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Pryssgården (LBA) in Sweden from an Artisanal Perspective

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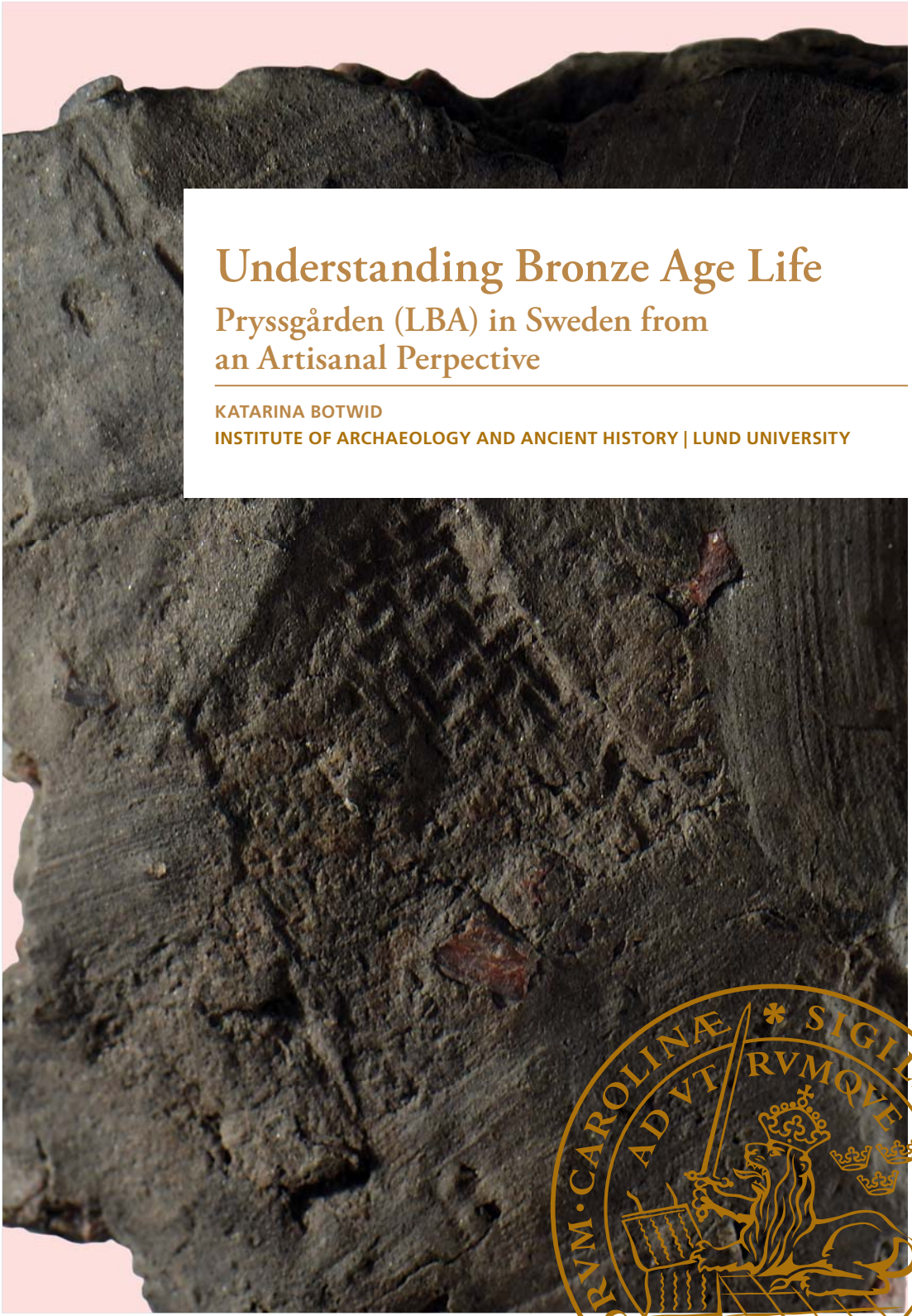

Understanding Bronze Age Life

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Pryssgården in Norrköping is one of the larger ancient settlements in Sweden. People lived and worked here during the Stone Age and live and work here still. In this survey, the area and the archaeological questions surrounding it will be examined and discussed from an artisanal perspective.

By re-examining the material from the excavations in Pryssgården from the perspective of artisanal expertise, new questions are both asked and answered. The investigation focuses primarily on the extensive ceramic material, and thus, the people crafting the clay.

Katarina Botwid PhD in Archaeology and Master of Fine Arts, works with interdisciplinary research combining ceramic art and archaeology.

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Content

Foreword

The further back in time we go, the lesser the chances of understanding and making correct interpretations about people living then. Our ability to take part in the lives of prehistoric humans ranges from historical texts full of facts, quasi-facts and everyday information through living narrative traditions telling us perhaps more about ways of thinking than about facts, and down to distant times where we no longer have any words from that time to describe what remains today—all that remains are the bits and pieces that are left of their lives, with no one to interpret for us.

The finds are there along with the previous research. Archaeologists must not follow this earlier research slavishy, but must be open and fair and not reject it out of hand either. Many research projects are of excellent quality and are representative of their time. To not use earlier research simply because times and ideas change would be essentially to "throw out the baby with the bathwater". I am often both horrified and delighted by some of the texts I review. And such will be the case with this text, in a hundred years—that it is completely typical for its period. It is perhaps time now to pay attention to practical knowledge held by ancient peoples and groups. It is more common that historical research is conducted on practical knowledge: there are texts about guilds, their social and financial systems, ideas about a market, a buyer, and surplus.

Today, consumerism is so prevalent that we have a difficult time thinking about anything without using economic terms. What needs did production fill? What did we gain by being extremely skilled? What was the cost for the group to allow someone to become so knowledgeable? What was the artisan's status? Was production a surplus? What resources were required?

That we use rhetoric from our own time is not wrong, but I believe it can be a trap. Words shape our perceptions of people. We can perhaps avoid transferring our own economic structures onto the people of prehistoric times.

I have no objection to our transferring our human abilities—the ability to create relationships, situations and societies. However, if we use our modern economic terms, then I believe they should be thoroughly considered and employed only where they are relevant. The prehistoric period I will be examining here is primarily the Late Bronze Age and the transition to the Early Iron Age and will focus on the past from an artisanal perspective.

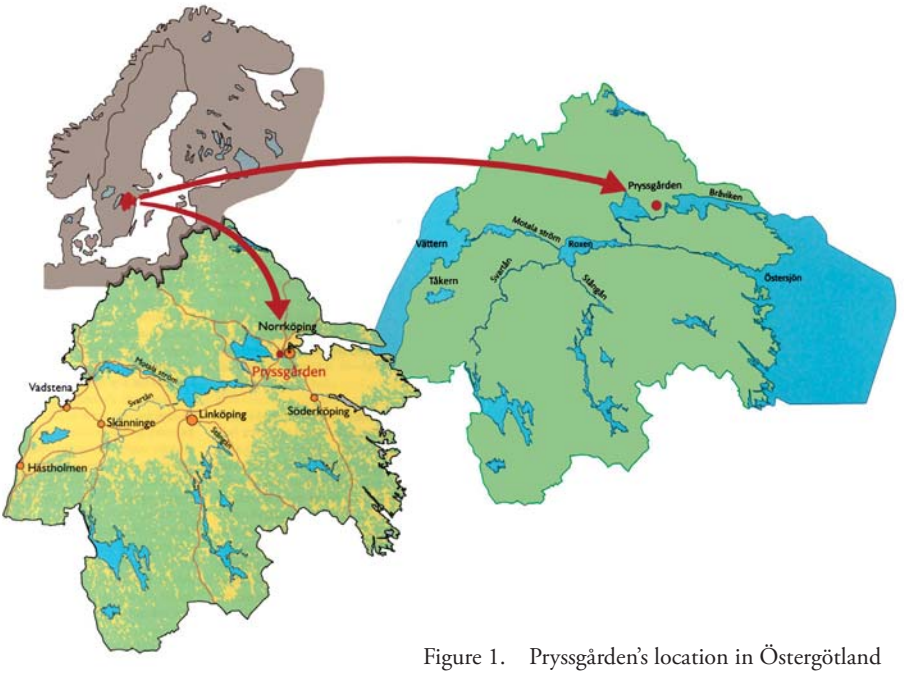


Figure 1. Pryssgården's location in Östergötland (Map RAÄ 2002)

Pryssgården in Östergötland – People Lived Here

Pryssgården is located within the modern city of Norrköping, not quite fifty kilometers from Sweden's east coast (fig. 1). The settlement is adjacent to Bråviken's innermost bay. Bråviken cuts into the coastal landscape, and via the waterways that pass Pryssgården, it is possible to go by way of Glan Lake to Roxen Lake and on through the natural Motala channel out into Lake Vättern.

From western Östergötland, which had been cultivated as early as the Neolithic period, agriculture continued to spread toward the east during the Bronze Age (Larsson 1994:9). This easterly direction may be a change indicative of a lifestyle shift that developed with the introduction and propagation of bronze. Larsson shows how even burial customs moved from west to east, and fig. 2 clearly shows how the spread of stone cists moved in the same direction (Larsson 1994:13).

The 1600 petroglyphs at Himmelstalund and other carvings such as those at Ekenberg, Leonardsberg, Fiskeby and Klockartorpet are located near Pryssgården (Lindgren-Hertz 1998). The carvings are clear examples of how activity increased in that area. People lived there from the Neolithic period until the Early Middle Ages (Borna-Ahlkvist et al. 1998:147–148). People still live here—people who have a relation with the land, whatever the season. When the new motorway was to be built and the area was excavated in 1993–4, its archaeological riches came to light. For a short time, the ancient people who had dwelt there—particularly those from the Bronze Age—were in the spotlight. Now there is asphalt where once the excavations revealed a surprisingly large and well-populated settlement.

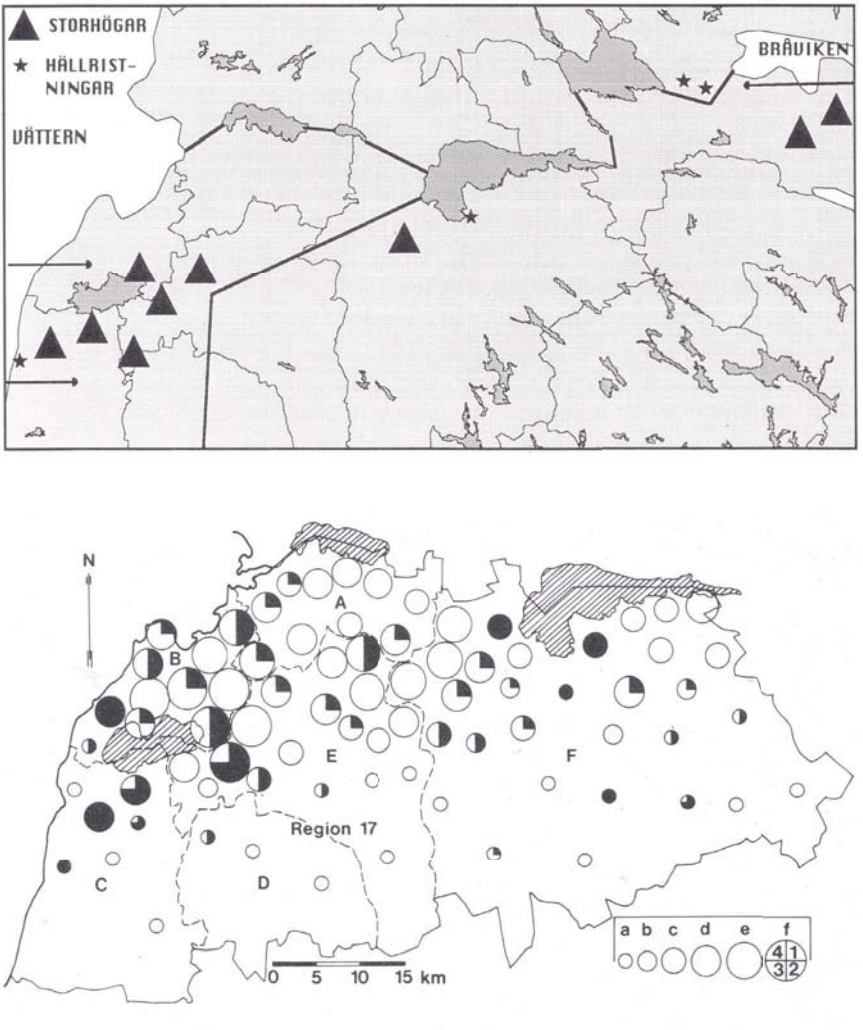


figure 2. The upper map shows the general spread of stone cists in Östergötland, and the lower, the degree of cultivation and density of finds from the Bronze Age in the central parts of Östergötland (Larsson 1994:9 and 14).

Pryssgården and Archaeology

The substantial archaeological material from the excavations is well documented and has been extensively studied. The report from the final investigation, RAÄ 166 and 167, "Pryssgården – from the Stone Age to the Middle Ages", is the documentation that enables us to understand the full potential of the finds and the excavation area. The report is comprehensive, with multiple appendices containing scientific analyses, an ample collection of cartographic information, and expert opinions on finds and behaviours (Borna-Ahlkvist et al. 1998). In the report, Lena Lindgren-Hertz has expanded the analysis of pits and pit systems (Lindgren-Hertz 1998:72–102), Hélène Borna-Ahlkvist has analysed and categorised houses and types of houses and examined the chronology of the houses, and Ulf Stålbom has focused on the analysis of the (primarily) pottery finds. Stålbom made a local chronology for the ceramic materials, dated them and determined their functions. He then proceeded to work on a number of articles and texts where he looked in-depth at the finds and their interpretations (Stålbom, 1995; Stålbom, 1997).[1]

The dissertation Hällristarnas hem (The Rock-carvers' Home) by Hélène Borna-Ahlkvist examines the settlement patterns in Pryssgården, and she presents a method based on the smallest unit in a settlement: the individual household. The reasoning and interpretations are supported by a thorough microanalysis of the larger settlement, where 90 different house remains can be distinguished (Borna-Ahlkvist 2002:126ff).

To be able to archaeologically show settlement continuity from the Neolithic period to the early Middle Ages and even beyond up to contemporary buildings, as we can in the case of Pryssgården, is rather unusual. Borna-Ahlkvist discusses the social construct of "belonging to a house" as a fundamental part of her interpretation. She also examines the various viewpoints in previous research regarding how farms and villages can change over time and discusses, in contrast to earlier interpretations (see Borna-Ahlkvist for the cited literature), how farms during the Late Bronze

1. I owe much to the work of Ulf Stålbom († 1958 to 1999). His very untimely death was a great loss not only to his family but to the world of Swedish archaeology.

Age can consist of very different building traditions, and that the division into Late Bronze Age–Early Iron Age cannot be interpreted as strictly as it often has been up to this point. She further claims that the lay-out of houses and farms depended on various needs, and that there is still insufficient knowledge about the shaping and variation of Bronze Age societies. She concludes that Pryssgården in specific had a fixed farm structure (Borna-Ahlkvist 2002:170–171).

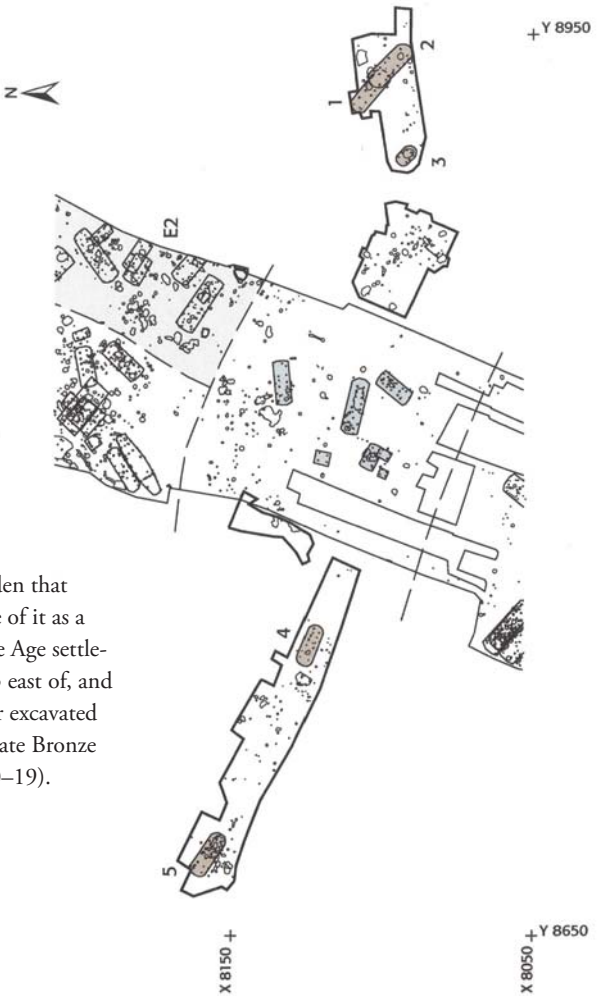


Figure 3. The parts of Pryssgården that completed the picture of it as a part of a larger Bronze Age settlement. Buildnings 1–3 east of, and 4–5 west of the earlier excavated site are dated to the Late Bronze Age (Nilsson 2005:10–19).

Later excavations in the area support the interpretation that Pryssgården was a part of a larger settlement at that site from the Bronze Age. A further five buildings, two longhouses west of Pryssgården (4 and 5), and smaller buildings east of the settlement (1, 2 and 3) were excavated in 1996 (see fig. 3). These were all dated to the Late Bronze Age (Nilsson 2005:10–19), but will not be discussed in my analysis other than as a part of the overall picture of the area.

Farther east, an excavation was carried out at Rambodal (2009), not quite ten kilometers east of Pryssgården, where another Bronze Age settlement came to light. There was a longhouse with a three-aisled hall (A200369) and a smaller four-pillar house (house 3, site number missing), plus a pit house (A1225). The buildings belong to a time spanning from the Late Bronze Age to the transition to Early Iron Age, and relatively large quantities of pottery have been found (Nyberg and Nilsson, 2012:13–21) that were later published and discussed in-depth by Ole Stilborg in his article "Rambodal i Norrköping: om keramik och identitet under den yngre bronsåldern" (Rambodal in Norrköping: About pottery and identities during the Late Bronze Age) in Fornvännen in 2014 (109). Stilborg discusses the similarities and differences in the pottery over a wider area and compares artefacts from Rambodal with Pryssgården's area E2 in Norrköping.

Comparisons were also made with Ryssgärdet in central Uppland and the Scanian Bronze Age settlements near Glumslöv and Kristineberg (Stilborg, 2014). He finds that there is a lot of similarity, but also local differences that make it possible to determine a northern boundary in the particular expression of the ceramics around the level of Uppland, and southern areas down toward Scania. Stilborg determines, however, that the pottery from the Middle and Late Bronze Ages correspond surprisingly well with that in southern and central Sweden (Stilborg, 2014:172–177). Stilborg's interpretations will be discussed again in the section "Petroglyphs, Mobility and Transit Sites". The following section presents ideas about how crafting at Pryssgården can be examined and which questions I will put to the material in this study.

Pryssgården and the Crafting

How people live is crucial for determining how different crafts can be categorised. I pose several questions that are vital for a better understanding of the day-to-day workings of Pryssgården's prehistoric settlement during the Late Bronze Age. If and when the questions receive answers, a more comprehensive image can emerge: my goal is to broaden that image from an artisanal perspective.

These questions are as follows: how skilled were the artisans? How did they work with crafts in this area? With regards to ceramics in particular, the questions are equally important: is it possible to see how craft skills were used and expressed in the social continuity shown by the Pryssgården material? And finally in this section: based on pottery production, is it possible to determine contact with the outside world?

The questions posed above form the basis of my study of the 7100 finds of ceramics registered at the excavation of RAÄ 166 and 167 Östra Eneby parish in the municipality of Norrköping during 1993–1994. The total weight of the ceramic finds was 128 kg, which was then and still is now the largest ceramic find in Östergötland. The interdisciplinary analysis that will be performed is based on my own knowledge, with my Master's degree and background in ceramics (HDK – School of Design and Crafts University of Gothenburg 1997) and in archaeology (Uppsala University-Campus Gotland 2009). With this basis for my research, I will present a new archaeological analysis which builds on knowledge both theoretical and experiential from each of these two fields. In the analysis, I focus first on determining which level of artisanal skill each find represents. An interpretation of artisanal skill can answer questions about the society's social and/or economic structures. For example, it is possible to ask whether the importance of the level of competency is driven by demand —artisans who must work according to future requirements might not have the same ability to spend a lot of hours achieving the perfection they would otherwise desire. Another example could be that time, opportunity and materials are given the artisan because someone in a position of status intends to use the artisan to augment this status (see the discussion about "aggrandizers" in Olausson 2008:20–50). It is possible to clearly deter-

mine whether artisanal skill is important in the production of a particular artifact group, or whether all artifact groups exhibit varying levels of skill in their execution (see 3.1.3). If there are differences, one can ask why that might be the case.

Following the analysis of the skill level of the artisan, my work will touch on the household, followed by an examination of the position of pottery making within the farmhouse and in the various smaller buildings on the farm used for production, storage and various chores. Artisanal interpretations of ceramics are independent of classification or categorisation of finds, something which can provide new angles on how ceramics can be used as a resource in the field of archaeology. The activity areas of a selected farm location will be divided up and interpreted with regard to the production of ceramics. In addition, I will discuss other crafts, climate and environment. Daily life and tasks on the farm will be described with regard to different seasons for different activities. Limitations and choices artisans make can provide vital information and permit interpretations of the specific horizons of understanding for crafts that were possibly active at the site. Specific horizons of understand is the collective idea of practical as well as social and cultural contexts that are part of a specific smaller group during a specific time, in this case, artisans. What was generally viewed as clear to everyone, of course, went by the term general horizons of understanding (Botwid 2015). Through using these two horizons of understanding, it becomes more obvious, in my opinion, what can be interpreted as hidden knowledge (i.e., knowledge held by a select few) and as open knowledge (i.e., knowledge that everyone knows, even if they are unaware of all the details) in an historical context. One example of general knowledge is that even if I am not a blacksmith, I know what a blacksmith makes and what those objects are used for. The specific knowledge about smithing and all its nuances and complexity is something the blacksmith shares with other smiths.

Figure 4. Artisanal interpretation of a stock pot. The vessel's artisanal skill level is perceived with the artisan's own knowledge as a tool. Photo: Katarina Botwid.

Method and Analysis

In this section, method, perspective and the artisan's interpretive analysis will be presented. Analysis, in this case, refers to the examination of the artisanal skill that is possible to observe in the ceramic artefacts. These analyses create a starting point for interpretations on how the artisanal skills at Pryssgården were distributed. The entire recovered quantity of ceramics, which amounts to 128 kg, was composed of c. 7100 individual finds all coming from objects deemed to be made of clay and are thereby included in the category of ceramics. Special artisanal characteristics will be shown in pottery finds in order to illustrate various crafting traditions that existed in this area. The main focus, however, will be on those finds that were examined for their technical skill, amounting to 349 pieces. Some of the finds that have deviations or are of especial interest will be interpreted and discussed in relation to the otherwise more usual finds. It becomes interesting to see how the site and the artisans affected or were affected by the location of Pryssgården.

