strand (FO214194). Photo G. Haggrén.

Late 17th Century bottles made in Holstein were usually made of lighter and thinner glass than those in England. Normally early bottle glass was of secondary quality but the production of the glassworks in Holstein during the second half of the 17th Century was of much higher quality than that in most of 17th and 18th Century factories producing bottle glass. At least all of the seals from bottles made in Holstein are of

clear green glass lacking air bubbles and impurities. Even the design of the bottles blown in Holstein was different. Their shape was much more bulbous than the typical 17th Century shaft-and-globe bottles made in England (FO218490/SG667). The glassworks in Holstein produced large quantities of wine bottles and also flasks for spirits directed especially at the markets in the Netherlands. The Dutch immigrants in Copenhagen were probably also interested in buying items sympathising with the House of Orange while some other bottles were made especially for Danish customers supporting King Frederick.

Signs of the early Danish China trade?

By Rikke Søndergaard Kristensen

In November 1618 King Christian IV (1588-1648) wrote in his diary: "Our Indian fleet sailed out of the Sound". The Indian fleet, which the king with great satisfaction watched leave the Sound was the first Danish fleet to be sent out by the newly founded *Danish East India Company.* The King was personally engaged in the founding of the Company. He was an eager supporter of the Danish expanding mercantile policy and saw a great potential of profiting from the thriving Asian trade, which was dominated by the Dutch and the English. In 1620, the Company established a permanent trade post at Tranquebar in south-east India and from Tranquebar Denmark was able to take part in the trade in the Indian Ocean and Indonesia. The Company ran into financial problems and was dissolved in 1650 but was re-established again in 1670.[20]

One of the very much sought after exotic articles to be traded from the Indian Ocean and Indonesia was the Chinese porcelain. Porcelain was not known in Europe until the beginning of the 18th Century and when the first Chinese porcelain items began to appear in Europe in the earlier part of the 16th Century, it became a much desired luxury item which only few people could possess.

The preserved trade records from this first Danish East Indian Company do not give much information on porcelain purchases. In the first half of the 17th Century the Dutch heavily controlled the inter-Asiatic trade, which also included the Chinese porcelain trade from Java and Taiwan, and it seems to have been difficult for the Danish merchants to get hold of any larger quantities of porcelain. Most of the porcelain that did arrive at Copenhagen in these early years may just as well have come through private Dutch merchants or maybe Danish merchants engaged in the East Indian trade more than from the Company trade itself.

A few porcelain items were kept in the 17th Century collections of curious in Copenhagen e.g. in the famous Danish physician Ole Worm's collection and in Frederic III's personal collection *Kunstkammeret* established c. 1650 (Fig. 196). The porcelain in these exquisite collections was high quality items pursued though private connections with Dutch merchants as far as we know from the archival material. Only people with high status and powerful connections like Worm and the Danish king had the opportunity to buy such items.

[20] The second Danish East India Company lasted until 1729. In 1732, it was replaced by The Danish Asiatic Company which conducted a direct trade with China.