Method of Artisanal Interpretation

The artisanal interpretation method is based on the fact that the author has practical knowledge of the subject (see below). Working practically is something common to most people. Our daily lives include many practical tasks, perhaps especially within the private sphere with its daily work in the home and its leisure activities. Many also work practically in their professional lives. *Practical knowledge* is absolutely necessary in our lives, and is viewed as completely natural. In research, there are several subjects that attempt to describe such knowledge, particularly in the areas of

epistemological philosophy and cognitive sciences, but also in such subjects as medicine and health care, where an expanding part of the research is focused on the ideas of practical work and tacit knowledge (Bornemark & Svenaeus 2009). Tacit knowledge is knowledge that comes with the body's perception of its surroundings (Polanyi 1966:40). The ability to observe and understand with one's senses does not include using words until we try to find verbal ways to describe this sensory awareness to other people. Polanyi uses the theory that *we know more than we can say* when he discusses tacit knowledge (1966:27). In many ways, this thought touches on the practical side of a craft.

The action itself (in real time) is difficult to express, but it can still be possible to reconstruct actions after the fact. Within research fields, practical knowledge is also known as practical wisdom, the intelligent hand, knowledge in action, tacit knowledge, and embodied knowledge (Pye 1978:4–8; Molander 2002:33–56; Gustavsson 2002:88–90). The idea here is to describe the competence of the body—through, and along with, practical intellect—to result in things (Björklund 2008:24). It takes practice and time to achieve competence or knowledge. The levels are described in epistemological philosophy and technology, the latter divided into two parts: the most skilled and the rest of the practitioners (see aforementioned authors). My method uses practical knowledge as an analysis tool: in the coming section, I will attempt to describe how this method works.

Artisanal Interpretation

The artisanal interpretation method assumes that an experience-based expert in that field is analysing how an artifact is made. This means that an artisan with extensive experience and good knowledge of the craft is called an expert (Collins 2014:64). The term *artisanal interpretation* was first used in my method-developing Bachelor's thesis *Från skärva till helhet* (2009a), and then further tested in several other works such as my Master's thesis *Offrad keramik* (2009b) and archaeological reports, but the definition is primarily discussed in *Evaluation of ceramics* from 2013 (Botwid 2013:32–34). I have now advanced the development of the method

so that more experts can make use of it and consult on matters that build on their practical artisanal knowledge in interpretation of artefacts from various categories of materials. In the article *Visible craft* (submitted: Journal of Material Culture 2015), I demonstrate how a further examination of the finds reported and interpreted in *Holger Arbmans Käringsjön – en studie i Halländsk järnålder* from 1945 can contribute to new information through artisanal perspective. The finds and their contexts are also discussed by other researchers, primarily Anne Carlie, who worked with Käringsjönsmosse for more than ten years (Carlie 1998, 2000a, 2000b, 2003a, 2003b, 2009).

Several experts (within the craft) are also part of the new *artisanal interpretation* of finds from Käringsjön, and I, as an archaeologist, am making new interpretations for the entire amount of find material. It is in this way, in my opinion, that the archaeological interpretation of an object is made with a greater awareness of the artisanal processes that the item underwent before it was preserved in its final context as an archaeological find.

Description of the Method

The expert examines the artifact through the lens of his or her experience-based, tacit knowledge (see fig. 4). The artifact is then given a ranking based on the assessed level of skill needed/used in its production. These skill levels used for artisanal interpretation stem from how practical skills can be learned and then expressed in a material. The object with its various characteristics can be ranked according to different skill levels by judging the technical details of how it was created (Botwid 2013: 31–44).

In the development of the *artisanal interpretation* method (adapted for use and application in archaeological analyses of crafts), I divided this practical knowledge into three parts, where, unlike the theoretical divisions mentioned above (dividing tacit knowledge in two levels) I defined a third level. This third part—beginners and less skilled artisans—was placed on a level where the practitioner had the least skill and knowledge of technique. I believe that low skill level becomes invisible when only a two-part division is used (Botwid 2013). By categorising and analysing

even low artisanal-technical skill level, society's various cultural or social aspects, as well as its technological needs, can be traced.
Learning processes and places for learning become visible when using a three-part division, which gives the method a greater usefulness. Artisanal interpretation contributes nothing more about the craft than the skill level visible in the artifact. Unlike other assessment methods (Budden & Sofaer 2009), contextual circumstances, or esthetic or societal values (Kuipers 2014) are not included in the evaluation.

My model is applicable to most crafts and is based on what the body's own ability, regardless of material, time or circumstances, can achieve. I propose that it is possible to evaluate degrees of skill level in the three divisions presented below in all practical operations, and am working to test them on materials other than ceramics (see below) (Botwid 2015 submitted). Its generality makes it possible to prevent the scales from becoming relative. The analysis model results in the possibility of larger studies being made, and it becomes possible to compare artisanal skill levels among *different* crafts through time and geographical distance. The levels are not bound to one particular type of craft. It is important to point out that an artisan can create on several different levels of skill depending on the situation or intent.

The Three Skill Levels

The three levels that make up the observable evaluation criteria are as follows:

Professional artisanal skill: The artifact demonstrates the very highest level of skill. At this level, the artisan is not afraid to take risks or develop new techniques. Technical procedures that push the boundaries of the material are not uncommon at this level.

Good artisanal knowledge: The artifact shows that the person who made it has a broad knowledge of the craft. A high level of skill can be achieved at this level. The artifact is made in such a way that production is not jeopardised, meaning the technique keeps within the boundaries of the artisanal-technical framework.

Artisanal knowledge: The artifact created with artisanal knowledge demonstrates a low level of knowledge and poor technical results. They are made by beginners or by artisans who simply lack skill or follow only clearly given instructions.

Artisanal Interpretation of Ceramics

In the artisanal interpretation of ceramic artefacts, the expert uses his/her senses, primarily vision, hearing, and touch, along with his/her experience of the craft in order to study how the vessel was created. Parameters included in pottery investigations performed by experts are as follows: weight, balance, structural integrity, size, thickness of vessels walls, amount of temper, manufacturing process and artisanal quality, selection of material, firing method and temperature, surface treatment, and decoration (Botwid 2009a & b, 2013:31–44, Budden & Soafer 2009:10).

After this is a total evaluation of the artifact based on technological knowledge that results in an assessment of the ancient artisans' work. The artifact can then be placed in one of the three defined skill levels. The three levels can be determined through the artisanal interpretation method: the various parameters mentioned above, with regard to pottery, have been "fired" into the artifact and can be viewed as a series of moments frozen in time. In the next section, following the evaluation of the literature and description of the material, Pryssgården's ceramic material will be examined with respect to its artisanal skill.

Material Description and Evaluation of Literature

The ceramic material from Pryssgården is sorted according to the contexts of the original study: thus, all the find categories are found in the crates and boxes belonging to each discovery area. Not all the crates have context information, however. The list of finds has no registered dating: any finds that I can date are those which were put into the report (Borna-Ahlkvist et al. 1998), or in Borna-Ahlkvist's dissertation (2002). Neither in the

report nor in Appendices I–III is it clear whether the feature number is connected to the plans, which makes it more difficult to answer questions such as how the various features indicated on the plan can be interpreted as belonging to a craft. A likely explanation for this is that during the transition from analog to digital field documentation of archaeological examinations in the 1990s, different methods and systems were being tested. In this transition period, there was a belief that the digital materials would be publicly available and therefore people did not always consider it necessary to report all the details in the written reports. This digital development is described in *Digital field dokumentation* (Lund 2007) in Archaeology in the East and the West (Kaliff 2007).

Registers and databases are available in the condition they were in at the time of report completion. Ole Stilborg registered the pottery from area E2, and has allowed me to use the registration in my research, something which has facilitated the work considerably. Karin Lund at the National Historical Museum (SHMM), helped me to connect SHMM's database MIS (accsess) find database with the digital documentation materials from Pryssgården that existed in connection with the publication of the report in 1997–98, which has enabled me in these final stages of the study to connect feature number with distribution on the plan. With this—in my opinion—indispensable work, it is possible to answer several questions that make interpretation more clear and empirically relevant. The circumstances during the work process have influenced and partly controlled the degree to which the ability to provide accurate information has been achievable. The parts of the sites that I use to connect craft environments should now be correct, however, and are reported by feature number. There is a discrepancy between the total amount (109.39–128 kg) of kilos of pottery presented and analysed in the report (Borna-Ahlkvist et al. 1998) and the number of finds in the find list in SHMM's database, which is not possible to sort out within the framework of this study.

Artisanal Skill at Pryssgården

Archaeological ceramics is one of the largest groups of find material, and since the beginnings of archaeology these ceramics have formed the basis for interpreting ancient times. Pottery in what is today Scandinavia is the foundation—and starting point (often as a cultural marker)—of a large part of archaeological research. The typology developed by archaeologists at the end of the 1800s and beginning of the 1900s (see Hildebrand [1866, 1899] and Montelius [1872–1873, 1876, 1885]) forms the structure we archaeologists today still build on and refer to with regards to archaeological finds. In a discussion on source criticism, various topics can arise, such as how ceramics were studied and which finds were used. What does the material look like and what conclusions can we draw from it. From an artisanal technical perspective and interpretation of the finds, practical knowledge can contribute to an increasing understanding of prehistoric pottery and other ceramic finds that is over and above what a number of other scientific methods offer. Within archaeology, pottery is interpreted through methods that determine chronological and typological relationships, complemented today with analyses taken from different areas of expertise (primarily scientific).

Through the artisanal interpretation of Pryssgården's pottery, I will be able to provide additional information that will form the basis for new, clearly related interpretations of the empirical data (see conclusion and discussion).

Artisanal Interpretation of Pryssgården's Ceramics

Previous Research

The bulk of the ceramics discoveries from Pryssgården was in the pits belonging to different building phases of the settlement. The largest amount of finds (about 75 kg) was found in the settlement pits scattered across the excavation area (Stålbom 1998: 109). Stålbom describes a general topological connection which is particularly evident between the buildings and deposited rusticated pottery from the Late Bronze Age, where he says that it is particularly evident in area E, which contained the largest amount of ceramics—60 kg of the 109.39 kg total. Registration took place in the field, and a modified version of Birgitta Hultén's registration model from 1974 was used for reporting the finds (Stålbom 1998:103), adapted for their specific needs and questions. The goal there was to build up a chronology for joining or separating different phases of settlement.

The research was intended to help compare chronologies from different areas (Stålbom 1998:103–107). The author chose to refer to 'layers' and 'house remains' in the report where he deemed it meaningful for the discussion. Stålbom concludes by determining that the ceramics in most of the find spots belong to the Late Bronze Age periods IV, V and VI. The pottery was said to have been produced mainly during the Late Bronze Age and is very fragmentary (see fig. 5), likely due to extensive use of the land (Stålbom 1998:111–113).

Implementation and Selection

In my investigation, I have visually and briefly inspected the entire material, which consists of over 9000 individual finds. These include all the ceramics: not just the pottery that can be identified as vessels, but all other categories consisting of ceramic materials fired to at least 600 °C, which

Figure 5. Boxes with the ceramic finds from Pryssgården. Photo Katarina Botwid.

are included in the category 'ceramics' here. Categories like fired clay, industrial ceramics and furnaces may contain unexpected finds, something which I have shown in earlier surveys (report Botwid 2014 and Botwid in press) when I found a deliberately produced oxide crayon used for colouration but catalogued as 'bränd lera' (fired clay) in a material category of archaeological finds from the Roman Iron Age.

The reason that all categories are included in this study is to enable me to carefully examine whether materials for providing colour as mentioned earlier on or ceramic tools can be found among stone artefacts, for example, or bones. In new research, a broader starting point can give totally new results. The number of finds in the find register under the category 'pottery' (vessels) is 7100. The first step in the process was to identify finds by their interpretative qualities. Vessels that are too fragmentary can be analysed and discussed from a craft perspective, but the fragments are small and are not sufficient to allow an evaluation of the level of artisanal skill: they can provide only a tendency. Therefore, I have chosen to go through the material and localise the finds which can be individually interpreted artisanally with a high degree of surety—these finds are sufficient to allow this. The finds that I have categorised as being able to study consist of 349 of the total ceramic finds, or c. 5%. Here vessels from different contexts must represent the possibility we have to get information about artisanal skill for the entire bulk of the material since only a few vessels are dated (thus, the dates do not either constitute a selection criterion).

Through an artisanal interpretation of the chosen 'interpretable finds', this interpretation can be made with a high degree of certainty. In a similar study of the ceramics from Gustavslund, Backen and Ramlösa farmsteds (Helsingborg, southern Sweden), I was able to estimate the level of artisanal skill for every find and presented the results of the certain interpretations as a part of the study. Following this, due to the high degree of fragmentation of the other finds, I made a more hypothetical artisanal interpretation. The resulting tendency allowed an estimation of how the ceramic skill found in the different farms related to every other one and even the conditions within them (Botwid 2014:231).

The Pryssgård material, as previously described, has more than 9000

finds: thus, it is impossible to study each one in the time available. A general ocular examination has been made however on the ceramic finds, burnt clay, technical ceramics and even organic material, stone and bronze finds. In the following section after the description of the material and limitations in the work, I shall present an artisanal interpretation of the material based on the artisanal skill at the site from the Neolithic to the Early Middle Ages.

Presentation of the Results

When the ocular inspection of the entire find material was made and those finds which permitted artisanal interpretation of the level of skill were chosen, each object could be examined according to the parameters used in the ceramic artisanal interpretation (presented on p. 25).

After the brief ocular study of all the finds, 349 remained that were sufficiently clear to allow an interpretation with an as high degree of accuracy as possible. It is possible to study certain parameters in very fragmentary material, for example, what temperature the material was fired at, whether it is thin or thick ware, and whether it is similar to the rest of the material or deviates typologically or technologically. All the parameters can be assessed in a well-preserved vessel or even in a well-preserved sherd that allows the entire vase form to be determined in spite of some parts being missing. That one parameter is missing gives a somewhat less secure interpretation, but there is enough, in my opinion, to permit an interpretation if the vessel was chosen for a study of crafting skill.

The study is performed by carefully and repeatedly feeling each object tactilely until an assessment can be made based on the tactile and ocular impressions. A more in-depth ocular examination follows using a good magnifying glass with a sharp enough lens in proper lighting conditions. Following this is an analysis of how the vessel was made and the level of skill determined by the traces of production left in the material: these together with the parameters indicate the total skill result for the interpreter. The assessment is written down and recorded in one of the three skill levels PAS (Professional Artisan Skill), GAK (Good Artisan Knowledge) or AK (Artisan Knowledge). In the registration record there is a place

to write down the vessel's biography in a descriptive text based on the documentation that the vessel itself provides (see vessels as documents in the discussion of readability in Botwid 2016 in press in the thesis manuscript from Medbo 2013:13). Here, the descriptive nature of the registration can be augmented with photographs and even earlier archaeological assessments if such exist. The aspect that is of primary importance for me here is the *skill* in this entire artisan group working with ceramics. The distribution of skill in the skill-interpreted vessels from Pryssgården can be seen in fig. 6 below. The results of the skill interpretation indicates that 349 finds could be artisanally interpreted with regard to all aspects and to a high degree of certainty.

All the levels of skill are clearly represented at Pryssgården but they cannot be correlated to typological dating due to initial registration matters. The pottery still found in the ceramic material can be interpreted as being everyday objects. The great majority of the vessels belong to daily life—this includes the 349 objects as well as the fragmentary vessels that could not be assessed regarding skill: these latter finds can be registered

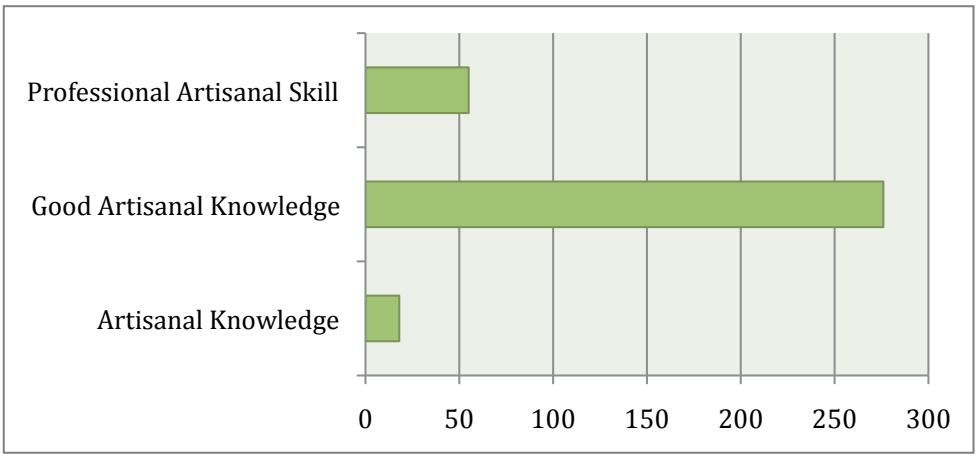


Figure 6. The figure shows the distribution of the 349 artisanally interpreted finds by skill level. The finds comprise 4,9% of the total ceramic finds.

with enough parameters to indicate that they have the same kind of variation as the other finds of everyday objects. Some finds are unusual in form but on the other hand do not belong to a particular skill level. The large group of vessels fall into the category GAK (Good Artisanal Knowledge) and represent all the various activities that can be associated with eating, preserving, storing and cooking food.

The facts that the ceramics were normal, everyday vessels and that there was no greater artisanal-skill variation over time could be seen as disappointing results for a study of this size. The deeper I penetrated into the material, however, the more just these facts interested me. The knowledge that existed was not found in the finished product or in special aesthetics. Vessels that appear to be simple and robust can have been made with a very high degree of skill, and vessels categorized as fineware can have been made very clumsily. Were the vessels demonstrating only artisanal knowledge (AK) made by beginners? Can a highly specialized person with PAS knowledge make everyday ware and form rusticated storage vessels? The large group of craftsmen with a GAK level seem to have made all kinds of pottery.

Some few finds seem to give evidence of contact from outside, which can have contributed to new impressions (see the section entitled Anomalies). The results are discussed further in chapter 4 with the final analysis results. In the following discussion the results of the artisanal interpretation will be taken up as well as how the outcome and certain conditions can create the composition of the find material.

Ceramic Crafts at Pryssgården

Being a ceramic artisan in the Nordic Bronze Age was a normal part of everyday life—people made the objects they needed in every facet of their day-to-day existences, work and small-scale farming. Certain crafts require special knowledge, and knowledge of ceramic crafts was, as I believe, found at Pryssgården. There are many different aspects in the ceramic craftsmanship which for the most are taken for granted. Collecting the raw clay, tempering it, forming, decorating, drying, and firing the ceramic object are somehow self-evident and have been described in this manner (see App. I). But how do you actually do it? How long does each step take and what kind of time perspective do you need? The effects and use of the climate in an artisanal situation are seldom discussed. Taphonomy and reuse as well as various preparation processes, firing processes and annual cycles are rarely taken up.

Which crafts belong together and how does this look? In the Bronze Age, pottery looked different than in the preceding period. It became coarser and thicker and sometimes had plastic decorations, for example, knobs or ridges. A large amount of pottery is now found in the settlement as opposed to earlier ceramic periods when the majority of ceramics were seen in connection with graves and various funerary contexts.

It is often assumed that artisans worked out of doors in this period. Regarding metallurgy, a 'hot' craft, it is thought that metalwork had to be performed inside in order to see the shift of colours which indicate when various steps should be made. Ceramics is also a 'hot' craft but consensus today says that the artisans worked outside. In the Bronze Age, there were small buildings, so-called pit houses and four-pillar buildings. They are interpreted as smaller farm buildings and sometimes as workshops, though without being connected to any specific activities. Were

there workshops already in the Bronze Age? By studying the ceramic craft more deeply at this site, many questions which can apply to other, contemporary places as well will be interpreted and answered. My ambition is to show how ceramic craftsmanship worked hand in hand with other crafts, with buildings, activity areas and the surrounding landscape. Once in a while it will be seen that ceramists were inspired to express themselves in a manner that suggests long-distance contacts.

Anomalies

Certain finds cannot be placed in an archaeological find context—in the worst of cases, they are not worked up or treated, or even ignored. In other cases they are raised to a level which can be misleading.

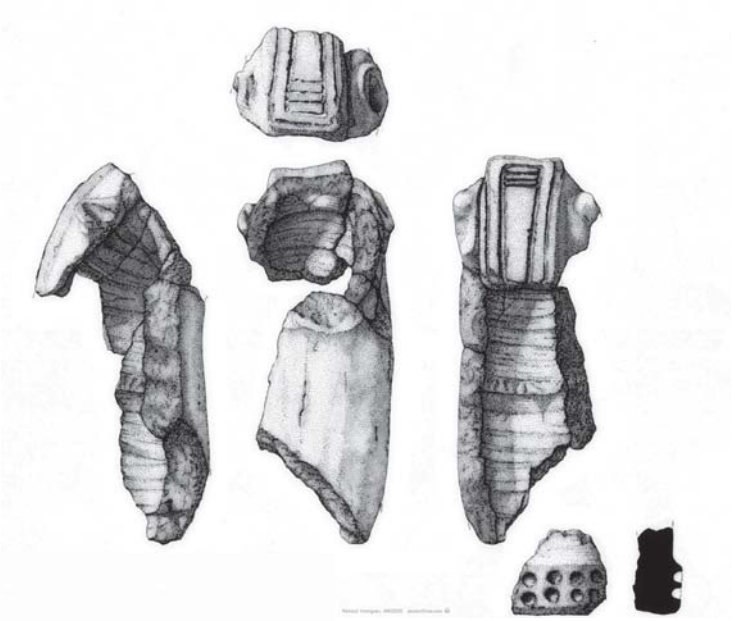
In an artisanal interpretation which is built on statistics, finds which deviate can simply disappear as they do not meet 'the normal'. For example, a vase form which usually has a wall thickness of 2 cm but which deviates and is made very thin and different, represents a deviation in a quantatative investigation, something that moves it from the highest skills level to the lowest one where the statistical analysis hides that which deviates in frequency (see Budden *Bad, Good and Excellent* and where the finds are placed in a 'Pearson Chi-Square test'). If this vessel was a stage in a development or an unusually well-made vase, it falls out of the 'normal' category. Such a placement works if the question posed is which tradition is aimed at and whether one is studying which forms are most commonly produced and what degree of time and knowledge are invested in the object/objects (Budden 2008:2–14). In a qualitative analysis, all the finds can be divided up on the basis of the skill that can be seen and is incorporated into the body of the object regardless of form. The fact that it differs from some sort of value 'norm' is irrelevant. After that, these 'anomalies' can be described even more if so desired and the reasons why they are found at the site can be interpreted. The vessels can thus acquire a biography and be further interpreted in their relation to the 'normal'. This type of find can express changes in technic and design, which provides a possibility to capture changes in the mass material early on.

Special Finds That Indicate the Unique in a Common Place

The Pryssgården Figurine – a Woman Without a Face

The Pryssgården figurine is the most renowned find from the excavations at Pryssgården. The technical description tells the reader that the object is made of coarsely tempered clay. The marks on the inside indicate that the figurine was formed around an object wrapped in organic material, which Stålbom imagines was burnt in the firing. The various parts are considered as one unit originally. A frieze around the bottom has small, round impressions—this part was assumed to be the base and went all the way around (see fig. 7) (Stålbom 1998: 130–132). Stålbom chose to interpret find no. 5918 as an anthropomorphic figure, and further, a woman, something unique in Scandinavia. The closest parallel is a unique female figurine from today's Deszczno near Poznan in Poland. Along with the interpretation was a suggested reconstruction (see fig. 8). The figurine is c. 15 cm high and is conical. The three largest pieces are reconstructed as the body. On the head and down the 'back' is something which has been interpreted as a plait. There are two ears, but the face is missing.

The figurine is interpreted as perhaps being connected with a fertility goddess cult in the Late Bronze Age society, a cult which people claim existed in Scandinavia then and which could be a connection to a common northern European belief. The lack of a face is also interpreted as the result of a deliberate action. Her face was struck off her head because someone wanted to take away her power. Stålbom believed that the female figure could be a merging of man and animal and that it in principle follows the interpretation of female beings who can have been considered as gods at that time (Stålbom 1997:112). The interpretation of the figurine has been discussed by Thrane (2006) and Goldhahn & Østigård (2007:101ff) and has been discussed continuously in archaeological circles. My interpretation is more similar to the later ones and differs from Stålbom's in several ways: it will be presented below.



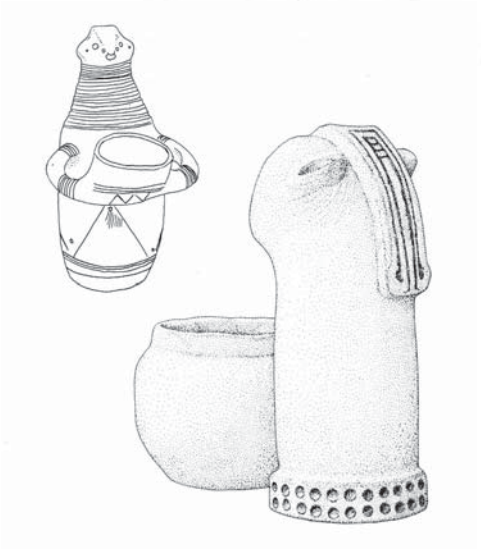


Figure 7. Find 5918. Illustration Richard Holmgren, ARCDOC.

Figure 8. In the upper left, a figurine from Deszczno (Late Bronze Age) near Poznan in today's Poland. To the right is suggested reconstruction of the Pryssgård figurine seen from the back with a vessel in front of her. The figurine is dated to 902–807 BC. Illustration Richard Holmgren ARCDOC.

From Figurine to Tuyère –
Practical Use for an Animal-Shaped Blast Nozzle

There are several aspects of craftsmanship: knowledge-wise, practical, aesthetic, visual and emotional aspects. Artisanal skill raises emotions, not least in archaeology. In this interpretation, I shall deal with the earlier beliefs around the Pryssgården figurine step by step. This will be a contrast which will not necessarily turn the figurine into a boring, functional part of a grey past. By working with an artisanal interpretation of the find, I reached totally different conclusions than Stålbom. What is unusual with my interpretation is that I build it on practical and theoretical artisanal knowledge, I gather clear technical characteristics and I start from these bases to which I add knowledge about technical ceramics.

After this I discuss abstract aspects that can be glimpsed in the social structure of the Late Bronze Age, based on my archaeological knowledge and understanding. In my opinion, the concrete and practical are not necessarily opposites of the abstract and otherworldly, if you will. An object that makes transformations in the heat of the work can be very visual and auditory, a kind of happening or artistic event, and could therefore have been important even if we can never know the impact (impressions) on the Bronze Age humans.

Artisanal Interpretation of Find 5918, the Pryssgården Figurine

Shape-wise, the find closely resembles rolled out, tubular objects from different parts of the world: the technique itself is common and is used primarily in ceramic craft groups who do not use the potter's wheel. In my opinion, find 5918 consists of parts of a cylindrical blast nozzle, a so-called *tuyère*. A tuyère directs a stream of air from a bellows to a crucible. Its use will be presented later in this interpretation. I suggest that the rolled-out tube is c. 30 cm long, bending at one end and opening at the other end towards the hypothetical bellows of wood and leather in order to protect it from the heat. It is slightly conical in shape.

The circular, hollow form continues down from the bend, ending in a round, impressed-circle-decor edge which about 5 cm in diameter. The

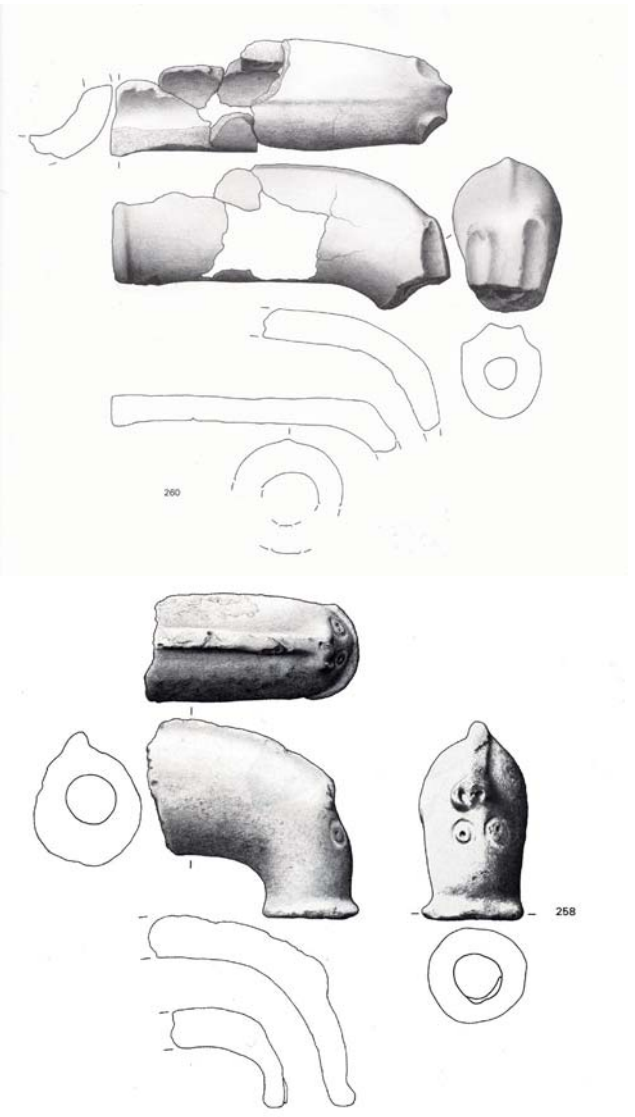


Figure 9. Horse-shaped tuyères from stora Heddinge and Baldslev, in Jantzen 2008 (Tafel 57,56), presented by Thrane as a comparable shape, published in Fornvännen 2008.

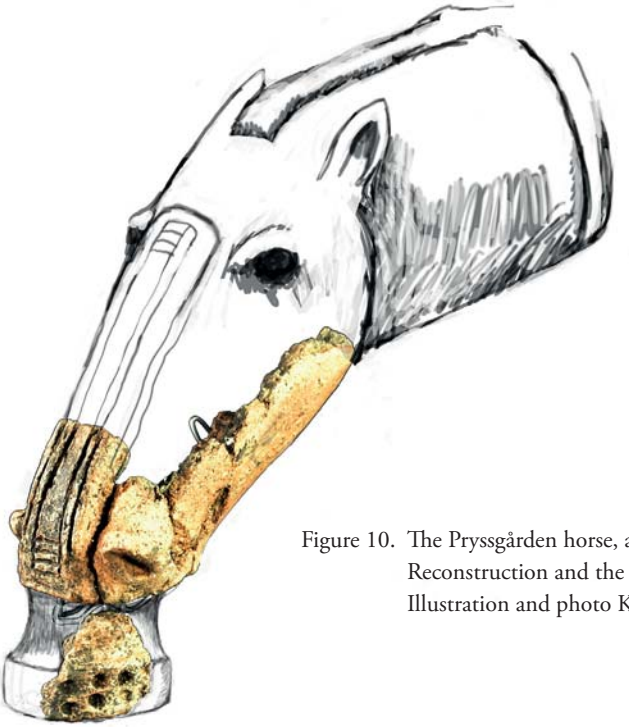


Figure 10. The Pryssgården horse, a Zoomorphic Reconstruction and the actual find F5918. Illustration and photo Katarina Botwid.

inside diameter of the opening is about 3 cm. In shaping the object, in my opinion the prehistoric craftsman chose to form the pipe like a horse. What was previously interpreted as a plait is interpreted by me as a blaze. On the sides of the blaze down by the turn, there are two pinched nostrils. What was earlier considered an impressed-circle frieze here is now interpreted as an impressed-circle-décor opening whose function was to show when the heat was high by glowing in the opening (see fig. 18 below). This function is both visual and informative. The horse is thought of as serving an important function in the Bronze Age world of symbols. (Ling 2013:33, Skoglund et al. 2006, Kristiansen & Larsson 2005:324ff, Jennbert 2010): the artisan chose a horse shape for this tuyère. The reconstruction is seen in fig. 10. The shape is turned in the right direction in my interpretation and can be reconstructed like the horse-shaped tuyères from the Late Bronze Age in Denmark (Thrane, 20)(fig. 9).

In his text about the Pryssgården figurine, Thrane says he believes it is probably a tuyère, referring to the Danish tuyères in his interpretation, but does not provide any additional arguments. Goldhahn supports Thrane's interpretation of the figurine as a tuyère (Goldhahn & Østigård, 2007). My further reasoning is supported by the latest interpretations but I intend to strengthen the arguments with more archaeological reconstructions and experiments.

After having tested the shape's various possibilities and features on both living, snorting horses, photographs and Bronze Age forms, I decided to make a zoomorphic reconstruction of the figure. In my opinion it is a horse with flaring nostrils. The significance of the horse in the Bronze Age and the interaction between man and animal is clearly seen in both artefacts and rock carving representations (Kristiansen & Larsson 2005:324ff).

Making a tuyère in the shape of a horse has no practical importance—a simple, straightforward tubelike ceramic object would have served as well. What I mean here is that visuality in crafts has an expressed significance.

One feature which can be of technical importance is the impressed-hole décor around the opening: as practical experiments have shown, at a certain temperature the thinner surface closer to the inside gives off a red-orange glow. When this glow is visible, one knows that the temperature is higher than 800 °C, and when the colour becomes lighter, one can judge

the vitrification point by the light up to 1300 °C: a really light orange determined through either experiential knowledge or comparisons with Munsell (see the Munsell colour theory and information (http://munsell.com/) is between 1000–1100 °C. The temperature can be measured as well with different types of pyrometers. An experienced potter, smith or bronzecaster is used to successfully making visual judgements of the temperature.

How Was the Tuyère Made? An Artisanal Analysis of Tubular Objects

As can be seen in the drawing (fig. 7), the figurine has clear technical evidence of manufacture on the inside walls: it was not thumbed or drilled, but built around a padded core. Ocular examination indicates that this core was organic. Per Lagerås (Paleoechologist SHMM) can determine that this particular bound core was straw: he cannot tell however what was the original grain that the straw came from since there is no reference material for straw as yet (pers. comm. July 26, 2014). In order to form a clay tube without seams (seams would make the ware vulnerable in changing temperatures), there is a rolling technique which is perfectly suited and which leaves the kind of traces we see in 5918 (see fig. 12 below). This rolling technique is not described in the ceramic literature to my knowledge, but through the experimental knowledge I have of craftsmanship, I reproduce it here (see fig. 11).

In my opinion this is the method used by prehistoric ceramists to produce such clay tubes. The series of pictures shows how the different stages result in a tube. The tube produced here is formed around a wooden stick which is covered or wrapped with bast fibres, chosen because this raw material existed in the Bronze Age, and is easily accessible. The rolling technique is based on the clay being rolled from the inside of the tube. If the craftsman is skilful, the clay will be even in thickness and the hole will be circular and centred in the middle of the shape.

A well-prepared clay with semi-coarse to coarse temper is kneaded and then squeezed around a stick covered with organic material. The length of the stick determines the length of the tube, plus 15 cm on each side

of the tube to allow place for one's hands when rolling. Before the clay is applied to the stick, the stick is wrapped or covered in some way to prevent the clay from sticking to it: this can be with bast, strips of cloth or some other organic material which can be tied on with string or wrapped around. Once this is done, the clay is squeezed onto the organic surface and is rolled back and forth on a flat surface. The clay should not be too tempered—it needs to be relatively fat so it will not crack or segment. After it is rolled, it is dried a little so that it keeps its tubular form—after that it is easy to make the desired shape.

This rolling which occurs from the inside out makes the tube considerably larger (it gets stretched out) than the diameter of the stick, which means that the organic material does not remain in the tube when being fired, as was previously suggested (Stålbom 1998:131). In my opinion, the soot in the hole comes from the object's being used in bronze crafting. The tube that is rolled can be utilised in various ways, but before it is possible to continue working with it, the tube must be dried in a controlled manner. Depending on the prevailing temperature, the tube is spun with the stick remaining inside it around every twentieth minute until a stable condition is reached and the stick can be removed. At this stage the tube can still be bent or squeezed together at one end. Gradually the tube becomes leather hard (1–5 hours depending on the humidity in the air) and can be given its final form, be decorated, polished, or once it is bone hard, even burnished.

The final drying now occurs under controlled conditions—it should be even and not too fast (Hamer 2004:115–117). When the form is completely dry and perhaps heated near an oven or furnace up to c. 100 °C, it can be fired together with other ceramic objects. The tuyère which has been reconstructed here was used to protect the bellows, which was considered as being of leather. With the help of the tuyère, the air stream is

Figure 11. The pictures above show the rolling technique that is used to form the tube that serves as the basic element of the tuyère. It is a very simple and sure technique for maing a hollow tube without seams.
Photo Paul Pettersson.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Figure 12. The pictures show artisanal traces from the technique of rolling from the inside. Top left, the inside of Pryssgården figurine F5918 where the traces of the wrapped material are extremely obvious: continuing study of the character of the fibres will be made. Right, a reconstruction of a rolled tube with only fibre bast wrapped around the stick. Bottom left, the tube-shaped clay object is found at MHM (Malmö Historical Museum) and comes from Fosie IV (1993), here rolled from the inside with a twisted string and straw as organic release material. It is interpreted as a tuyère. Photo Katarina Botwid and Paul Pettersson.

directed, which raises the temperature when bronze is melted: the process is described more in the section called 'How does the reconstruction work in practice?'

The whole craft-technical process applies to all tubular objects, but forming angled tubes requires that the tube is bent shortly after it has set, before the clay becomes leather hard and so stiff that it breaks. The shape dries in different steps, and can be given the features that the ceramist desires. Fibre bast, which was used in the experiment concerning the lines on the inside of the tube, leaves imprints that are too weak to be those seen on the interior of find 5918: however, the type of imprint seen on the reconstruction is found on a newly discovered tuyère from Lund (find 511) (see figs. 13 and 14) and on the tubular shape from Fosie IV (Björnhem & Sävestad 1993:79) (see fig. 12) there seems to be yet another type of straw or grass attached to the stick with a string. In renewed practical experiments, straw from naked barley or wheat will be tried. In my opinion, it is this technique that was employed in the production of find 5918, Fosie IV and find 511, where traces of production are very evident.

From Tuyère to Tuyère? ESS Object 4

As finds of tuyères have been considered to be (and even in reality are) unusual in Sweden, attention has been focused in other directions, as has been seen with the Pryssgården figurine. A shape similar to find 5918 is find find 511, discovered in connection with a contract excavation outside of Lund, southern Sweden (the ESS area in Östra Odarslöv 13:5). The only comparable find from a modern contract excavation is find 5918 from Pryssgården. Through the reevaluation and interpretation of the Pryssgården figurine, find 511 was compared with it and is now thought to be another tuyère: even the shape of the one from Fosie IV was compared. To clarify the similarities, 511 is presented below:

Find 511 is shaped like find 5918 (see fig. 13 and fig. 14): the part of 5918 that is preserved is the top and the side, although in contrast, find 511 has a preserved underpart. Through analysis of the shape it is possible to understand the whole form: this complementary and comparative analysis strengthens the reconstruction of find 5918.

Figure 13. Find 511 is dated to c.790–540 BC (KAL 2 Sigma). The find is from a contract excavation for an ESS project outside Lund, southern Sweden. The shape corresponds to the Pryssgården figurine, and has an angled underpart and the flat mouthpiece still in place. The tuyère is very similar in shape and size and is rolled in the same way. Photo Henning Cedmar Brandstedt.

Figure 14. Find 5918, the so-called Pryssgården figurine. Photo Henning Cedmar Brandstedt.

Figure 15. This figure shows, from left to right, the reconstruction of find 5918 used as a tuyère for ten hours; following it is find 5918, and to the right, find 511. Note that none of the finds are sintered. Photo Katarina Botwid.

Figure 16. The reconstructed and used tuyères, from the left to the right nos. 1, 2 and 3. Photo Katarina Botwid.

Find 511 could theoretically have had figural decoration which is no longer preserved. Below (fig. 15) are both finds and the reconstruction in the same picture to back up this hypothesis. The practical use of this tubular object is reconstructed and discussed in the following archaeological experiment.

How Does the Reconstruction Work in Practice?

While working with this material, it was necessary to test the strength of the hypothesis by means of archaeological experiments. The experiment is based on my knowledge and experience of 'hot' work.

In order to be able to determine whether the tubular object, originally considered a figurine, would work as a tuyère used for melting bronze, an actual melting situation was planned and carried out with the assistance of Andreas Nilsson, a doctoral student in archaeology at Lund University specialising in bronzecrafting and casting in soapstone moulds, and of Paul Pettersson, who examines technical ceramics at the Dept. of Geology, Lund University. Both Nilsson and Pettersson have years of experience with practical experiments in metalcrafting. The starting point for the experiment is the hypothesis that the Pryssgården figurine was actually a horse-shaped tuyère. In discussions with knowledgeable colleagues at conferences and presentations, it seems that the strongest indication for the use of ceramics in metalcrafting is traces like the sintering of technical ceramics.

My experience from ceramic crafting is that sintering (which produces a glass-like surface) can clearly occur in certain situations but that it happens in connection with the exhausting of the material (the same artefact being used many times) when the degree of use finally leads to the sintering of the ware. My belief was that incorrect usage could speed up the sintering process—this was one of my questions to the material in this experiment; further, does the reconstructed tuyère work in melting bronze? Is there sintering on the tuyère when used? What traces are found on the inside of the tuyère?

Figure 17. Reconstruction placed over the crucible with bits of bronze. Photo Katarina Botwid.

Figur 18. The picture show the opening for the reconstructed tuyères that were used.: upper left, tyuère #3, sintered and used for 2 hours; upper right, #2, used for two hours. It has metal percipitate on the rim and did not sinter; lower left #1, not fired originally and used for 10 hours; lower right, tuyère #3 in use. Photo Katarina Botwid.

Reconstruction

Tuyère 1 was not fired before use and was then used for ten hours. It is a little sooty on the rim and a bit inside. Tuyère 2 was biscuit fired to 800 °C. once in an oxidising atmosphere and was used for two hours. Tuyère 3 was biscuit fired and used for two hours (see fig. 16).

The Result of Using
the Reconstructions of Find 5918 from Pryssgården

In order to be able to demonstrate different usages for tuyères (see fig. 17), three reconstructions were rolled (from the inside) of which two were fired and one remained unfired but was very well dried. In figure 16 one can see the results of the different features visible on the goods in accordance with how the tuyères were used.

In addition to the three pictures of the rims of the tuyères in figure 18, one can see in the fourth picture how tuyère #3 was used. I put a lot of charcoal around the rim to show how sintering can be achieved through reduction and through closer contact with a metal oxide flux. Sintering is interesting archaeologically as it gives evidence that bronzecrafting took place at the site. In my opinion, however, sintering is most likely undesirable for the working artisan, as metalworkers do not want melted clay in their bronze melt.

Further, I maintain that this way of using a tuyère signals a lack of practical knowledge of 'hot' crafts. Allowing the charcoal to reduce the clay around the rim leads quickly to material sintering (see the experiment made by Julia Heeb 2014:44) and runs the risk of corrupting the metal material. In our experiment we melted 1 kg (2.2 lbs) of bronze (small pieces of scrap metal of varying quality) in two hours without any visible traces on the rim of the tuyère (Botwid & Petterson in press).

It is perhaps those tubular objects that are angled and that have an inside wall with traces of the rolling method of production (and which can be sooty) discussed above that can be interpreted as tuyères. Find 5918 has these characteristics, which in my opinion can indicate bronzecrafting. If this is the case then it is possible that the tuyère is underinterpreted in the

Figure 19. The child´s finger pads fit into the imprints in the pottery find. Photo Katarina Botwid.

Figure 20. The figure shows a reconstruction of how the 'anvil' is held against the inside of the vessel and the paddles beat each attached clay ring upward, thinning out and adding height to the shape. In this reconstruction the technique is passed on from an adult to a child.
Illustration Henning Cedmar Brandstedt.

Scandinavian material in the same way as technical ceramics previously in earlier research, and that by looking for tubular parts with winding traces inside, more examples can be found. Together with visuality in crafting, the possibility for melting bronze and for bronzecasting will be discussed in the final discussion and conclusions.

Skilful Child Ceramists – or a Particular Individual

Identifying individual artisans in a large mass material like the one from Pryssgården is unusual. While working with the 7100 ceramic finds I discovered some with clear fingerprints (F4768, F9127, F1355, F9110) and one which I judged could have come from a child (F5889, a partially reconstructed vessel). An artisanal observation shows that the prints of the finger pad, angled vertically and pressed into the wall, are very small and close together. The placement of the thumb on the inside and the fingers next to each other on the outside are all around the vessel in a rhythmic and regular manner. The thumb reaches down and 'lifts the clay' by squeezing it towards the two fingers on the outside (fig. 19).

An unusually small adult's fingerprints could be confused with a child's, but the probability of the prints belonging to an adult is small: it is difficult for an adult to place her fingertips so close to each other with normally developed finger joints and the tendons and muscles surrounding them. I can find no archaeological technique or anatomical research which can explain these concrete differences in the fingerprints as having been made by an adult. Thus, there are finds with fingerprints in the fabric, but in the entire mass material, this vessel is the only one where I can clearly distinguish something which could possibly have been made by a child. In my opinion, there was a skilled person who had the interest and time to transmit her/his artisanal knowledge to an individual who could have been six or so years old when s/he started learning and was now between eight and nine when the vessel was made.

How Was Vessel Find 5889 Made?

Artisanal interpretation indicates that the vessel was formed rythmically, the wet clay was well processed for its use and had the right degree of plasticity and amount of temper for this type of storage or cooking pot. It was made with the so-called 'paddle and anvil' technique (see fig. 20), which means that the craftsperson starts with a small thumbed bowl and builds up the walls with thick rolls of clay (see appendix 1 III:I). After each coil of clay has been attached, it is paddled towards an 'anvil', which could be a stone or a fist on the inside of the vessel (Stilborg 2014:21). After this coil of clay has dried a little and been carefully formed with the hand and the paddle, the next ring is attached and paddled. The vessel is built up in rhythmic movements until the desired thickness of the walls is reached and the artisan has got the desired height and width for the vessel.

The paddle and anvil technique is complex and requires care and attention in the work process. This vessel is made with good artisanal knowledge (GAK).