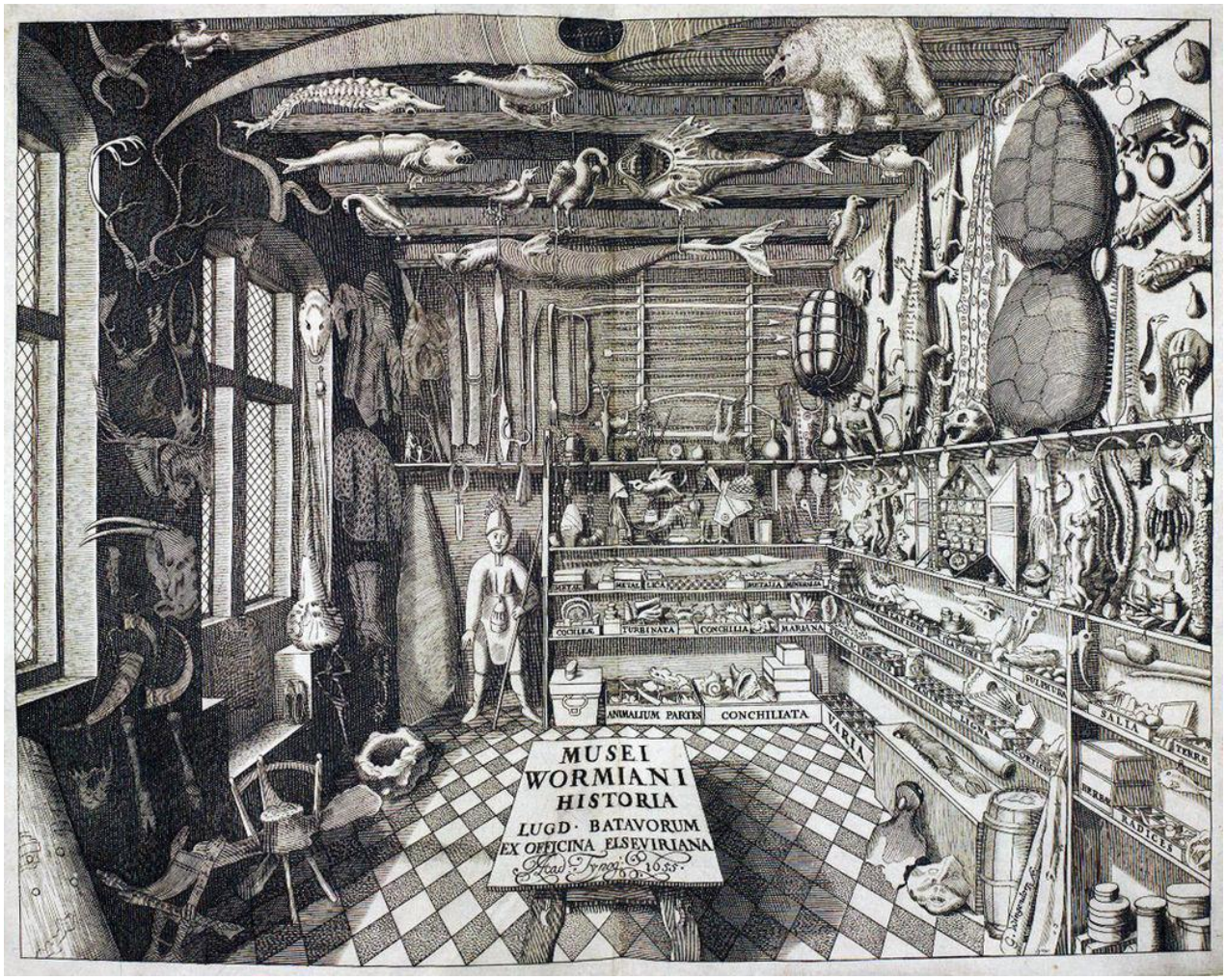


Fig. 196 "*Musei Wormiani Historia*", the frontispiece from the Museum Wormianum depicting Ole Worm's cabinet of curiosities. None of the recorded porcelain items are visual on this depiction.

But in addition to the high quality and high status porcelain a small-scale consumption of mass-exported porcelain ware are present in Copenhagen from *c.* 1600 or maybe even the last decades of the 16th Century. The excavation at Gammel Strand has revealed some very nice and rare examples of this early Chinese porcelain (Fig. 197).

The ware is called *kraak ware* after the Portuguese ship type that were used in the Asian trade and on which the porcelain was carried. The *kraak* porcelain was produced in the Chinese town Jingdezhen in the period of the late Ming dynasty (1573-1644). It was the first type of Chinese porcelain ware to be produced in large quantities for the European marked and exported in large quantities especially the Netherlands.

Fig. 197 Part of *kraak* type dish with landscape motif found at Gammel Strand, c. 1580-1650, (FO216366). Museum of Copenhagen

Fig. 198 Chinese blue and white *Kraak* dish, Wanli (1537-1619), decorated in the centre with emblems, the border with scroll and pendant tassels, diameter: 12 5/16in., 31.3cm. (From http://www.chinese-porcelain-art.com/).

The *kraak* porcelain is well-made porcelain painted an underglaze cobalt blue style and mostly decorated in with very delicate Chinese landscape motives with animals and Buddhist auspicious emblems (Fig. 198).

The *kraak* porcelain seems not to have been part of the Royal collection and it can only be identified through archaeological findings in Copenhagen. In the refuse layers at Gammel Strand three *kraak* porcelain items have been found, which is a high number of this rare type (Fig. 199).

Fig. 199 Part of kraak type dish found at Gammel Strand, with landscape motif and Buddhist symbols, c. 1580-1650, (FO 217949)

We know from e.g. Dutch 17th Century paintings how the *kraak* porcelain was used in the homes. We often see them on display objects on selves or used on tables as fruit bowls as seen on Fig. 200. They express luxury, exotic way of life. Archaeological finds from the Netherlands show that the *kraak* porcelain was related to the well-to-do households but still not the highest rang of kings and the like but the wealthy burghers and merchants. In Copenhagen we must suspect the same was the case. The *kraak* porcelain found in Copenhagen could very well have belonged to people connected to trade and some of these could have been of Dutch origin. Several Dutch people lived in Copenhagen in this period and they could also have brought their own bowls and dishes with them from the Netherlands, where *kraak* porcelain was much more common than in Copenhagen.

We can only guess if these kraak porcelain items were brought to Copenhagen by Danish or Dutch private merchant or if they were actually brought by the Danish East-Indian Company.