Vessel Find 5889

Vessel F5889, a bronze age pot with small fingerpad prints, which have been carefully measured to 7.2 mm, is seen in fig. 21. On the right there are no visible fingerprints: this find (F6616) was polished with a stone or a piece of wood and then given a rusticated surface with a high percentage of sand seen either as decoration or applied for practical reasons (Stilborg 2002:82). *If* this vessel (F6616) had been made by a child, any traces of this would now be hidden by the craft technique used, as well as any way to determine whether more children than the one discussed above were making ceramics. Is it possible to determine the age of a prehistoric artisan? By comparing the impression from the fingerpads of the index finger of a child and an adult, I can show a possible tendency, as seen in a preliminary investigation in the next section.

Figure 21. Vessel F5889 and vessel F6616. In the above, the small finger prints are clearly seen, while the one below shows how the rusticated surface treatment can hide fingerprints. Photo Henning Cedmar Brandstedt.

Figure 22. Two groups of fingerprints. The large ones are from those of an adult woman (55 years old) and the smaller, those of a nine-year-old child. The fingerprints were made by putting the fingerpads on a piece of white paper, and the colour was from a red crayon.

Find F 5889 and a qualitative, comparative study of technological traces in the vessel				
Fingerprint mm (average)	Index finger	Shrinkage 4% (after firing)	Middle finger	Shrinkage 4% (after firing)
Adult woman	12,3 mm	0,5 mm =11,8 mm	12,7 mm	0,50 mm =12,15 mm
Child nine years old	8,3 mm	0,3 mm =7,9 mm	8,7 mm	0,35 mm =8,3 mm
Differens	4 mm	3,8 mm	4 mm	3,8 mm
Find F5889		7, 2 mm		

Figure 23. Table showing the qualitative and comparative study of the fingerpad imprints found on vessel F 5889, shown here both before and after firing and compared with the prints found on F 5889.

Comparison of Fingerpad Prints, preliminary Study of the Age of the Ceramic Artisan

Careful observation revealed that the artisan used his/her index and middle finger for the imprints on the outer side. To see whether my idea about a child artisan could have any validity, I tried to measure the fingerpad imprints and compare them with modern fingerprints of an adult and a child (see fig. 22). I took into consideration the shrinkage (4%) of the clay from firing in order to get some guidelines for how big a child's imprint should be from artisanal traces (see fig. 23)

The results of the calculations in this very limited pilot study show that the index and middle finger imprints of the nine-year-old are closer in size to the imprints left on the vessel than are the older woman's.

The calculations of the nine-year-old child's fingerprint, even taking the clay shrinkage into consideration, is somewhat larger than the prehistoric one—0.7 mm larger (see fig. 23). In my opinion this very limited study can strengthen the hypothesis that skilful children participated in the production of ceramics at Pryssgården.

The fact that a child can acquire fundamental artisanal knowledge by watching and being in a day-to-day crafting environment is of course something that influences her/his level of skill. In ethnological studies, scholar such as Lave & Wenger (1991) observed and studied learning situations: these studies show that such situations exist even today. They describe a situation where the individual who is learning is first only an observer and becomes familiar with an artisanal situation, which then draws her/him in towards the centre of knowledge (i.e., towards the knowledgeable, those doing the crafting) and finally attracts the artisans' attention and interest. After a while these peripheral individuals are given minor tasks which suit them or the knowledgeable one for the time being. As time goes on the newcomer becomes more and more secure in her/his activity and can finally be given tasks which are important for the artisanal group. This learning process is called 'situated learning' (Lave & Wenger 1991).

This find (F5889) shows that this individual, whom I consider to be a child, was given a well prepared and kneaded clay to work with. The child thus could work with a suitable material, which makes it easier to practice her/his shaping skills. A clay that is too short and unworked or a too plastic clay body would be hard to work with. This means that the child learns under the guidance and instruction of a skilled craftsman.

Figure 24. Reconstrution of how 'situated learning' can be understood. A ceramic artisan at the height of her abilities prepares clay and kneadscoils for very skillsful but perhaps less strong and/or less experienced people. Illustration Henning Cedmar Brandstedt.

Recent research on learning indicates that knowledge transmitted within a generation can give quick cognitive changes, which means that technique development does not necessarily require long periods of time, since the human brain's ability to change cognitively is possible even in shorter intervals of time (Högberg & Gärdenfors 2015:119). This knowledge about our ability to develop could explain 'technical leaps' in archaeology (quick, sudden technological changes occurring in short intervals). The new knowledge is implemented and carried on within a tradition or social milieu. Learning continues and occurs later in a situation or within a tradition which wants to preserve knowledge over time (Tehrani & Riede 2008).

In my judgement, the individual should have at least three years' experience in the craft in order to be able to work in this way. The artisan in this case started practicing method and construction technique at roughly six years of age.

The time that the skilled artisan put into this and the care that is evident in this case means in my opinion that a society or a group views craftmaking as a self-evident part of its daily life (see the concept of 'community of practice' in Lave & Wenger 1991:91ff). The child is considered competent and can participate in the daily tasks as a young individual. (see fig. 24).

Comments on Craft Interpretation

The complex learning process in ceramic craftsmanship means that there are many steps to be taken before one can start making vessels. The artisan needs knowledge about where s/he can find the right raw materials and know how to collect the clay. Then s/he needs to have knowledge about how the weather and climate such as frost and the storing of prepared base clays affect processes, and knowing how the clay should mature in the right way. In working with production, s/he needs knowledge about tempering and additions of other clays. Then s/he has to know which mixtures of different tempers like chamotte or fire-cracked rock stone are best suited for the function of the particular vessel-to-be. When all these choices are made, the materials have to be incorporated in the clay mass

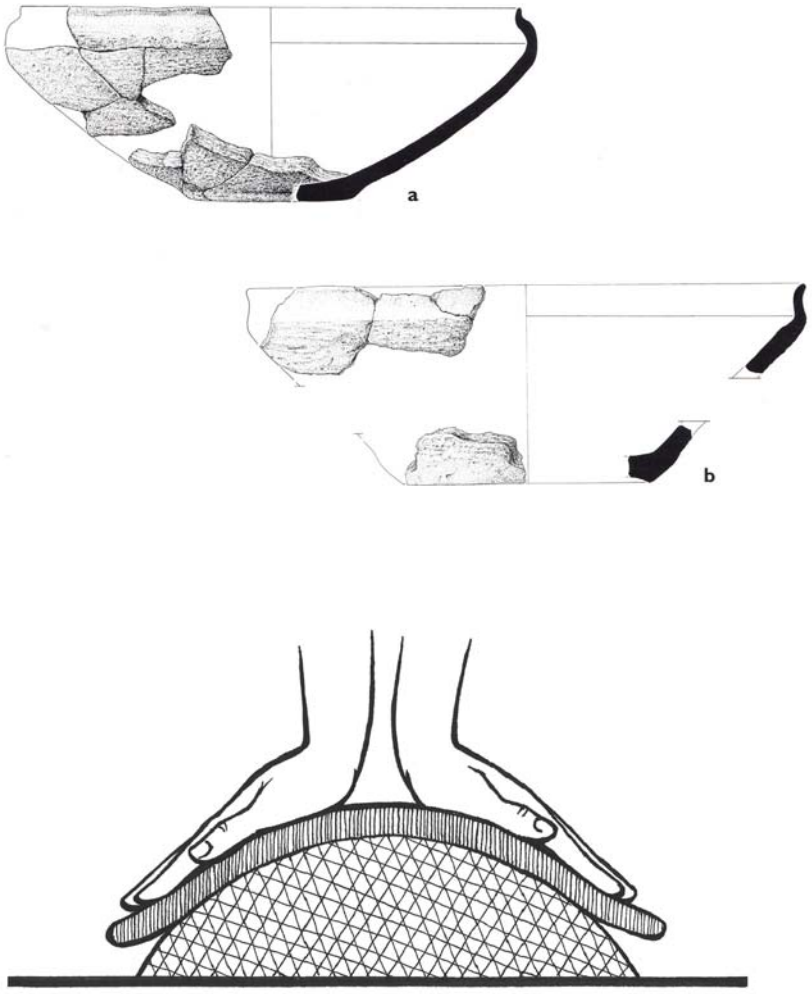


Figure 25. Reconstruction of vessel F6032 and F6021. Illustration Richard Holmgren ARCDOC, Borna-Ahlkvist et al. 1998:129.

Figure 26. Forming the rolled out bowl.
Illustration Henning Cedmar Brandstedt.

Figure 27. F6032 with a slipped inside. There is some engobe still left on the inside of the bowl. It is described as oxidised to a strong red color in the earlier archaeologica analysis. Observe the small and flat base, the fine rustification on the outside and the shallow form. Photo Katarina Botwid.

Figure 28. The bowls that were copies are characterised by their totally missunderstood technology. From top to bottom, nos. 1 (F6021, 2 (F6021) and 3 (F7188). Photo Katarina Botwid.

with an advanced kneading technique to insure even distribution in the clay. Added to this, the artisan needs to know about different shaping techniques, decorative methods and surface treatments. When the vessel is ready, it needs to be carefully dried and taken proper care of until it is completely dry and can be fired.

Knowledge and experience of the knowledge-intensive work implicit in firing is a must, with different types of bonfires, holes or furnaces. The perfect balance between air and fuel to reach the necessary firing temperature is knowledge that takes years to acquire. In my opinion, a younger child has not developed sufficiently to be able to grasp the complexity of the whole process. On the other hand, children who can spend time with knowledgeable artisans in a good learning situation can become surprisingly skilful. In the case of find 5889, something happened in the process which prevented the final stage in the shaping to take place. Here we see that the vessel dried too quickly so that hand-smoothing or rustication was not possible: this is why we see the small fingerprints all over the vessel wall, the thumb on the inside and the index and middle fingers together on the outside of the wall. Thus, in this material I found a child who was skilled in crafting. Perhaps there are more fingerprints of skilful children hiding under paddled, hand-smoothed or rusticated surfaces in the find material.

Three Bowls – Original and Imitations

An attempt to imitate or copy a vessel is difficult to trace. There is a vessel that I consider an original in this case: it is made in a technology totally different from what is common to the site but seemingly from local materials (Stålbom 1998:129). In addition to the original, which will be reported on here, there are four bowls which seem to be have been made in an attempt at copying the manner of production but failed because the artisan did not understand the technique. In the Pryssgården material, there are a smaller number of objects shaped in a different design idiom than the rest of the ceramic objects. In the report, they are called imports, and the author attempted to assign a place of origin to them through thin-section analysis. The analyses indicated that the local artisans used

a different composition for the temper (see above) but that the clay and its mineral composition could not be differentiated from the local raw materials, which were used for the great majority of ceramics (Stålbom 1998, comments on report from Ceramic Research Laboratory [CRL] in Lund). These forms can have been inspired by having seen similar vessels somewhere or by artisans who demonstrated their way of working, or produced by ceramists who were temporarily at the settlement and worked with local materials for a longer time.

Another possible interpretation is that someone from the farmstead travelled and learned new shapes or techniques from somewhere else (Botwid 2015 submitted). At Pryssgården ceramic production does not seem to have been influenced by these unusual shapes to any greater extent. In my opinion, they were produced by visiting artisans who were at the farmstead for a shorter period of time. A ceramist from Pryssgården, or one who resided there for a longer period of time, would have had the possibility of influencing the craft through transference of knowledge for a longer time. It is possible that this person could have died before s/he had the chance to teach his/her techniques to the local ceramists. One example which illustrates this hypothetical interpretation is find 6032, made in a completely foreign technique (described below). There are a number of interesting observations here. This vessel is an anomaly which either in connection with its production was 'copied' by a Pryssgården ceramist or at a later date this ceramist tried to make a similar vessel but did not understand the entire process. The original was probably made by a ceramist from another place who wished to use the Pryssgården ceramists' pottery expression. The Pryssgården ceramists tried to make vessels in the same way later by imitation or copying.

Analysis of Crafting

In my opinion, vessel F6032 (see fig. 25a) is a bowl which was made using a completely different ceramic technology. It was described first as a possible import from the Lausitz area (present-day Poland); however, later analyses indicated that it was made of the local clay (Stålbom 1998:129).

Artisanal analysis: the find was produced by hand rolling—the ceramist flattened out the clay and then rolled with a rolling pin. The technique can be described in the following way: a round, well worked mound of clay is flattened and beaten with diagonal blows at a 45° angle from the middle and out while the ceramist slowly turns the mound. When after several spins the disc is about 1.5 cm thick, it is rolled out flat using light pressure. The disc has to dry to an almost leather-hard state after which it is put over a convex form (of clay, stone, or wood). Light pressure is applied to carefully push the disc down over the form and then it iis left to dry even more (see fig. 26).

When the future bowl is leather hard, it is lifted off the form and turned 180°. The bottom of the bowl is tapped very lightly against a flat surface of wood or stone to flatten the base (see fig. 27). The basic shape of the bowl is now finished. The ceramist rolls out a thin roll, which is attached to the burnished, leather-hard top of the bowl. The bowl is then turned with one hand while the other forms a rim in the wet clay. The whole bowl is now left to dry to a leather-hard state, then burnished and scraped (with a rib or a little knife of metal or flint) on the inside.

Following this, the bowl is decorated or covered with a slip (engobe) on the inside (see fig. 27). This slip, or slurry, is the same clay as the bowl, but levigated (Hamer 2004:210) several times until only the finest clay particles are left (the same procedure as when making *terra sigillata*). It is a time-consuming method but results in a strong light-red and smooth surface on the vessel. The slurry in this case had added red iron oxide—probably roasted, very finely ground magnetite—or else was mixed together with an especially iron-rich clay (there are indications of oxide crayons—see Botwid in press (paper 2 this volume)—in the find material but further analyses must be made in the future on them).

In addition to the slipped inside surface, there is an unusual rustication applied on the outside one (see fig. 27). The usual rustication normal for vessels from this site is very coarse compared with the one on this bowl; further, this one had very fine sand mixed with the slurry and was paddled onto instead of being pushed over the outside surface.

Copies and Attempts

There are several other bowls (see fig. 28) which I consider to be attempted copies or imitations of F6032. Here you can clearly see that the shape is built right-side-up, covered with coarse rustication, and is not slipped with a supplementary iron oxide slurry. Bowl no. 1, F6021 (see fig. 25b) is made with a fair level of skill, while nos. 2 and 3 provide clear indications that the artisan formed them without waiting for the clay to be leather hard.

Comments and further analysis based on artisanan-technical observation: in my opinion it is clear that there were long-distance contacts with Pryssgården. The first bowl is a hybrid which was connected to the ceramic tradition at the site through the application of a weak rustication on the outside surface. Apart from that, the bowl was made in a totally different manner, using techniques which do not appear in the rest of the find material or to my knowledge at any other crafting place in the Late Bronze Age in Sweden.

Figur 29. The black bowl with a handel and a tool—the picture shows find 6209, the bowl, and a smoothing stone, find 5014. Photo Katarina Botwid.

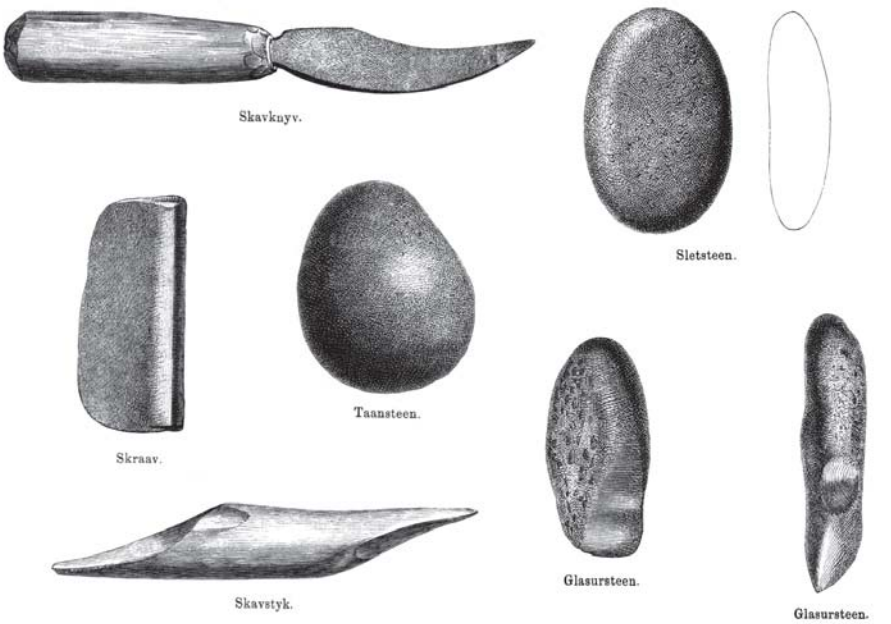


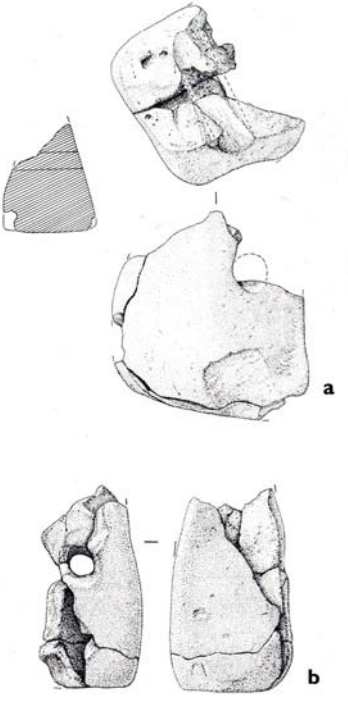
Figure 30. In the picture from 1881 is seen the entire set of tools that the jydepotte women used. Notice the various shapes of the smoothing stone and the scraping knives. Digitally processed from F. Sehested 1881.

Figure 31. The picture shows how the smoothing stone is used when the vessel is leather hard (se appendix p132). The vessel is burnished with short, rhytmic strokes to a high shine. The shine depends on wheter or not the clay was dried to the correct stage. Photo: Matilda Kjellqvist.

Black Vessels at Pryssgården –
the Beginning of a New Tradition?

In the material there are two vessels (A50579, F6209) (Stålbom 1998:121) that in my opinion show clear connections with the so-called 'jydepottetradition' (Danish ceramic tradition from Jutland, Denmark), a technology which in recent times (16th to 20th centuries) has been recorded (Guldberg 1999:35), as women transferred their knowledge to other women. The pottery (sortepotten) is thin, black, burnished and fired in a reducing atmosphere with slow cooling to avoid the risk of reoxidation, which would turn it red again. This black pottery was common in the Late Iron Age. It is possible that the vessels were dried first in a smokehouse—there are remains of one such building on the farmstead (see section 5.3.1, building 256, below). Around 500 BC, climate deterioration is a possible factor which could have affected how craftsmanship developed: if the climate became more and more damp, one might have needed a drying house. In AD 580 (Tvauri 2014:30ff) a clear connection with the climate can be seen in ceramic crafting and in the tradition that later came to be called the 'jydepottetradition'. Here it is the production and firing itself that demonstrate craft-technological processes—both the jydepots and other black vessels have changed typologically over time, which is a question of cultural preferences and shorter time intervals. In my opinion, the technology can be a more general Nordic/European craft technology which survived into historic times on Jutland. This pottery tradition is now being discussed or named as a possible comparanda in Swedish archaeology (Botwid 2009b, Ericsson 2009).

Figure 32. F6776, close up and entire ceramic shred which has irregular textile impirnts of a plain-weave fabric of flax or nettle (textile analysis made by Eva Lundwall, Textile Conservation Department at the Sweish National Heritagr Board). Photographs, close-up Katarina Botwid, shred Håkan Thorén.


a
b

Within ceramic craftsmanship, the idea that the jydepotte women's craft went back to Late Iron Age times has been presented by several scholars (Lyngaard 1972:30, Vincentelli 2003:27). The largest work on creating links between the jydepotte tradition and archaeology was made by Axel Steenberg, a curator at the National Museum, Copenhagen. Stenberg documented the last jydepotte women and their work on film in 1938, but for some reason, the tradition still lands somewhere between history and archaeology (Guldberg 1999:40–41). Craftpersons active in the craft movement of the 60s and 70s were looking for their roots, and trained ceramists investigated this specific practice. They learned it as adults and lacked the practical continuity that an unbroken tradition creates (cf. the earlier discussion on situated learning). With the reconstruction of the jydepotte craft and the existence of contemporary Danish craftsmen who with great knowledge of the material and the techniques thanks to the extant vessels and the documentation succeeded in recreating this tradition unique to Scandinavia: hopefully, the tradition will live on.

The fact that attention within the field of prehistoric Nordic archaeology now aimed at the technological can provide new insights into how black pottery was made even in prehistoric times.

Examples of such possibilities are experiments from the Lejre Centre for Experimental Archaeology and Education, Lejre, Denmark where historical-archaeological experiments in producing jydepotte pottery have been made, carried out by potters such as Grethe Andersen and Edel Hildebrandt. Their work and experiments can be seen in the film *Jydepotten* from 1987 (Guldberg 1999:42–43). Today there are ceramists who have long experience in making jydepots: one example is Inger Hildebrandt, who has been teaching Inger Heeball for three years (pers. comm.). At Lejre the tradition is shown but has not been connected to archaeology so often, even if there are certain exceptions.

Figure 33. The documentation of the loomweights from area A1, Pryssgården. Photo Katarina Botwid 2015. Illustration Richard Holmgren ARCDOC, Borna-Ahlkvist et al. 1998:146.

In the next section, I shall argue that the jydepotte tradition can have roots going back to the Late Bronze Age, and that the way of working can also have been a craft technology in Sweden.

The Oldest Swedish 'Sortepotte'?

In figure 29 is seen find 6209, a low, burnished bowl with a wide handle which is black-fired cooling in a total reduction. The vessel shows that the craft-technological aspects here are shared with the jydepotte technology. The analysis of craft skill places it in the 'good artisanal skill' category. There is also a find in the material which I believe to be a tool, a smoothing stone (F5014—the find is registered as a whetstone. The smoothing stone is part of the jydepotte women's equipment along with several tools that have archaeological and historic roots (fig. 30). The 'whetstone', now recatalogued as a smoothing stone, is one of the few surviving ceramic tools that might have been used in the Late Bronze Age on black-fired, hand-built shapes and carried on through to the Danish tradition, which had continuity until 1947. Burnishing is a common surface treatment throughout the entire world even today (Vincentelli 2008 passim).

The vessel from Pryssgården is a well-crafted, smoothed bowl with a handle and traces of burnishing that match the tool that was found (see fig. 31). This find has clear craft-technological evidence that can be linked to the jydepotte tradition and is, if this is the case, an example of a tradition going back to the later phase (A phase) of the Late Bronze Age (Stålbom 1998:127). The firing and a possible drying house can have originated in connection with damper and colder climate intervals or periods, since ceramic crafts in particular are much affected by dampness in the air.

Ceramics with Traces of Textiles and Technical Ceramics

Other crafts can become visible in the ceramic sherds: as in the case with the tuyère, ceramics can point towards other crafts even if we cannot see the craft production or process per se. The hidden crafts, processes or tools appear in other ways. In area A1 (Find 6032), textile imprints can be seen

in ceramic sherds, and, as here, in preserved loomweights—estimated to at least 10 (Stålbom 1998:146). Two of the vessels from Pryssgården have textile imprints, enabling textile analysis (Stålbom 1998:138). Here we come into contact with both which textiles were used in Pryssgården and how textiles were used in ceramics. Textile imprints in the clay in the one sherd, dated to the Late Bronze Age, revealed after an ocular analysis by Eva Lundwall (textile conservation department at the Swedish National Heritage Board) that it was a "woven twill made of wool with 12 threads per cm in warp and weft." (Stålbom 1998:138).

The other sherd, which was found in area E, has an imprint of a fine, plain-weave fabric probably made of plant fibres, where the thread density in both the warp and the weft is 20 threads cm (see fig. 32) (Stålbom 1998:146). My analysis is that the artisan in this case covered the vessels with a damp cloth to prevent them from drying out. When it was warm or when a ceramist was constructing several vessels simultaneously, the pots would be covered. This would prevent interruptions in the rhythm of the work that would cause the vessels to dry out (pass the stage where they could no longer be remoisturised to a leather-hard and flexible consistency). In this case, the traces are partly smudged, which I believe means that someone consciously tried to smooth out the marks, but unfortunately the vessel had dried too much, no longer permitting this to be done, or that the ceramist did not need to remove the traces. My interpretation is that the imprints were not meant to be decoration.

In the same area A1 there are loomweights (see fig. 33) which are very similar to finds from a context outside of Scandinavia: the area which is today's Czech Republic (Belanova-Stolcova 2012:342). There could have been trade contacts between Pryssgården and Holubice, something which will be discussed below in the section called 'The big picture'. This group of special loomweights can thus indicate an unusual link outside of Scandinavia (assuming of course that this type of pyramidal loomweight really is unusual). In the same area, there are (according to Stålbom 1998:138) harder-fired ceramics, which he believes is indicative of a change in the way ceramics were made. This in combination with the unusual loomweights found here can further strengthen the idea of an exchange of crafts or craftsmanship.

Use and Reuse of Textiles

In order to interpret the use of various craft products found at Pryssgården, there is good reason to reflect on how textiles can be used in pottery production or even as a covering material for clay left in a cool place to mature for a season (Köpingebro, House 4) (Tesch 1993:65). I assume that textile production was extensive. As mentioned earlier, we see in the material traces of both wool and flax (or nettles) being woven into textiles. In addition to textile artefacts, these are also used in ceramic crafting. The loomweights at Pryssgården in my observation were well fired and quite similar to the La Tène weights.

Here an artisanal analysis indicates that there is a possibility for developing the links between technical ceramics and household ceramics. This connection is often weak, for reasons that are not very comprehensible. My suggestion is that we should also speak here of technological textiles, since we see that they were used for purposes related to artisanal production. Through the imprints on ceramic sherds, we see the textile itself, which explains the presence of technological ceramics (loomweights) that in the next step show the connection to a larger contact net, like for example Holubice in present-day Czech Republic.

Summary of the Analysis Results and Discussion of the Ceramic Material in the Pryssgården Settlement

The results will be woven into an in-depth discussion in the section 'Final analysis results'. The pottery from Pryssgården is typical and characteristic for a Bronze Age settlement. The smaller amounts from other periods show no deviations from similar ceramic material—it can be viewed within the framework of a larger European context. Comparisons with other southern Scandinavian settlements do not show any differences, either (Stålbom 1998:128). The ceramics here are clearly connected with house and home, and with other crafts. Attempts to distinguish typological variations do not show any greater differences within the ceramic material—Ole Stilborg and I are in complete agree about this and, especially in the analysis of Rambodal's ceramics, our dialogue revolves around the

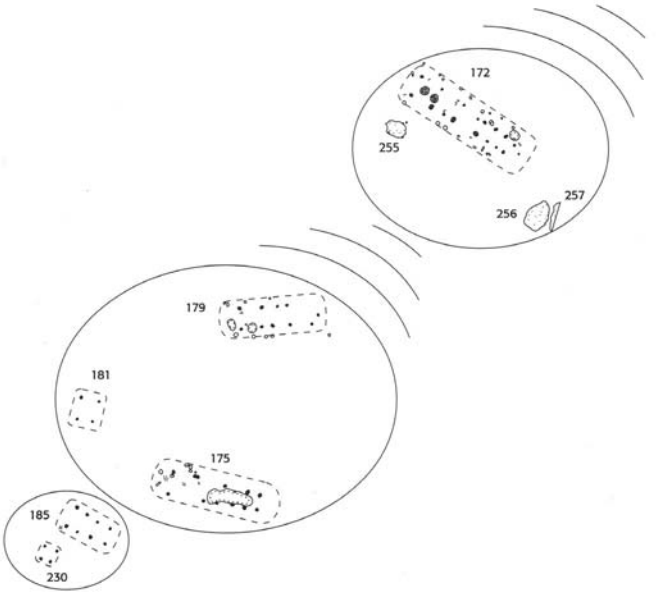
similarities, with only small deviations between settlements. Based on the technical analyses of the material, even Stålbom says that the ceramics in Pryssgården follow a uniform and common pottery craft tradition that is evident in Bronze Age settlements. Some few finds at Pryssgården are different: these have been discussed above in the section called 'anomalies', 4.1. Based on my observations, there is no visible difference regarding a clear correlation between level of skill of the ceramist and the production: all the categories of ceramists produced all types of vases. In other words there was no work division dependent on skill: certain shapes are more difficult to make than others, but I can find no particular skill level connected to them. Perhaps there really was a community of practice at that time which was independent of status or economic considerations (unlike today, which can be said to be steered by markets). Contrary to any thoughts of economic organisation, we see at Pryssgården that there are different arenas from which I would like to discuss crafting. I find more and more questions in everyday life which affect the social side of craftsmanship. This discussion will be presented in the concluding archaeological interpretation.

Living in a Craft Environment – Placement of Buildings and Places for Crafting in Pryssgården

A difficulty in understand a prehistoric society like Pryssgården through its excavated material can be that the site feels 'clean': that is, that there are not many finds in the houses and thus there is a lack of interpretative source material in the context of the house itself. Clearly connecting areas of activity and smaller buildings to a farmstead can increase the possibilities of understanding possible links. The internal placement in the farmstead in the following interpretation takes up the various buildings at Pryssgården. One important part will be the reconstruction of the farmstead, which will represent the farm's organisation of crafts in the Late Bronze Age. The placement of the farmstead is chosen with care in order to be able to describe *'the house'* in a wider meaning, as Borna-Ahlkvist discusses in her thesis. She works with the social significance of the whole house and finds that three generations can have used a house construction. In her interpretation she emphasises that the *memory* of the house is found in the house construction that is left as it is or is incorporated into the next house generation, and ultimately by using building materials from the previous house to build the next one or else in some other way to allow a logical order to follow along to the new house generation. The idea of use and reuse is already present in this interpretation (Borna-Ahlkvist 2002:84–85).

I have chosen the longhouse and its outbuildings, house 172, for my interpretation. In a hypothetical chronology it is considered the youngest of three house generations within the same time interval (see fig. 34) in

area E2. House 172 and its outbuildings show the farm organisation I chose to use it as an example of the farm from an artisanal perspective. The analysis is based on the signs of craft production that I have seen. Finds from the same period in this area will be seen as active agents in this analysis as the find material is contemporary with the house regardless of the various find spots. On the basis of the picture I put together based completely on the finds and the farm buildings, I hope to be able to present a reasonable analysis. Any questions that remain after I have put the craftpersons in their proper contexts will be taken up in section 6.1 entitled 'The little picture' where these practical chores are discussed and I show what they could mean in an interpretive text.



Figur 34. The hypothetical generations at the farmstead from the oldest houses 185 and 175, period IV (1000 BC), followed by house 179, and the youngest, house 172. These latter houses are also dated to period IV, Late Bornze Age but later (900 BC). (Borna Ahlkvist 2002:143).

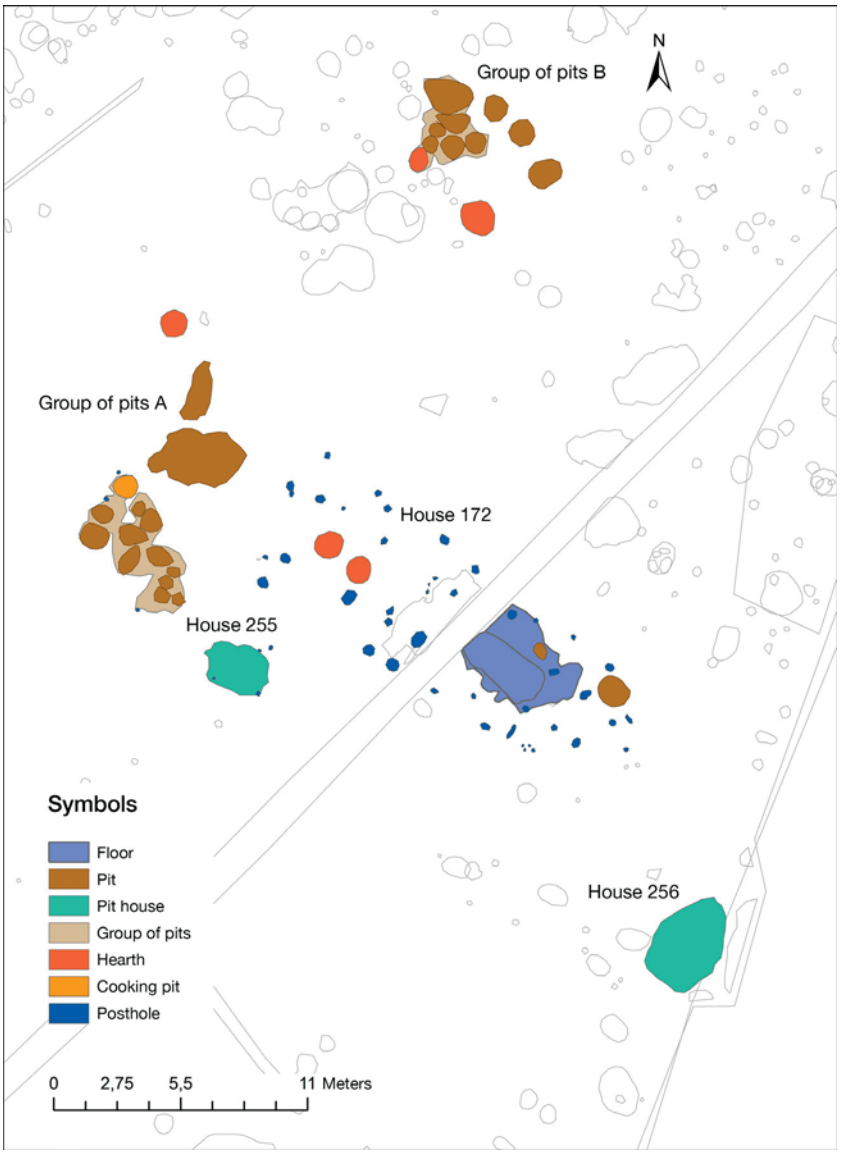


Figure 35. Farmstead house 172 and the feature numbers. Karin Lund SHMM.

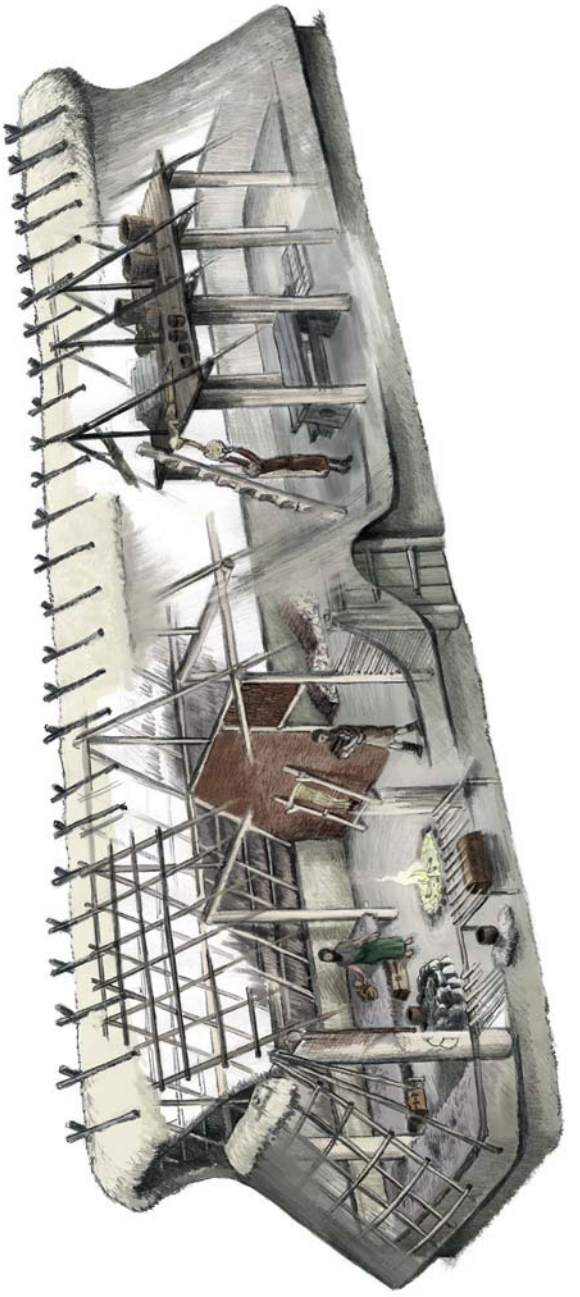


Figure 36. Reconstruction of the internal functional division of the longhouse based on Borna-Ahlkvist (Borna-Ahlkvist 2002:61ff). Illustration Henning Cedmar Brandstedt.

Presentation of the Farmstead

The text and pictures in this section deal with the actual chores. The longhouse will be activated with the outbuildings and activity areas contemporary with the longhouse (see fig. 35). The smaller buildings are two pit houses, differently shaped from each other and with different functions (buildings 255 and 256). The activity areas are interpreted as a cooking pit (A59009), a grouping of pits (A59469) with many small internal features, and pit (A54275), which is a larger pit. Directly linked to it is a smaller but longer pit (A54588) (see below fig. 41). North of the activity area A, which is next to the longhouse, there is another activity area which in my opinion belongs to the extended farmstead area. It is about 15 m from the northwest wall of the longhouse to this area, which has 7 hearths (A50659, A50670, A50680, A62488, A53742, A53581, A53766), five storage pits (A61526, A51513, A51523, A53788, A54715), a group of pits (A53692) and some larger pits (A54766, A59153, A54733) (see below fig. 44). Between these features there are also some post holes which cannot have been used for any structure. These holes are connected with the groups of pits and hearths without being in the way for the work activities: the post holes will be interpreted later in the reconstruction, where my interpretation can provide answers to the questions about the activities. It will also be compared with earlier interpretations regarding rubbish or sacrifices (Stålbom 1998:132). Hopefully the reconstruction can provide a foundation for the analysis of what a person or a group of people living in the house actually did. The idea of sacrifice that Stålbom presented will not be discussed in connection with the reconstruction: however, in section 6.1 'The little picture' I will return to the possible organisation of the site.

The Farm

The reconstruction of the main house (172) is divided into functions according to the structures described by Borna-Ahlkvist (2002:6ff), where the hearths are in the western part of the longhouse and the working part in the eastern part in the Late Bronze Age (see fig. 36). The raised hearth

Figure 37. The longhouse from the Bronze Age. Sten Tesch's reconstruction of house B14:VIII from Köpingbo, southern Sweden, built on The Ekehagen Ancient Village site. Today, 20 years after it was built, the house is still standing and works well (2015). The room division is similar to that at Pryssgården house 172. The house had a package of clay wrapped in a textile (which left imprints in the clay) and was kept in a so-called storage pit well protected from frost. Already in 1984 Tesch reported it as a prepared clay package that was being stored for use in the farm's pottery production (Tesch 1993:165), an early artisanal-perspective interpretation. Photo Henning Cedmar Brandstedt.

which is in house 172 is found in only one other house (174) and is also dated to the Late Bronze Age. I have used and reconstructed all the parts that have been defined in the house along with the find material that was found *in situ*. The three-generation house has a living area in the western part where the hearth and raised hearth are found, and work areas, a loft and storage in the eastern part. There are no traces of animals quartered indoors in house 172. After the reconstruction of house 172 I will take up the reconstruction of house B14:VIII which was made by Sten Tesch in collaboration with the The Ekehagen Open Air Museum (see fig. 37). The reconstruction has been used as a model for the shape and external choice of material.

Pits at Pryssgården

In the area I delineated there are no pits of the type that Lena Lindgren-Hertz defines as preparation pits for preparation of food or crops. Those pits at the site are considered to be *groups of pits or pits* (A59469, A54781 A62569, A54766, A59153, A54733), storage pits (A48554, A50515, A61526, A51513, A51523) or *rubbish pits* (A54588) (Lindgren-Hertz 1998:87–88). Looking at them from a craft production perspective, some of the pits will get new interpretations, but for the sake of clarity they will be named by the definitions Lindgren-Hertz gave them above with the feature number connected to each attribution (for more specific information about the large category of pits and their definition, see Lindgren-Hertz's section in the report from 1998, pp. 72–102). In the current text, I shall take up only those pits I plan to work with.

The Farmhouse and Outbuildings

The farmhouse is a longhouse from the Late Bronze Age. It is 16.5 m long, or 18.5 m including the eaves. The width is c. 6.20 m, narrowing towards the southeast: the smallest width in the aisles was 1.45 m and the widest was 3.70 m. The hearth was radio-carbon dated to 1035–827 BC cal (Ua-6636) (Borna-Ahlkvist 1998:190). Close to the houses were two pit houses which had been used in very different ways: the rounder one,

Figure 38. The construction of the farm is seen and its relation between the outbuildnings (255 and 256) and the longhouse (172) and the near-by activity areas west and northwest of the longhouse. Illustration Henning Cedmar Brandtstedt.

no. 256, was built with 8 thin posts. I interpret it as a ceramic drying house. This activity will be more clearly described in the section called 'outbuildings and function', where I discuss and reconstruct several outbuildings in the same section. House 255 was used, in my opinion, as a storage building for the various needs of the farm. In the yard there are two work areas—judging from the associated finds, they were places for 'hot' crafts: in this case, bronzework and ceramics.

Crafting Pits in the Farmstead

To the left of the longhouse a complicated system of small pits, A59469 (fig. 38), 12 in all. This type of pit cluster is classified as work pits, are often in groups, and can be related to the Bronze Age houses at Pryssgården rather than to the Iron Age houses. The groups have an uneven distribution, which can mean that certain activities were connected to specific groups (Lindgren–Hertz 1998:87). By this I mean that we see a work area organised for ceramic crafting. In the cluster near house 172 there are finds (ceramics) and in the hearth at the northern end of the grouping there is something which is considered a cooking pit (A58990), with ceramics in it (56 g). The largest collection of ceramics is found in the biggest group in the work area (A54275), with 1546 g of pottery sherds. In my

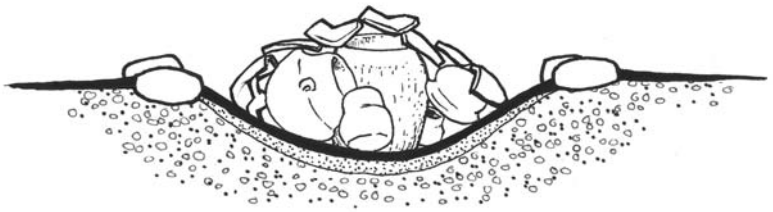


Figure 39. Larger shreds, used as packing material in firing ceramics. The scale is that given for the feature considered earlier as a cooking pit. Illustration Henning Cedmar Brandstedt.

Table for the reuse of ceramics				
The table shows the different usage activities in the ceramic features for the reuse of fired clay for different purposes within ceramic crafting. The material is created, refined, altered or reworked in a craft-technological circulation.				
Usage	Size of ceramics	Preparation	Size of feature	Usage
Filler	Big sherds	Direct usage	Big	To protect unfired vessels under and over the vessels (see fig. 39). When the big sherds become more fragmented (after firing), they fall into the next category.
Tools	Smaller sherds	Grounded, sanded, reworked	Smaller	Tools can be scrapers, lids, heat protectors, and so on. When they break they are put into the pit for fragments.
Temper	Fragmented ceramics	Ground [chamotte] Note: in Bronze Age with handstones	Smaller	Kneaded into the prepared clay to tolerate changes in temperature as the material is already fired and of the same character as the clays they are worked into a very good temper.
Buildning material	Fragmented	Ground [chamotte]	Smaller	Used in wattle and daub for inside walls in the bronze age (Jensen 2006:350-351)

Figure 40. Table showing reuse of ceramics. The circulation goes from broken pots to big sherds thereafter to fragmented sherds and end up as temper (chamotte) in new pots or as building materials. See the placement in the pits in the reconstruction in figure 42.

analysis of the different work pits, I believe that the largest one (A54275) functions as a pit for storing fired sherds that will be used as protectors and fillers in the pit firings when fired new ceramics (see the reconstruction [fig. 39] and 'filler' in the appendix).
There are two finds in the feature that are discussed by Stålbom and thought to have had influence from outside the Scandinavian area (1998:129), which will be discussed in connection with the work pits, which are located only 15 m north of this pit group. Finds F6032 and F6021, which were recovered in this feature, are presented in the section 'Anomalies' and will be discussed later along with the other features in section 7.2, 'The big picture'.