Fig. 200 Jan Davis de Heem, still life with fruit and lobster, second half of the 17th Century, oil on canvas 75x105 cm, Museum Boymans-van-Beuningen

The 'missing' fishwives of Gammel Strand

By Rachel C. Morgan

Within living memory, the area of Gammel Strand has been mostly closely associated with the *fiskekoner*, the fishwives, of Copenhagen. So much so that numerous photographs and paintings exist of the fish market and fish wives from the mid-19th Century onwards, and a statue commemorating the fishwives was installed in 1940 while their stalls were still situated on Gammel Strand. However, without this social knowledge these women are almost entirely absent from the archaeological record generated during the recent Metro Cityring excavation. Very few artefacts were found which relate to the long-running use of the site as the main fish market in Copenhagen, and there are none which indicate the importance or even presence of the fishwives themselves.

Fig. 201 The *fiskekoner* were an institution in Copenhagen, attracting famous customers. Here Frank Sinatra buys fish on Gammel Strand in 1956. (Photo A. E. Andersen, Berlingske Tidende)

This absence is due to the nature of archaeology, especially the types of remains found on Gammel Strand, and are highlighted in this case due to the existence of other socio-historic sources of information relating to the fishwives. The 19th and early 20th Century archaeology found at Gammel Strand, which dated from the times when the fish market was very active, only revealed the underlying stone and timber framework beneath the harbour. The street level of the harbourfront where the market was physically situated and where remains could expect to be found was destroyed by subsequent renovations. The fish market itself was also impermanent, as the booths the fishwives sold from were constructed of timber crates which were set up and taken down daily. These circumstances created the conditions for the fishwives to be 'invisible' in the archaeological record.

A movable feast

The fish market in historical Copenhagen was not a stationary structure but moved from place to place as the city developed. The first written record of a fish market dates from 1449 which located the market on Amagertorv. When Gammel Torv became the main town market place in the 17th Century the fish market moved between it and Gammel Strand, to the area of Vandkunsten, eventually settling at Gammel Strand itself sometime in the 17th Century (Ømann 2012).

The fish market remained at Gammel Strand for the next two hundred years, and became a city institution. The market appears to have co-existed with the remaining assize and tax functions of the harbour which took place in the buildings towards the western end of Gammel Strand. Paintings from the period show the fishwives selling from their booths along the harbour-front near Højbro Bridge. When the harbour's administrative buildings were demolished in the mid 19th Century the fish market expanded to fill the

available space. Contemporary photographs show the fishwives at their booths spread out along most of the newly created square.

Fig. 202 Storm Post ST34393 (G646) with wicker fish basket F0219487, G646. The upper part of the post had been recently removed to help excavation. K. K. Tayanin

The importance of the fish market to the city at this time is demonstrated by the construction and later expansion of the *fiskegang,* which was found during the excavations and which is the one structure which can be specifically linked to the fish market. This 'fish-walk', a narrow timber walkway beside the harbour-front just above sea level was used as a landing platform for the flotilla of small fishing boats which supplied or stored the catch. Some of these small boats seen in contemporary photographs appeared to contain water and were used to keep the fish alive, and therefore fresh, for as long as possible. When the *fiskegang* was expanded further west in 1868, as shown by dendrochronological dating, the surface of the walkway itself was constructed from concrete which demonstrated the importance and permanence of the market.

When the harbour-front was redeveloped in the late 19th Century, a plan was created to build a formal *fiskehal,* a fish market hall, on the site of Gammel Strand. The design drawings show a open hall, sunk below both the street level and the sea level, with small windowed sky-lights in the roof to let in light and fresh air. A section drawing through the proposed fish hall shows a fishwife sitting at a small trough stationed over a drain in the floor and a female customer waiting to purchase. This building was never constructed and eventually a new fish market was built at Kalveboderne.

Absence of evidence, not evidence of absence

Without earlier direct archaeological evidence for the fishwives, information about them has to come from other sources. Apart from the later paintings and photographs one of the most interesting pieces of evidence is a diktat issued by the master of police in April 1751. In it Politimester Torm issued a warning directly to the fishwives about their behaviour. It appears that selling fish could be a cut-throat business with regular enough trouble at the market leading to an official police warning.

Some physical evidence for the fishing trade was uncovered during the excavation at Gammel Strand. Among these were fishing tools, a fishing weight and a live-well. The latter was a fishing basket which was tied to a post to store the live catch before they were killed and sold at the market – a smaller scale version of the boats seen in some of the early photographs.

Fig. 203 Remains of the mid 19th Century linear *Fiskegang* (in centre of photo) after the 1860s concrete base has been removed. This was replaced in the 1880s by the harbour wall to the right of the photo.

The final find from the excavation which related to the market at Gammel Strand was discovered in the construction backfill behind the 1880's stone wall. The presence of the complete skeleton of a fish showed that even during these major construction works the market continued to function in the area.

The end of an era

The fish market as it existed on Gammel Strand ended in 1958. A new *fiskehal* was built at Kalveboderne and the fishwives moved there. A farewell parade for the iconic *fiskekoner* was held in the snow on 2nd December 1958, which demonstrated the importance of the women and their fish market to the citizens of Copenhagen. One stall remained by the statue of the *fiskekoner* as a symbol of the tradition until 2008 when the owner, Doris Marx, retired. The statue itself will be returned to the site once the Metro station is completed and will then be the only remaining symbol of this long-lived Copenhagen institution.

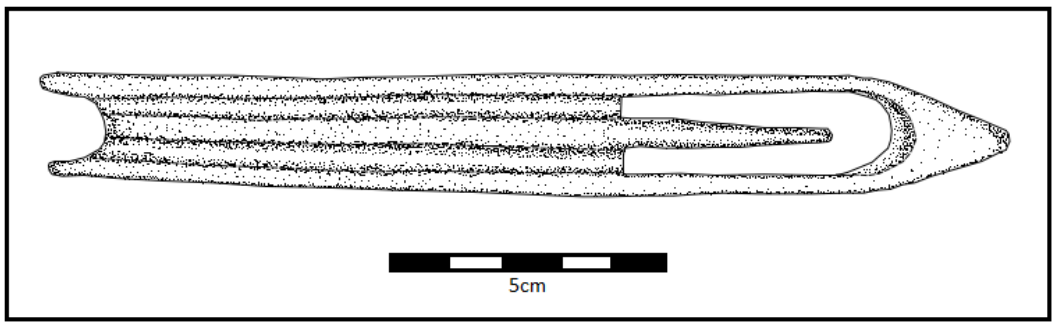


Fig. 204 Netting Needle complete FO212435. SD 42280, G666. Phase 3. Drawing by G. Dickenson

Conclusion

This bygherre/cultural historical report comprises a summary of the archaeological work undertaken at Gammel Strand, Copenhagen (KBM 3828) by the Museum of Copenhagen from 2010-2016. This work was conducted in association with the Metro Company prior to the construction of the new Metro station at Gammel Strand, one of seventeen as part of the Metro Cityring project.

Prior to the Metro Cityring project, a series of small excavations in the area over the last 100 years revealed various fragments of buildings and posts and bulwarks suggesting that earlier harbours were preserved beneath the modern surfaces. Photo documentation of Gammel Strand using the Daguerreotype form in the 1840s also portrayed the former harbour administrative buildings of the Gammel Strand harbourside with the *Vejerhus* (weighing house) and *Pramlaugets hus* (Bargemen's Guild house), so their foundations were known in the excavation vicinity. A combination of the photographic record and the physical archaeological structural remains, combined with historic records and cartographic evidence of the area suggested that the preservation of Renaissance archaeology and later archaeology was expected and that earlier Medieval archaeology was presumed.

The excavations revealed the expected archaeological remains such as harbour bulwarks, the Weighing House, the Bargeman's Guild House and other administration buildings along with a large collection of archaeological artefacts showing evidence of trade, production, wealth, religion and thus consumption and networking. The single context recording method used on these excavations, in conjunction with the large quantity of dendrochronological dating of the wooden harbour sides, enabled the opportunity of building a site chronology, and the creation of various site phases. Extra provenance work on various stone fragments from the harbour walls and from the various timber types also provided knowledge of where each constituent from the site structures was imported from.

The sheer number of harbour structures, and harbour phases from the 1400s to the present day along with an unbroken finds register from land reclamation from the 1400s has enabled the archaeologists to uncover the story of how the area *Ved Stranden* (by the beach), later called Gammel Strand (the old beach) was created. We now have the knowledge of how the harbour area was urbanized to become the centre of the harbour of Copenhagen in the 1400s, and by the early 1600s, arguably the most important harbourside in Scandinavia. By the 1700s, the harbour, due to its small size, could not be used by the large ships, leading to the greater importance of the bargemen transport the goods from the large ships to be weighed and taxed at the Weighing House at Gammel Strand. The harbour itself falls into decline, but the harbourside continues as the administrative centre up until the 1850s when the tax law changes and the need for the administration structures ends, leading to their demolition. Up until the 1960s the area was an important local and regional centre as a fishing harbour before the transfer of the industry to *Fiskertorv*. The site today is now a leisure area comprising galleries, restaurants and service industries which are visited by the tourists and Copenhageners, who generally do not know of its' former important international former status. The results from the excavations from Gammel Strand will therefore change this viewpoint of the area and will rightfully now place the harbour again amongst the upper echelons of the Late Medieval and Renaissance harbours within Europe with the new information of regional, Northern European and finally global evidence of trade and connections.

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