After this review of how so-called pottery stored in pits can constitute craft-technological traces of activity in ceramic crafting, the different activity areas for pottery sherds can be organised according to the following:

Based on the table in figure 40, which shows how reuse can be seen in the pit groups, you can see that at least three pits in the pit cluster (fig. 41 and 42) can have been used for containing sherd material sorted by size: the large pit (A54275) and two smaller ones (A59381 and A54526). Brittle-burnt stone, crushed, ground brittle-burnt stone, and sand can be sorted into three more pits in the feature (A59469). Colour materials belonging to ceramic crafting and prepared within the framework for it leave traces that can be seen in archaeological Bronze Age material, for example in those parts of painted walls preserved at Kirkeberget in Voldetofta, Denmark, where parts of wall paintings with different red and red-brown iron oxide colours have been studied together with frieze-like decorative parts in ceramics of the building which might have framed a doorway (Jensen 2006: 351–352). Another example, but later, from the Late Iron Age, around the birth of Christ is the red crayon which was preserved in Gustavslund and which indicates a more colourful past than what is usually assumed in reconstructions (Botwid in press). The materials which were prepared can be sorted into basic materials like selected parts of ash and hazel trees (1 pit), red earth (1 pit), and pulverised, dried, crushed clay which is untempered and cleaned (1 pit); material rich in calcium, like chalk (calcium carbonate) (1 pit); interesting materials which glitter (stone which looks like gold and which gives a gold shimmer

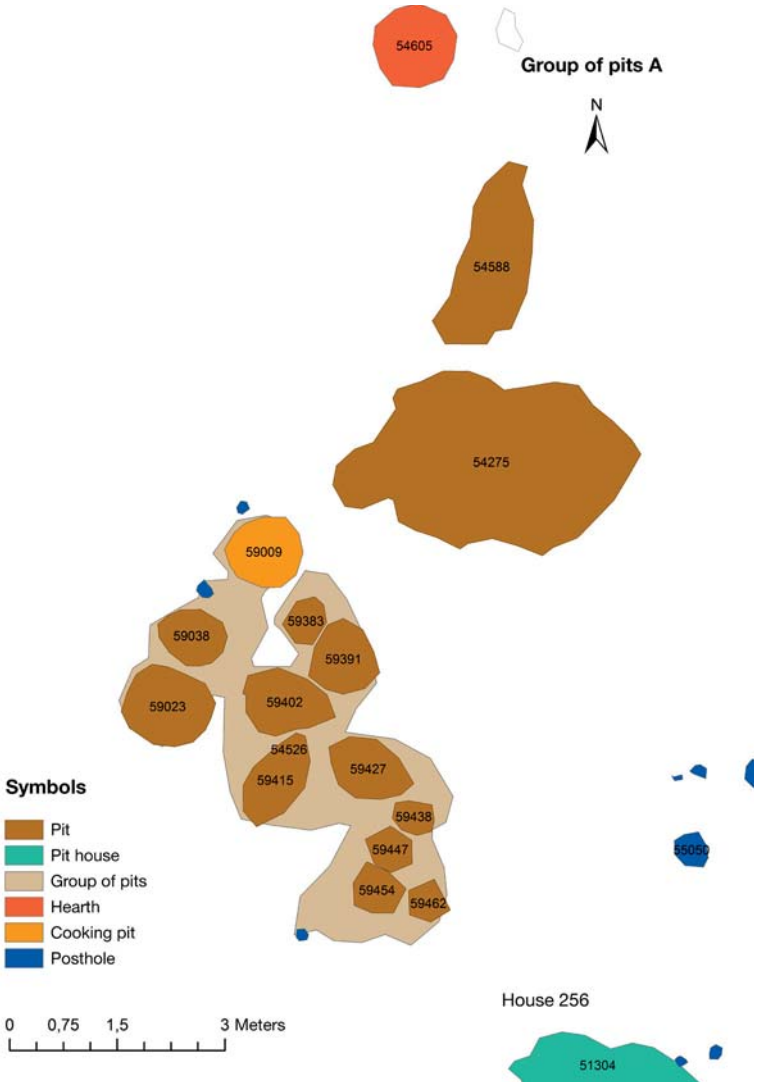


Figure 41. The figure shows the features with the feature numbers, new information after combining the finds and feature databases in august, 2015 (see the earlier section 'material and source criticism'). Karin Lund SHMM 2015.

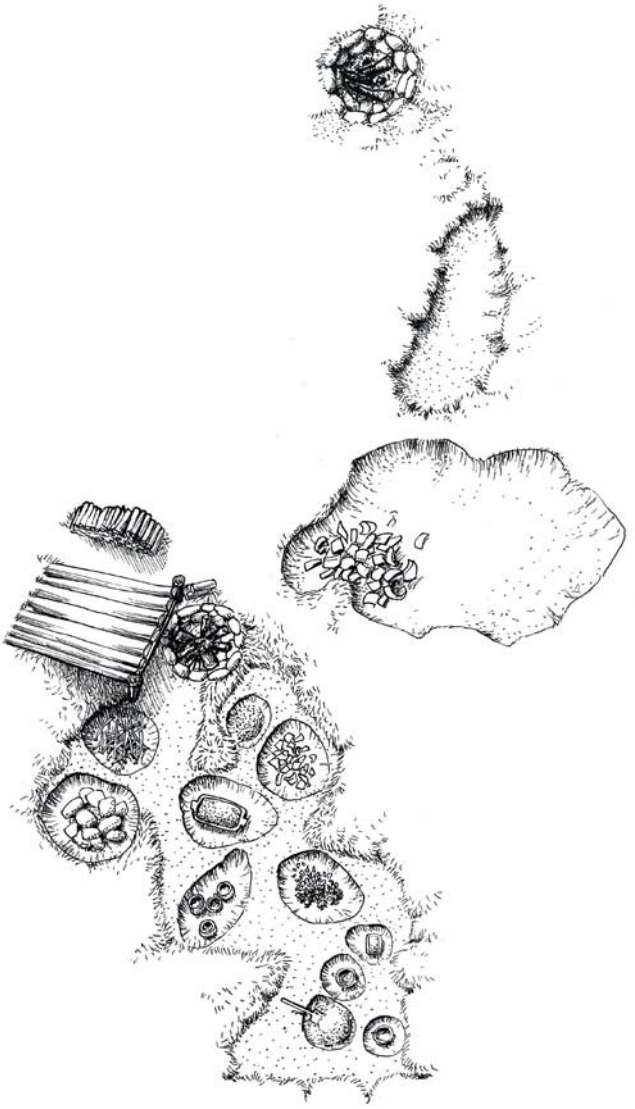


Figure 42. Analysis and reconstruction of the pit group (A594699) during the Bronze Age with the contents of the various pits. Illustration Henning Cedmar Brandstedt.

to a ceramic or colour production) (1 pit); processed colours which can be preserved in small vessels (Stålbom 2004:128ff) with covers or leather covering (Ericsson 2009:82) to keep out moisture. These suggestions imply an interpretation that places these technically possible (probable) raw materials in the Late Bronze Age farmstead. One feature missing here is the larger incineration area in the organisation of this farm. My interpretation is that it was farther away from the house, at the edge of the work area (see fig. 43). Feature A54605 is considered a hearth: the definition of a hearth is a round or oval area that measures 0.2–2.0 m and which has layers of charcoal and soot, often with stone chips in the layers. The preserved depth at Pryssgården is 0.1–0.5 m (Lindgren-Hertz). In my analysis I put the farm's large incineration area in this feature. In the whole system of pits and hearths, there are remains of ceramics that weigh 3683 g, divided into different pits.

It is also clear here that the distribution of ceramics is found in 7 of the small pits in feature A59469, which strengthens my interpretation that it was sorted and makes the assumption about the ceramic-related base material reasonable.

Taphonomic Discussion of Ceramics

Pottery produced by professionally skilled artisans is better made, it does not crack as often in the firing process and does not break when used normally. Further, it is possible that it was well taken care of if it was appreciated for its quality, and moved with the people when the household moved (Borna-Ahlkvist et al. 1998). The vessels run the risk in that case of being underrepresented in a settlement of this character (finds found in pits outside the house like in A79037) (Borna-Ahlkvist et al. 1998:109).

Figure 43. Here is seen a reconstruction of the ceramic workplace. Farthest away in the picture is seen a pit where ceramics are being fired, and next to the wind shelter, a reduction firing. The pit system is drawn in the area between the workplace and the pit house to the right. Illustration Henning Cedmar Brandstedt.

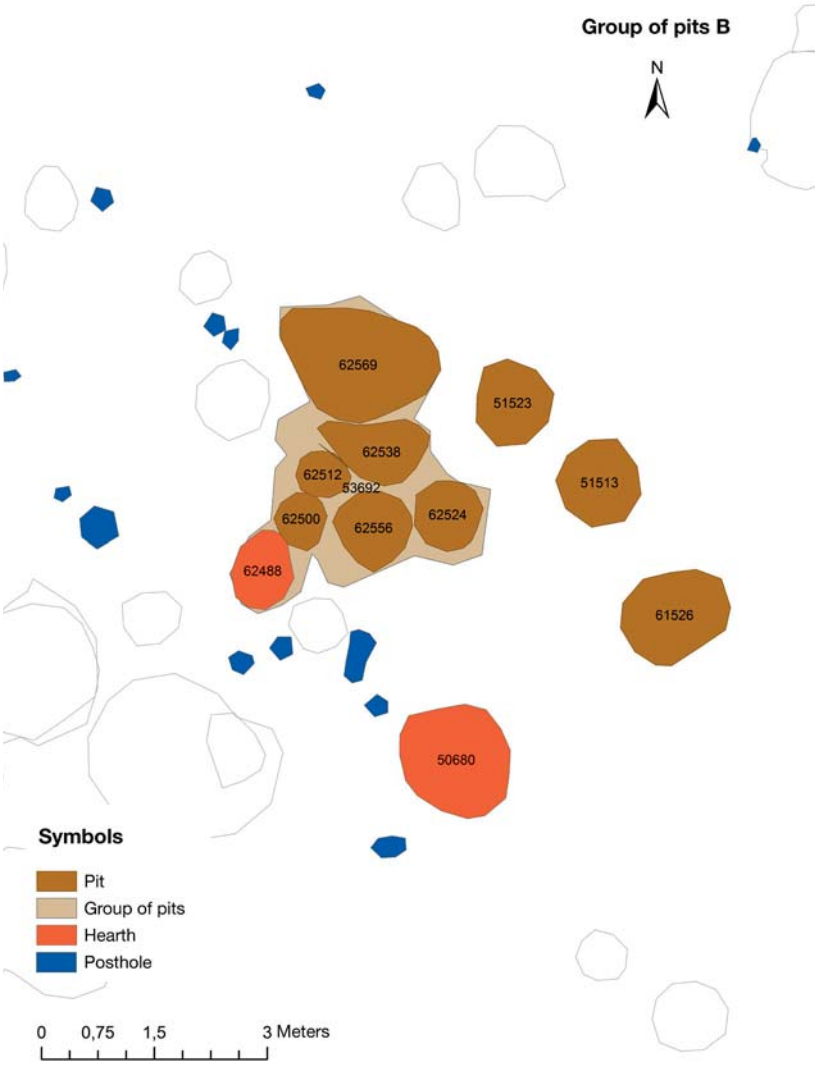


Figure 44. Site of bronze working with various pits and postholes. New information after combining the find and feature databases in August 2015 in collaboration with Karin Lund SHMM (see erlier section regarding material and sources.

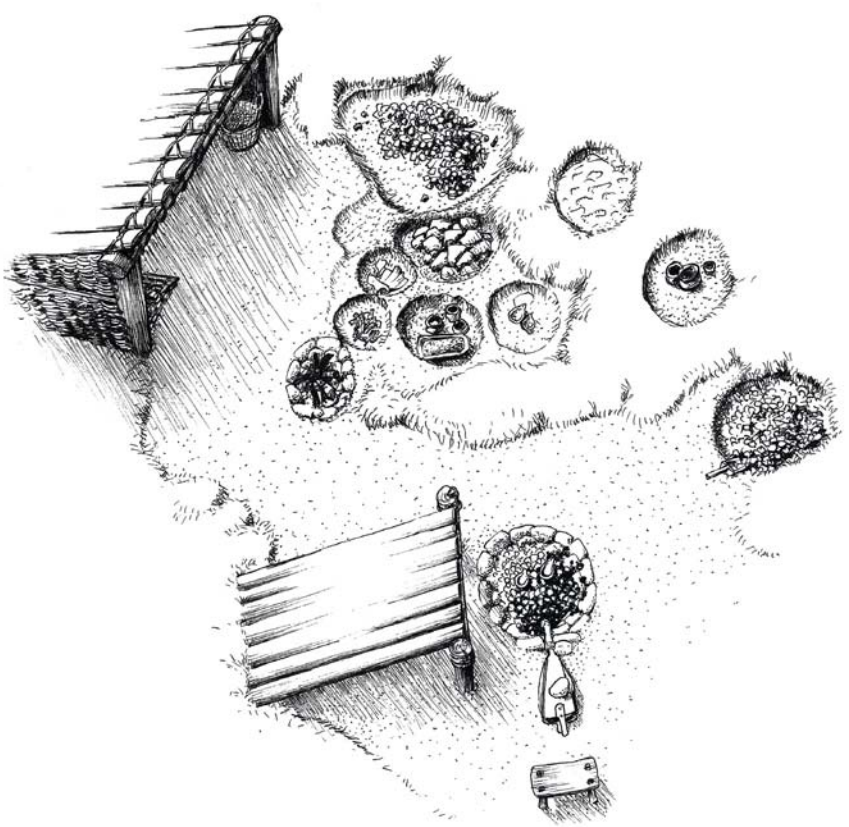


Figure 45. Reconstruction of activity and work ares in pit group B.
Illustration Henning Cedmar Brandstedt.

Figure 46. The visual aspect of bronze working at Pryssgården. The illustration follows the plan that was shown i figure 45.
Illustration Henning Cedmar Brandstedt.

Pottery made with good artisanal knowledge (GAK) keeps well despite frequent use (cooking over an open fire, for example) and there might be a larger percentage of such pots (made with GAK) where the effects of the usage on the wares are known. It is possible that people produced more cooking vessels than storage ones for this reason.

After they broke, many vessels were converted to chamotte temper that was included in both new pots and as temper for plaster for walls and hearths. As a result a great number of vessels disappeared. One thing left to interpret is that despite the degree of preservation and the size of the amount of finds, the material is much less varied that the original ceramic material might have been. If one gives too much importance to taphonomy, the dominating character of the mass material gives an incorrect picture of the amount and type of ceramics which were used on the site. On the other hand, the material gives an excellent idea of how it was reused. A good example of the long duration of cooking pots is seen by a reconstructed pot used at The Ekehagen Open Air Museum (near Falköping, Sweden) which was in use for ten years in making fruit soup to serve to the visitors (about 30,000) each year during the season from April to October (pers. comm. Maryam El Hattab 2013). The pot had been used on hearths both indoors and out of doors, which meant high risks. It was coarsely tempered, and fired at a medium temperature—it finally broke into two pieces in the summer of 2013. Judging from this and other experiences of long-term usage in similar cases, it is clear why it is very difficult to estimate the original amount of ceramics in a settlement or farm.

A Possible Work Area for Bronze Working

North of the farm and connected directly with the farmstead was another activity area (see fig. 44 and the reconstruction in fig. 45). 'Hot' crafting possibly took place here (see fig. 46, reconstruction/visualisation of craft event). The entire work area was in an area of 8 × 2 m. In the middle of the area was a row of posts, which did not disturb any feature. The cluster of pits A53692 is a smaller group with 6 pits and a hearth (A62488) on the edge. Lindgren-Hertz believes that the system was used for 'hot' crafts and considers the pits well defined, with flat bottoms and sloping sides.

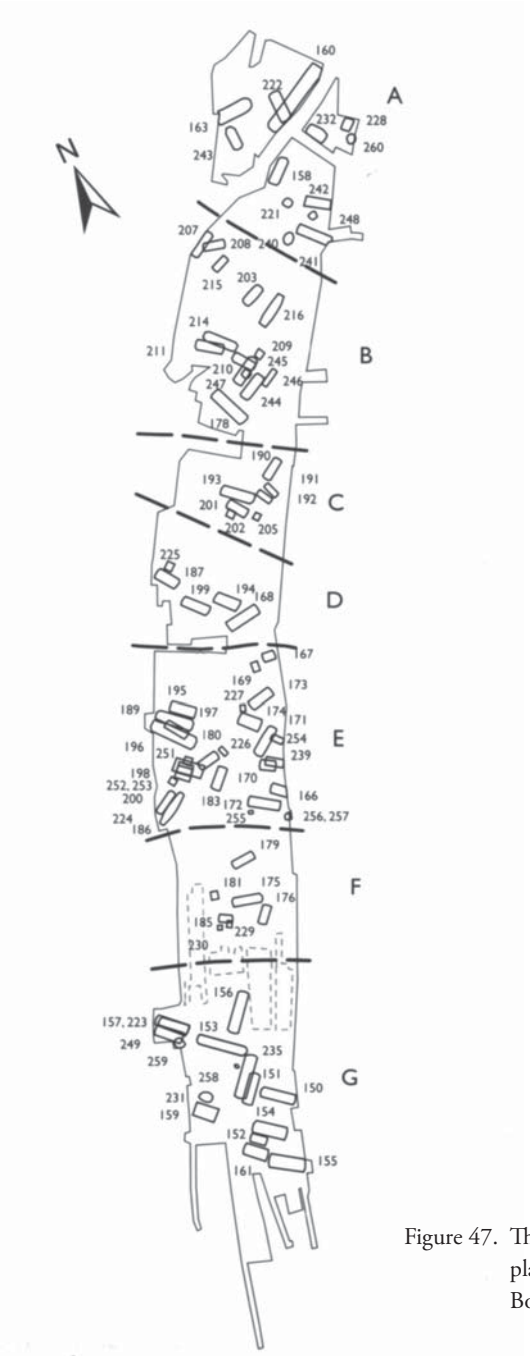


Figure 47. The whole excavation area and the placement of the various buildnings. Borna-Ahlkvist 2002:18.

They are c. 30 cm deep. Directly connected to these are storage pits (1.5–2 m) north of the work pits in the system (Lindgren-Hertz 1998: 94–95).

Reconstruction of the work area according to my interpretation as follows: In the pit group A53692, despite the small amount of spillage from metalworking in the pits themselves, some pits were thought to have been work pits for bronze casting. The layout and structure is similar to the group of pits used for ceramics as described above in fig. 42. No soapstone moulds have been found but there is clay in the feature, which could have been remains of lost moulds close to the pit group. In its southern end is a hearth (A50680) that contains find F5918, the 'Pryssgården figurine' (now redefined as a tuyère-see above, section 4.1). The tuyère shows clear signs of having been used—the clearly sooty interior by the rim indicates this. If it had been handled correctly, it could have been used many times. I base this on the archaeological experiments which were conducted during the reinterpretation of the so-called Pryssgården figurine as mentioned above: a tuyère which is handled correctly can melt a kilo of bronze in two hours with no signs at all of sintering.

There are finds of crucibles typologically belonging to bronze crafting which exist in the material: however, the measurable values of metal found after x-ray fluorescence analysis are too weak to make a definitive conclusion. This in itself of course does not exclude the possibilities that the crucibles were newly produced or had not been used often (Botwid och Eklöv-Petterson in press). In the same feature was found a miniature vessel which could possibly be assigned to bronze crafting: many stone chips and soot in the hearth, which could indicate hot crafts (A50680). Just behind the group of pits in the area are storage pits. They have not been described in any great details but are considered by Lindgren-Hertz as possibly belonging to the work area and according to her interpretation were all open at the same time (Lindgren-Hertz 1998:95).

Bronze finds are few—in total there are 30 g of bronze from 11 findspots in the entire find material (Stålbom 1998:147). An example of objects is a bar button (F2954) (Stålbom 1998:140), an unusual bronze knife (similar to iron age) (A16517) and a bronze fitting (A16113) (Stålbom 1998:141). Two finds from the Late Bronze Age were found in area E2 where the farmstead is located, the one being a four-sided thin bronze

bar and the other, a slightly bent bronze bar with an oval cross-section, considered a piece of a bracelet or neck ring (Stålbom 1998:141–142). If the finds of snipped-off thin bronze bars were made locally at Pryssgården is uncertain, but these thin bronze bars can be understood as bronze scrap metal for reuse in bronze casting (pers. comm. Andreas Nilsson Oct. 26, 2015).

Three Bronze-Age Buildings in Pryssgården – Analysis and Reconstruction from an Artisanal Perspective

The research on the buildings in Pryssgården (see fig. 47) has been based primarily on comparative and chronological studies. For more in-depth analyses, there is an extensive chapter in the report (Borna-Ahlkvist et al. 1998:53–71). The catalogue for the buildings in the same volume gives a building-archaeological interpretation, and divides the buildings into various subcategories (Borna-Ahlkvist et al. 1998:167–258). In her thesis *Hällristarnas hem* (Borna-Ahlkvist 2002), the author advances the idea that the buildings on the site were clustered together on the farmstead, with activity areas and outbuildings connected to the longhouses (Borna-Ahlkvist 2002:130ff). In addition to an in-depth study of the buildings' chronologies and probable building phases, there is also an interpretation of the importance of the buildings for the population (Borna-Ahlkvist 2002). In this presentation a small number of structures represent farmsteads from the Late Bronze Age along with the longhouses, outbuildings and work areas.

The longhouse (172) is reconstructed (see fig. 36) based on the (probable) number of people who lived in it. Here Borna-Ahlkvist considers the house as a three-generation dwelling (Borna-Ahlkvist 2002:61). Belonging to the house are two outbuildings considered pit houses (255,

256) and the two activity areas described earlier. The various features on the farmstead have been discussed above and the suggested reconstruction has clarified which activities I consider reasonable to discuss from a craft perspective. The following reconstructions I suggest within the functional divisions of the buildings follow as closely as possible suggestions and

reconstructions of them which were presented earlier (see among others, Tesch [1993:166], and plate 6/3 a–d; [Tesch 1993] and Borna-Ahlkvist [2002:60–62]).

The insides of the buildings with their equipment, furnishings and possible work places are suggestions, not definitive interpretations, linked to the finds at the site and follow the empirical data as closely as possible. Buildings 255 and 256 in this way of thinking are outbuilding with different functions related to the activities of the farmstead. Building 256 is reconstructed as a drying house for ceramics, and 255 for stores and storage. The interpretation and reconstruction of the house and outbuildings aim at constructing a picture of the entire farmstead.

Outbuildings and Functions in the Late Bronze Age – Three Examples of Reevaluation of the Building Remains from a Craft Perspective

After having carefully studied the report on the various outbuildings in the catalogue of the houses (Borna-Ahlkvist et al. 1998:167ff), I shall delimit my study to three outbuildings from the Late Bronze Age. The houses have different characters and are considered to have completely different constructions: by looking carefully at the stratigraphy and types of each building, I could determine which suggested craft activities I could find believable. Houses 255 and 256 contributed to the choice of the farmstead around house 172, which is from the same period: together with the activity areas in the same farmstead area, they formed a suitable starting point. Building 152 is a three-aisled outbuilding and has been chosen as a candidate for a craft building. The house can be multifunctional, but is interpreted and reconstructed in the following as a building used for ceramic crafts.

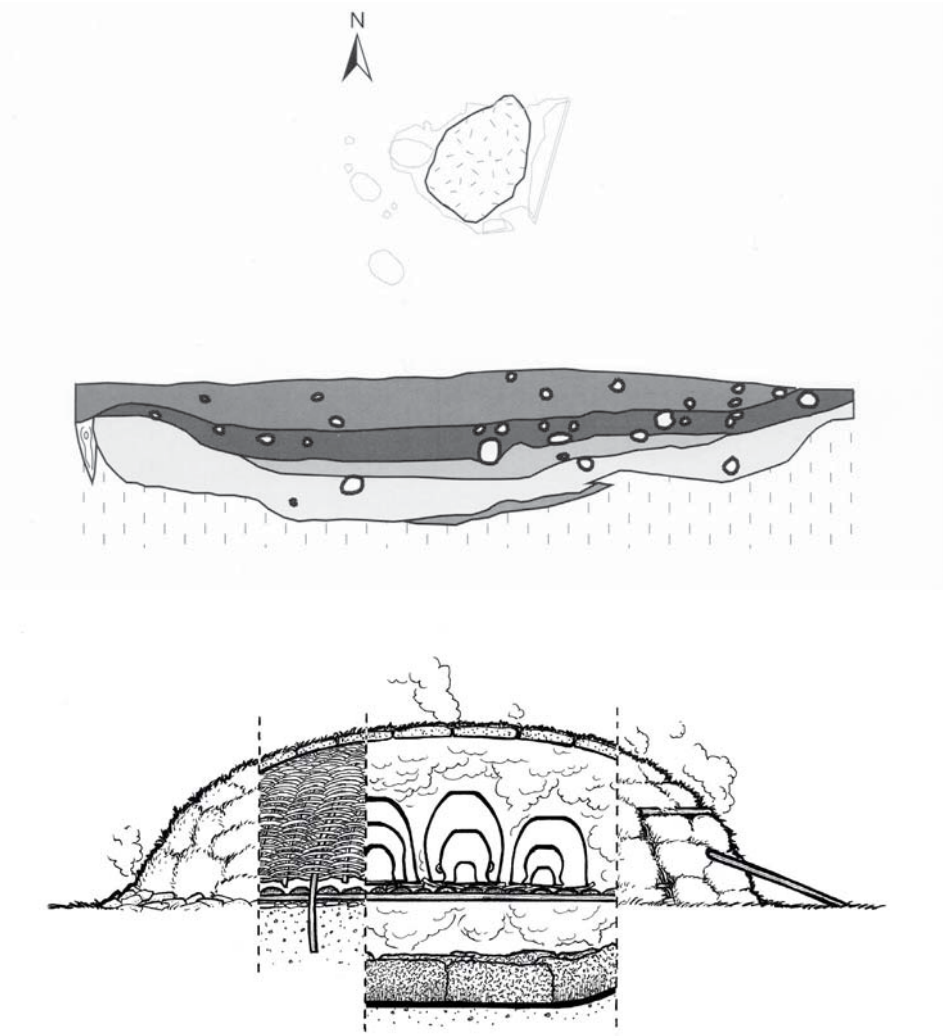


Figure 48. Outbildning 256 (pit house, c. 4 m long and 3 m wide, with a depht of 60 cm) plan and section from the catalogue of buildings in Borna-Ahlkvist et al. 1998:254.

Figure 49. Reconstruction of outbuildning 256 as a drying house for ceramic production. It is c. 4 m long and 3 m wide, with a depht of 60 cm. Illustration Henning Cedmar Brandstedt.

A Step-By-Step Reconstruction of the Drying House for Ceramics – Building 256 in Area E

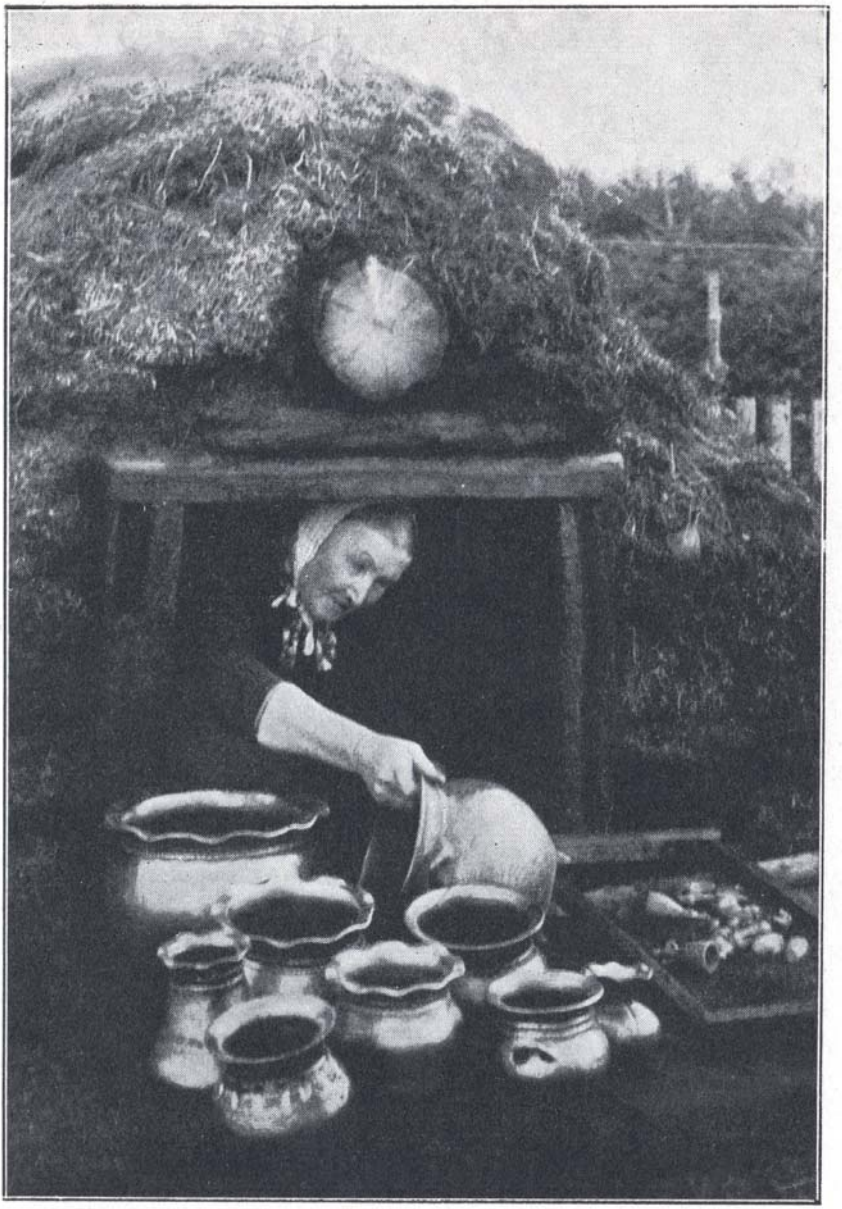
House 256 (see fig. 48) belongs to the farmstead and is situated far to the east in the farmstead area. It has been interpreted as a pit house and dated to 991–820 cal (Ua-7191) (Borna-Ahlkvist et al. 1998:254). In order to describe how I understand their interpretation and description of the house, I reproduce their text below:

> Description. The house is interpreted as a pit house. The house had a somewhat oval shape. The dug-down walls of the house were straight and the bottom was flat. Around the pit were 8 thin post holes with an average diameter of 0.5 m and an estimated depth of 0.3 m. The post holes are most likely a part of a wall, the remains of a wattle construction. In the northwest part of the pit was a 'wreath' of stone chips which could have been like a low wall around the house. Either the stone chips strengthened the wall or they are the remains of some production activity that took place inside the house. The fill in the house was composed basically of five levels. In the bottom of the pit there was a 0.05 m layer consisting of greasy, somewhat sooty humus soil, interpreted as a floor level. Above that are two layers, interpreted as collapsed structures, consisting of sooty humus with some few stone chips. On top were two greasy, sooty layers with humus soil: both contained many stones chips. The layers were considered infill. There were finds in all the layers with the exception of the bottom layer. The finds give no indication of the function in the pit house. (Borna-Ahlkvist et al. 1998:254)

Outbuilding 256 Interpreted as a Drying House for Ceramics

In the description above there are several different pieces of information which indicate that this building was a specific drying house for ceramics. The absence of bones or other types of food remains like grains or similar types of foodstuffs allows the function of the structure to be interpreted as an activity not connected with food preparation. The activity suggested here—that of ceramic production—is based on the stone chips: stone when repeatedly heated up crystalises and becomes brittle. My analysis of the function of this building is based on the fact that during the Late Bronze Age the weather became colder and damper, culminating about

Figure 50. Jydepotte women at two different types of dryinghouse which can structurally be compared with pit houses from the Late Bronze Age. The figure shows two examples of ceramic drying houses: the one with the ceramist standing is more like a hut. The poles on the bottom is clearly visible. The other model is more like a pit house where you clearly see how the craftswoman takes out the hot vessels and places them on a bed of fired ceramic sherds so that the cold damp earth will not cause them to crack or split. Thus the sherds that were not considered earlier to be connected with the pit most certainly were in my opinion. A.G. Jensen, Jydepotten – vort lands hantværk. 1924:37.



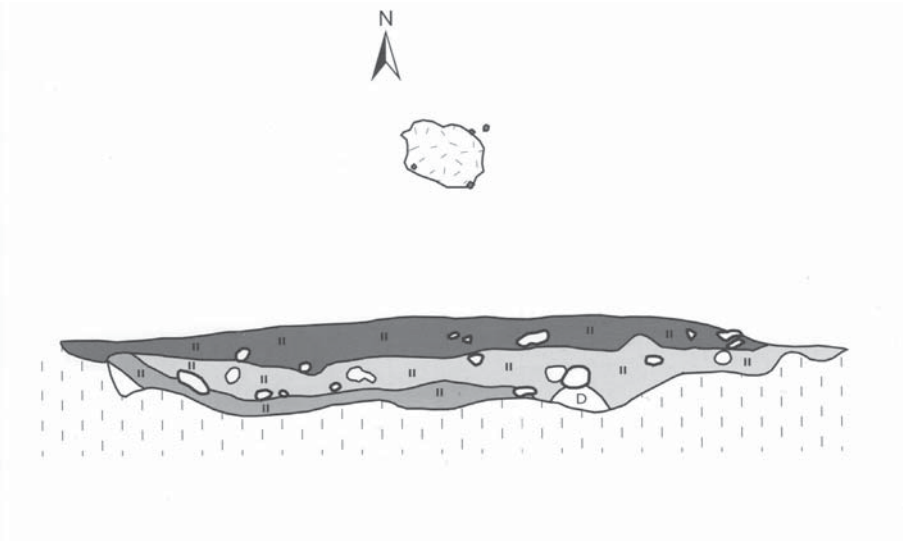


Figure 51. Plan and section of outbuildning 255 (pit house, 3,3 m long, 2,7 m wide, with a depht of 40 cm) Borna-Ahlkvist et al. 1998:253.

Figure 52. House 255 is interpreted as a storehouse. Illustration Henning Cedmar Brandstedt.

600 BC (Tesch 1991:126): the need to dry newly-made pottery can have arisen. The stone chips were used for strengthening and the flat bottom for building up drying racks in the low pit house. The thin post holes functioned at that time to stabilise the wattle wall in the construction (see fig. 49). Cut-out sections of sod or turf were mounted on the outside of the wattle structure to make the construction airtight. The ceramics were placed with the vessels upside down and several vessels nestled in a layer of fired sherds often three-and-three. These sherds in their turn were put on split poles which created a grid that rested on the stone-set rim of the pit. The ring of stones around the pit rim contributed to the stability the ceramist aimed at in his/her work. The door to the right in the picture is made of wattle which is loose and covered with sod or turf and fits into a frame set into the wall of the house.

The craftsperson works from the inside and out, towards the opening in the structure. S/he lays down a layer of sod on the bottom of the pit and put two poles across. Then s/he puts the large already fired sherds on top of the poles that now make a 'floor' in the middle of the construction. Thereafter s/he put in the vessels to be dried on top of the sherds. The sherds are used to protect the vessels against high temperatures and possible humidity from the wooden poles and the bottom sod. As the artisan works his or her way towards the door, s/he continues the procedure until all the vessels to be fired are resting on top of a layer of large sherds that in their turn rest on the grid of poles. When the grids, the filler, the sod and the new ceramics are all in place a small fire is set in the sod layer by taking some coals from a hearth and 'sprinkling' them along the edge of the sod blocks—the coals are only supposed to glow. Then the opening is closed and the drying house is carefully watched and new sod is added to the smoke-fire for a day or two. The ceramics are then carried out still hot to the firing pit, which was prepared the day before and which is stone or clay lined and dry. If it is raining or windy, the planned firing day is postponed and the drying house continues to keep the unfired pots warm and dry until it is possible to fire them.

This hypothetical scenario is based on experience of artisanal craftsmanship and on the long European craft-technological ceramic tradition which was carried forward up to historic times on Jylland—the so-called

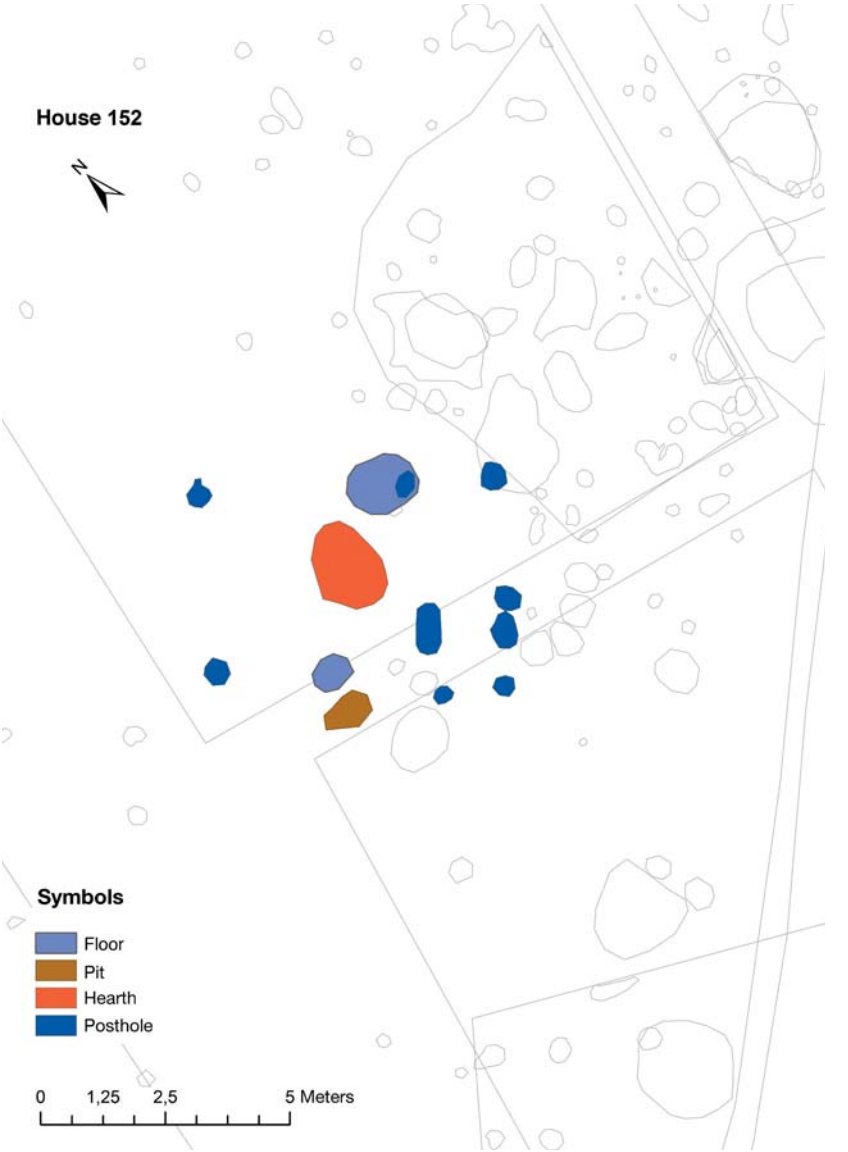


Figure 53. Plan buildning 152 in area G at Pryssgården, interpreted as a workshop (Borna-Ahlkvist et al. 1998:171). Karin Lund, SHMM 2015.

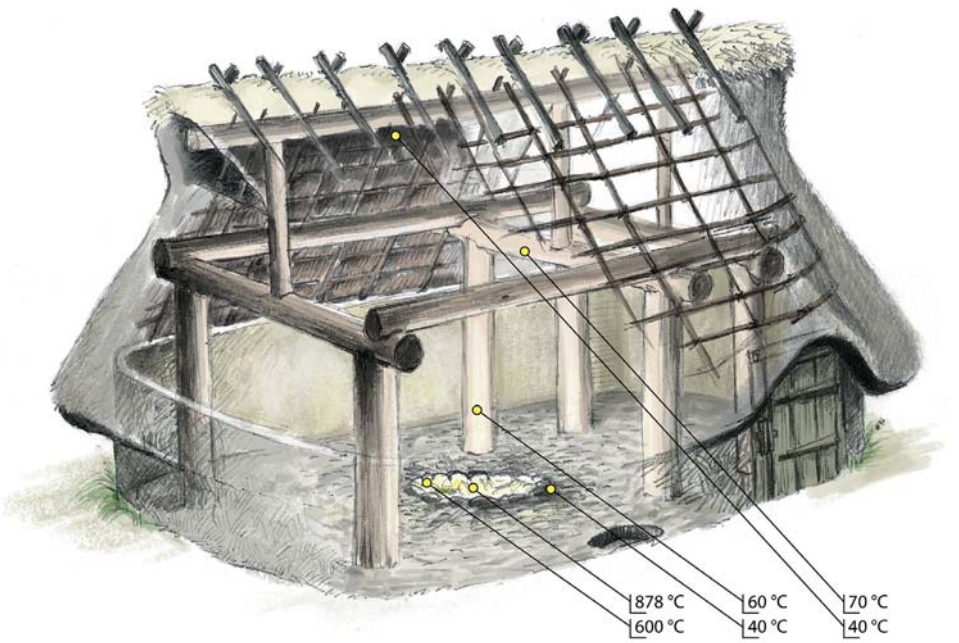


Figure 54. Reconstruction from the plan of buildning 152, area G, interpreted as a ceramic workshop. The temperatures around the hearth have been measured and can considered safe when firing ceramics. Illustration Henning Cedmar Brandstedt.

'jydepotte tradition' taken up above. Extensive descriptions of the craft technology are found on pages 9–46 in Andreas G. Jensen's book *Jydepotten – vort lands ældste haandværk* (The jydepot – our country's oldest craft) published in 1924. I used the pictures there of two drying houses as the source for my analysis of how they could have been constructed (see fig. 50). Jydepots were mentioned in written sources for a long time (Claud-Hansen 2012:197; Guldberg 1999:41; Lyngaaard 1972:30; Jensen 2006:358). These techniques are still practiced today in ceramic production even if the drying house has outlived its usefulness as heating in workshops and slow firing in electrically heated kilns has facilitated production the last 50 years.

Step-By-Step Reconstruction of the Storage Structure 255 in Area E

Building 255 is interpreted as a pit house and is 3.3 m long and 2.7 m wide, with a depth of 40 cm (see fig. 51). The building is dated contextually to the Late Bronze Age. It has a flat bottom and four post holes that are thought to have supported the roof. The posts were 20 cm in diameter and 10 cm in depth. The finds were of a general nature (Borna-Ahlkvist et al. 1998:253).

I have included building 255 in my interpretation of the buildings at Pryssgården as there is nothing that implies crafting, heating, hearth or firing in the building. Its sunken bottom and more slender posts can indicate a simpler construction, one which is fine as a building for storing things needing a cooler climate, similar to those root cellars or more shallow, covered pits which existed in to historical times. In the reconstruction, various items and commodities are stored: both the things being stored and the physical structure are hypothetical. According to Stålbom (1998:113) rusticated storage vessels are limited at Pryssgården to the Late Bronze Age.

In my interpretation of the house as a storage building (see fig. 52), its contents would be those parts of the family's basic needs that would not fit into the longhouse. In such a storage facility, very low temperatures are not required for keeping foodstuffs like seed, flour, root crops, pickled vegetables and dried fruit and berries in pottery vessels. They are kept dry

Table of dried clay store with calculated volume of clay and reused textile			
Clay store in building 152	Calculation interpretation	Amount of kilos of clay	Amount of reused textile
Frost-free storage of prepared base clay	∅ 90 cm average ⊥ 20 cm deep (120 x 60 x 20 cm =144 dm^3)	1 dm^3 equals 1 kg normally tempered pottery clay	50 cm wide c. 400 cm
Clay parcels in the pit	10 parcels		4 m

Figure 55. The clay stores and technical textiles calculated for buildning 152 in area G, Pryssgården.

if the pots are porous and made from a relatively coarse-tempered clay. To insure drying, the vessels have to be completely dry and filled with totally dry commodities. Some foodstuffs like cheese and butter could be stored and kept cold in the longhouse by taking advantage of diffusion in the porous ceramic vessels, which requires that the vessels are constantly kept damp.

Step-By-Step Reconstruction of the Ceramic Workshop 152 in Area G

Building 152 is in area G. The hearth is dated to 1129–910 BB cal (Ua-6567). The structure is categorised as a little three-aisled building. In the description of the building, it is interpreted as a smaller farm building or a workshop (Borna-Ahlkvist 1998:171). Based on my search for workshops prior to 500 BC, this building with a large hearth (1) is a good candidate. The house has a stone floor (2) and a storage pit with a flat bottom 90 cm in diameter and is 20 cm deep (see fig. 53).

The big hearth shows that the house in some way was used as a workshop. According to the interpretation of the smaller farm buildings at Pryssgården, these and similar structures in the Iron Age have been considered too small to be dwellings. The big, low houses are close to each other and have been considered earlier as dwellings for people. One objection to my interpretation of these houses as hypothetical ceramic workshops for firing local pottery to cover the families' needs and building bigger storage vessels has been that it gets too hot in the houses, which would lead to their catching fire and burning down. My experience with hot crafts prevented me from accepting these objections. As a result, on several occasions I measured the temperature on near-by wooden structures when firing ceramics at Vitlycke Museum's workshop where I was conducting archaeological experiments and firing (in 2014 and 2015). The posts in Vitlycke's reconstruction are very similar in diameter to the posts in building 152 at Pryssgården and the crossbeams in the ceiling are at the distance which is most often used in reconstructions of Bronze Age houses (c. 2 m).

When the firing was at top temperature, the heat in the hearth was 878 °C and the post closest to the hearth after two hours of constant exposure to the heat measured 60 °C at the hottest spot, the crossbeam was 70 °C and the thatched roof, 40 °C: the hearth itself on the outside of the surrounding stone ring was 40 °C, and 600 °C on the inside. Thus it can be established that a controlled and well tended firing should not risk setting the building on fire (see fig. 54). The temperature was measured with a KIMO Kirav 300 IR thermometer, calculated and set for ceramics ε=0.92. The instrument, which takes both surface and IR measurement, has optics of 50:1 and can measure up to +1850 °C, which allow a very good margin for measuring the temperature for hot crafts. There was also a dug-out storage pit which I believe belonged to ceramic crafting since prepared clay for crafting has to be kept frost free.

In the table below (see fig. 55), the pit in building 152 is considered to be a clay-storage pit. The clay was made into smaller parcels and wrapped with a cloth. The calculation of how many parcels of clay could fit into the available space is based on the table below and thus corresponds to the amount needed for normal ceramic usage: 10–15 kg per parcel. It shows the calculations of the size and weight of each parcel and the amount of

textile cloth necessary to cover one. Textile imprints are found on clay parcels from the Late Bronze Age in three of four small buildings in storage pits in the farmhouses in Köpingebro (Tesch 1993:165). In Pryssgården's ceramic material there are imprints of textiles on ceramics that dried too quickly (Stålbom 1998:138).

The term resused textile is employed here in situations where the textile that is used supports or indicates another craft (see earlier sections about technical definitions). In my interpretation of the use of textiles, my starting point is that the textile employed is 'recycled'—its use here is not its *primary one*, and therefore becomes a 'technical textile'. Later on, this already frayed textile could be reused once again as packing material and is therefore considered as rags and could be used with some other organic material such as wool as a reinforcement or strengthener in plaster or clay vessels. In the next section, I reconstruct and interpret how the workshop could have been organised.

The organisation of the workshop follows the routines and tasks of the craft. Visual observation of the ceramics which are representative for the Late Bronze Age at Pryssgården indicates a number of tools and certain furnishings which had to be present there in order to produce ceramics.

Ceramic crafting is sensitive to wind, strong sun and moisture. The Late Bronze Age and the transition to the Early Iron Age are seen as a time period which became colder and damper and thus a special building for ceramic production is reasonable. The building could have been multi-functional, but in this interpretation, the whole house is designed for ceramic manufacture. The interpretation is based on my personal experience of ceramic crafting and the arrangements necessary to create vessels with prehistoric technologies. I have also been inspired by the jydepotte tradition regarding details like certain tools, modelling plates and furnishings.

In the storage pit there is *prepared clay* (see App II): this is a ready-to use basic clay (see App I:III) *wrapped up in cloth*. In order to give a picture of the work which goes on in a ceramic workshop, which is directly related to the objects I have placed in my reconstruction, I give a short presentation here. Depending on the intended use, the base clay is reworked with the suitable temper: fine, coarse, or organic. *Chamotte* is ground up with

a grinding stone to the desired degree of coarseness/fineness or to a powder. It is added with a special kneading technique. The temper is added in a series of stages which ends up with kneading (App II:II): cutting the clay into slices, covering with the desired temper, folding the clay up and around the temper in a pyramidal form, and working it until the temper is evenly distributed throughout the clay. Badly worked clay is a risk for forming, drying and firing.

The vessels in Pryssgården have been formed by various techniques—this can be studied through the traces and marks of the material (modelling plates and stone) that the vessel were made left on the underside of the vessel. Thus there should be several kinds of material and furnishings (see fig. 56) which in my opinion were used for ceramic production in Pryssgården during the Late Bronze Age. The workshop building is the last stage in this hypothesis that I present as the basis for a total interpretation at Pryssgården from an artisanal view. In the final chapter, this totality will be discussed and the bigger picture that I have worked from through the examination of all the parts and processes will be presented.

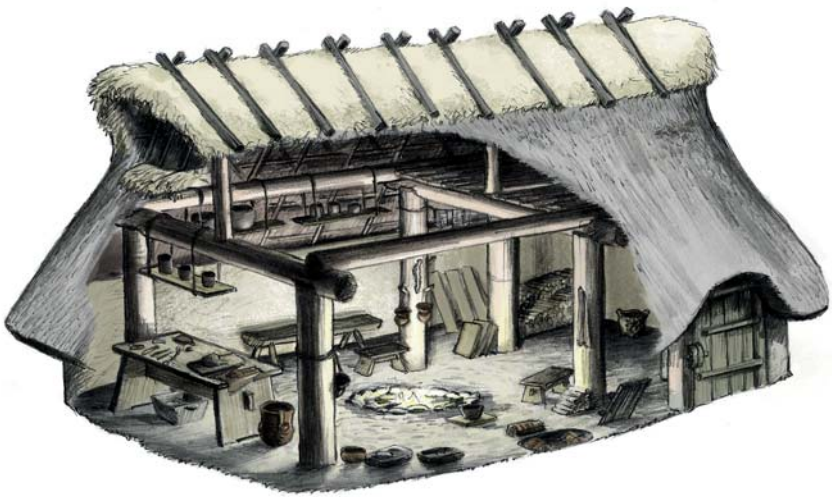


Figure 56. Building 152 interpreted as a ceramic workshop with tools and interior furnishings in the reconstruction. Illustration Henning Cedmar Brandstedt.

Final Discussion and Conclusions

The ceramic finds in the Pryssgården material demonstrate that the people who lived there had a knowledge of how to use the appropriate natural resources around them for ceramic crafting. From the Neolithic to the early Middle Ages, artisans knowledgeable in making ceramics were in the area and at times lived at or visited the site. My interpretation is based on the idea¸ as suggested earlier by Borna-Ahlkvist (2002:25) as well, that there was a continuous settlement at Pryssgården from the Late Bronze Age to the Early Middle Ages. My craft interpretation for the applicable vessels is valid for the whole period, but my in-depth study of the farmstead's activity areas for various crafts and the understanding of the functions of the longhouses and smaller structures concern the Late Bronze Age. In this period, both ceramics (used in metalcrafting) and bronze crafting existed on the site, and thus, ceramics and the ceramic artisan could also have collaborated with producers of various other 'hot' crafts, especially as knowledge about temperatures and firing already existed from early times (Weiler 1994:50ff).

Bronze is acquired from external sources, which implies contacts with the outside (Ling & Uhnér 2015). This situation could mean that at least in the beginning, artisans working with bronze casting could have introduced this craft to different places: suitable places were those where the craft could spread and catch on and where the raw materials (bronze, or copper and tin) could be gotten through maritime routes. Near Pryssgården, at the settlement called Rambodal to the east, a soapstone mould was found and recently discussed in a new article (Nilsson & Sörman 2015). Tin and copper could possibly have come to the region from middle or south-eastern Europe (Ling et al. 2014). As Pryssgården had contact with

the outside world via the Baltic Sea and constitutes a port towards the inland to the large lakes Vättern and Vänern, it is not difficult to see the pattern of movement which emerges.

There was also early on, as I described in the introduction, a movement from the west to the east in the area, where agriculture and settlements move out towards the coast in the Early/Middle Bronze Age, to later be incorporated into a larger European connection (Weiler 1994:97ff). Pryssgården was, in my opinion, a place for the exchange of knowledge in ceramic crafting. Certain finds, such as the Pryssgården figurine, have been reinterpreted in an artisanal-technological way. In this concluding interpretation, the little picture of the farmstead with its houses, buildings and features is shown against the background of the artisanal interpretations and perspectives I have presented, along with the earlier research. I believe that when the little picture is connected to a bigger context, this results in a more vivid picture of artisanal craftsmanship.

The Little Picture – the Home and the Crafts

Using the building as the starting point and the farmstead as the playing field, I want to sketch out here in words and pictures the archaeological interpretation I believe I have achieved through my cross-disciplinary viewpoint and method. I will demonstrate how the various activities can be connected to each other and how people and activities at Pryssgården interacted together in a well-meshed rhythm. The focus will be on crafting but even many other aspects of their lives will be touched upon more or less briefly. I believe people live in a craft environment where all the parts are intricately interwoven in a *chaîne opératoire* (Lemonnier 1986) or through 'entanglement' (Hodder 2012) with each other. Having a home and activities are basic needs. The little picture leads to the big one, in my opinion. People whose basic needs are not met have difficulties in making social contacts, networks, alliances and subsistence beyond the absolutely necessary. Belonging to a house in practice can be belonging to a house in other ways as well: I shall discuss this on several levels and link it to the big picture directly afterwards.

Living at Pryssgården as an Active Person

The farmstead has been defined as a *social unit* in an ongoing discussion about the settlements of the Bronze Age (Borna-Ahlkvist 2002: 151–155, Gröhn 2004:280ff, Kristiansen & Larsson 2005:32–38, Artursson 2009:181ff and 231, Tesch 1993:212, Welinder et al. 2004:231). In this presentation, the farmstead's various physical buildings—longhouses, outbuildings, pit houses, huts and other lesser posthole structures—have been connected to different crafts and activities. It is thus an artisanal-theoretical interpretation which is linked primarily to an artisanal perspective.

I imagine that the suggestions I have presented, which move activities and actions into buildings and fill activity areas in the surrounding spaces, can be developed and widened into interpretations of individual settlements. This will continue to occur in future discussions about craft activities, artisanal wastes, storage and recycling outside of the buildings, on the farm and inside the built structures. My hope above all is that we can discuss different aspects of collaboration, learning and social structures within the sphere of crafts and crafting artisanship.

Regarding patterns in population and a mobile or permanent population in primarily the Late Bronze Age but even down into the Early Iron Age, there are several possible interpretations in my opinion.

The Settlement

Borna-Ahlkvist in her interpretation of the Bronze Age is of the opinion that Pryssgården in specific seems to have been a permanent settlement: this view is the foundation for my interpretation of *crafting* on the site. That there were also smaller huts outside the settlements for seasonal agricultural work seems to have been the rule during the greater part of the period (Tesch & Olausson1991:73–77). It is possible that materials necessary for various crafts were found far enough away from the settlements to require temporary dwellings.

Some interpretations claim that people during the Bronze Age travelled between 'houses' or farmsteads in a movement caused by the fact that

livestock need larger grazing areas in order to be fed on a larger scale. In the article "Herder communities: Longhouses, Cattle and Landscape Organisation in the Nordic Early and Middle Bronze Age" (Holst och Rasmussen 2014), the authors describe the physical and social landscape during the *Early/Middle Bronze Age*. Their theory is that during this period, a completely different social and spatial pattern emerged. They based this on the idea that a new life style arose when the transition to the exploitation of large plains became important: now domesticated animals were introduced and were being bred, and large land masses were needed. Agriculture was more closely connected to the farm.

A picture now emerges with grave barrows, maritime communication and the introduction of boats on a large scale creating a greater sense of social community which included using large land areas. According to this interpretation, this socio-economic picture appeared in the vicinity of maritime routes around the whole of Zealand (located in today's Denmark): the settlements are found in clusters along the maritime routes, followed by burial barrows. That this use of land is not built on territories but on a common use of the land does not mean, according to the authors, that land use was not regulated. They present an interesting interpretation which I have found can well be applied to Pryssgården in the big picture.

In my preface I reflect on economic terms: in Holst & Rasmussen's hypothetical suggestion for this (Holst &Rasmussen 2014:99ff) , they speak of a *transhumance* organisation as a model for the Early/Middle Bronze Age which continues into the later part of the Bronze Age. If a similar organisation existed during the Late Bronze Age, then it is possible to see the geographic location of Pryssgården as a transit site to the inland. In that case, even the anomalies, with their different craft technologies, anomalies, fit into the picture.

In a transhumance organisation like the one suggested, some of the population move and some stay in the vicinity of the farmstead: this is a step towards being able to have access to the raw products grown or found in the various geographical areas (Holst och Rasmussen 2014:107). This theory is not contradicted by the idea of either a hierarchical organisation (Weiler 1994:170, Artursson 2009:230, Kristiansen & Larsson 2005:334ff) or a permanent farmstead (Borna-Ahlkvist 2002:190),

but can in my opinion rather be connected to mobility and similarity in the making of artefacts and to the transfer of knowledge between places and the spread of raw materials. The farms should not be seen as isolated dwellings but rather as small units which have a relationship to the surroundings: some form of exchange should have taken place in the sparsely populated areas also (Artursson 2009:231).

Food and Vessels

During the entire Bronze Age the relation of hunting to raising livestock decreases. Individual breeding of domesticated animals and putting them out to graze increase continuously up to the Late Bronze Age when the domesticated animal bones (mammals) increased to at least 95% (Welinder 2004:105–108). At Pryssgården the distribution is as follows: 48% beef, 32% s ovicaprids, 12% swine and 8% horse (Petersson 2006:40).

The percentage of fish is more difficult to interpret but in coastal settlements in southern Sweden Skåne (Sandeplan, interpreted as a fishing settlement—Welinder et al. 2004:192) and Blekinge (Sunnanasund, Norje—Boethius 2015 manuscript, in press), there are archaeological studies which indicate that the amount of fish in the diet at that time is underestimated. In a site like Pryssgården, fish should belong to the everyday menu. It is difficult to estimate the amount of carbohydrates (through agriculture and wild foods) in the daily diet but should have been included by this time, as well as fresh milk, cheese, and eggs from wild birds. In the Late Bronze Age, agriculture and crops (hulled barley, emmer and spelt wheat) were considered to be the same over the whole area of what is today southern Sweden (from Skåne to Uppland) (Welinder et al. 2004:105).

In Lindahl & Matenga's *Present and Past: ceramics and homesteads*, a study of ceramic crafting and usage patterns in an agricultural settlement in Zimbabwe in the beginning of the 1990s, it is seen that the amount of ceramic vessels used in a household consists of 2–5 cooking pots and 8–12 storage or serving vessels (Lindahl & Matenga 1995:22). The authors believe also that a lack of vessels in the abandoned settlements they studied means that the artisans saved and reused sherds in various ways

(1995:101–108). This observation can be directly applied to a craft perspective and can be made in modern archaeology even if the find categories are often applied to features interpreted as deposits, sacrificial or hoards. Stålbom discusses deposition patterns in ceramic rubbish from the Late Bronze Age: he asks himself whether there is any abstract significance in these depositions, and believes that it is important to make spatial studies of the material culture to further develop an understanding of why these deposition patterns look like they do. His interpretation implies that the sherds that are put into pits are *passive* and can be considered as rubbish (Stålbom 1998:147ff). In my opinion a craft perspective in some way comes closer to the spatial division Stålbom suggests. I do not share the opinion that the ceramic sherds would be passive, however, as different sizes of sherds serve functions (as seen in fig. 40, above) and thus are *active* agents in various steps in crafting, which I showed in my interpretation of work pits and reuse processes.

I argue that the features are 'recycling' pits and they are a part of the circulation of material which is normal in an artisanal environment. Reuse at Pryssgården has been discussed in earlier chapters: I believe the system of pits situated in the farmstead near house 172 is for reuse and as work pits belonging to crafts (ceramics, textile and bronze production). The idea that what was left behind on the site should be considered as rubbish after the people moved from the site is one that I totally share with Stålbom (Stålbom 1998:147).

In conclusion, earlier research shows that people moved together into larger households: their subsistence was based on agriculture combined with the local animals and fish living at this time in the area in the Bronze Age, especially the Late Bronze Age. A lifestyle like the one described above requires good artisanal knowledge. Regarding ceramic crafting, it is absolutely necessary to be able to make vessels suitable for all stages of food production. Food has to be dried, stored, kept, pickled, boiled.

The settlement at Pryssgården is considered an ordinary settlement (Peterson 2006:49) but is well chosen and is situated in a very strategic geographical location (Borna-Ahlkvist 2002:187). In my opinion, the placement itself can have served several functions beyond the obvious one of subsistence.

Figure 57. The map shows the wider possibilities for travelling over shorter stretches of land to reach Lake Vänern and demonstrates that in this way, it was possible to travel all the way to the Northt Sea. Here we see the Bornze Age rock carvings follow the route and encircle southern Sweden. Now the pictures of ships become clear, the trip one makes or the travellers who can be seen from the land, cut into the rock by rock carves, who also carved other important figures, people and animals, carts and swords. there are even abstract signs which have been interpreted as suns, moons and traces of goddesses (Kristiansen & Larsson 2005:334).

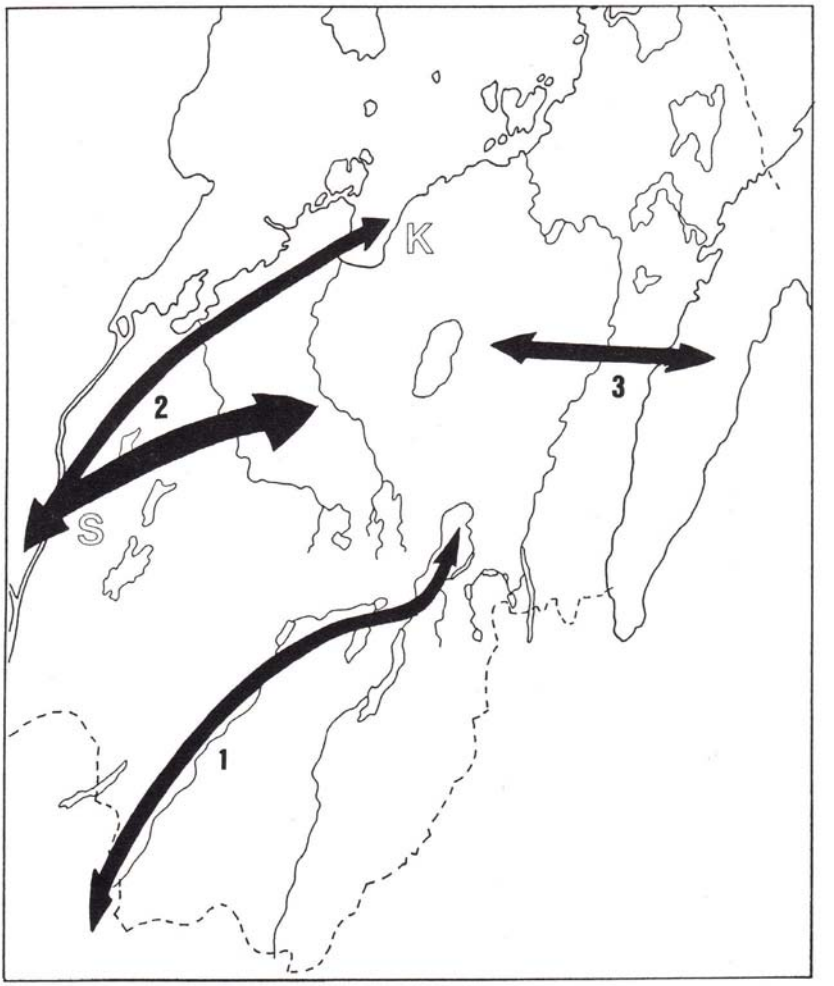


Figure 58. The path of bronze according to Eva Weiler (1994:98) in the area between Lake Vänern and Lake Vättern in the West of Sweden.

Even if the site is considered an ordinary one, it can at the same time have been special. In the next section I shall discuss; how we can understand the socio-economic organisation that could explain the contacts that occurred between people spread out over a larger area.

The Big Picture – Petroglyphs, Mobility and Transit Places

Via the waterways that go inland from the Baltic Sea, one can reach Lake Vättern, and by travelling through Västergötland, reach Lake Vänern and the North Sea and Bohuslän (Borna-Ahlkvist 2002:188). Emphasis is often placed on the fact that Pryssgården can be reached from the entire Baltic Sea region, but despite the fact that the area is rich in Late Bronze Age remains, little has been mentioned about how the site could have been a transit area for contact with the entire inland of present-day Västergötland. The site can have been chosen because it was possible to reach places by boat via the Baltic Sea and/or controlling who could continue inland. Being able to go coast to coast in the southern part of today's Sweden allows control or use of the resources and raw materials.

The geographical placement near Motala Ström, which creates a natural, controllable waterway between Bråviken Bay and Glan Lake, provides good possibilities for whomever can or wants to control passage by boat. It is impossible to know who could have exerted such control, but it is not impossible to imagine that given a certain amount of organisation, such a large settlement could control whomever and whatever entered and departed via the waterways.

There are rock carvings with boat motifs all along the route following clear paths, as is seen in the map, figure 57 There are also finds along this route of razors, soapstone moulds and scrap metal (bronze) (Weiler 1994:138–143). In this interpretation, Pryssgården constitutes a node in the network that is created when the waterways begin to be seriously used, which is also discussed in Wehlin 2013:185. In my opinion the movement of people, knowledge, bronze and artefacts passed along the entire interior of the region of Götaland and out into the North Sea and vice

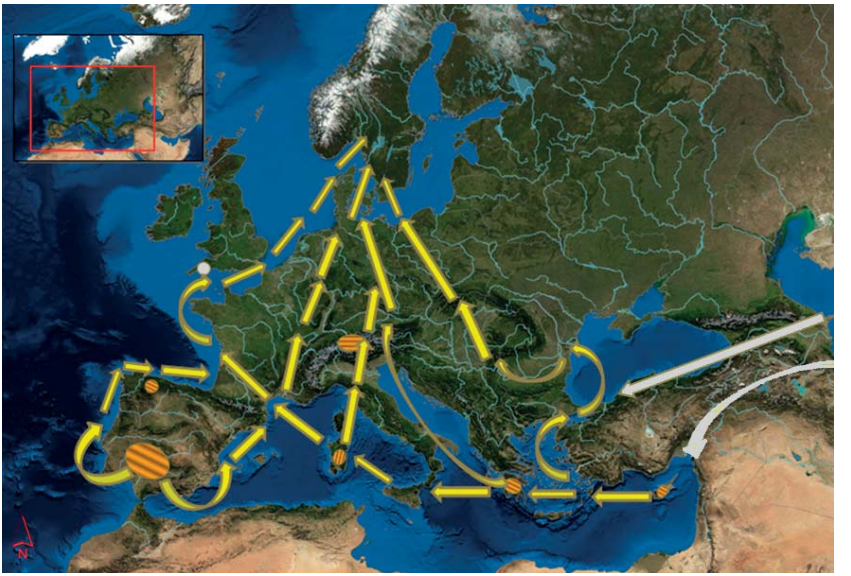


Figure 59. Based on the provenance analyses that *Ling et al. (2014:107)* refer to regarding metal mobility. They base their ideas of a possible mobility on analyses of the various lead isotope ratios found in bronze and copper—The picture shows the big picture of the possible flows of metals, coppar (yellow arrows) and tin (white arrow) (*Ling et al. 2014:129*). *The map is published by permissionof Johan Ling*.

versa. These thoughts are in no way brand new: there are various suggestions concerning the distribution networks that later laid the foundation for discussion about how bronze was imported and soon led to local artisal work with bronze or with scrap metal which was melted and reused for casting new bronze objects. On the map (fig. 58) Weiler showed in part that which I now present in a wider framework. In the figure, she clearly shows the paths the bronze took, even naming the waterways in the interior of Västergötland.

This interpretation opens the way for a clear and distinct connection right across the country through waterways and large lakes, which links expressions seen in the world of artefacts and in rock carvings in this area.

In the interpretation of the use of boats in the Bronze Age, I use Johan Ling's research on ships or 'war canoes'. Ling shows in his work how different types of boats could have used these waterways in the Late Bronze Age (Ling 2008:226ff). For Ling, not only were metal crafting, horses and boats important in the Bronze Age societies but also knowledge about how to build boat and travel along the waterways. Ling refers to the Hjortspringskeppet boat which dates to c. 350 BC, but also says that the similarities to the Bronze Age rock carvings of boats, dated to c. 1600 BC, is striking.

The reconstruction of the Hjortspringskeppet, which has been taken out in actual maritime travel, shows that it is possible to travel by sea with a skilful crew and a cargo of 700 kg from southwestern England for a distance of about 100 km per day, to the Swedish west coast: such a voyage, including stops along the way, would take about 10–14 days. Boats like the Hjortspringskeppet are considered to be skilfully built and well equipped for sea travel (Ling & Uhnér 2014:36–37).

The publication of the article "Moving Metal II" in *The Journal of Archaeological Science* (Ling et al. 2014), which is based on lead isotope analyses of copper and copper-based alloys and the routes the metals could have taken to Scandinavia from several different sources of raw materials of copper and possibly tin, provided new insights about the possible origins of Scandinavian bronze (see fig. 59). The figure shows which geographical places can be determined as having lead isotope fingerprints consistent with the raw materials. The selection in this analysis does not show the

clear connection between Lakes Vänern and Vättern that I suggest above, but I believe it is possible that the bronze from the interior of Västergötland is close to the Scandinavian links which might have led to the sources of raw materials that Ling et al. examined. Future analyses from this area will hopefully show whether or to these indications are supported. Thus, it becomes possible to connect small groups of varying characters and a multitude of solutions to a larger organisation. The development becomes clear now. For example, there are settlements (houses) that become more and more permanent for agricultural populations, local production or trade in raw materials, travelling artisans with specific knowledge or craft skills, shepherds and people raising livestock which move between settlements, boat builders and even troubadours and storytellers, adventurers and others, all of whom develop different social patterns and contact nets within a heterogeneous system which appears in the Bronze Age (Earle et al. 2015:1ff).

Metal is often the topic of discussion. In this bigger picture, however, if *the house* is the common denominator and people travel by boat between houses and have access to them as a part of this social and economic construction, we get a different picture of the Bronze Age. An artisan making journeyman trips can move about relatively easily in such a construction. Having access to raw materials and new technologies is an asset. The fact that ceramics do not greatly vary typologically over larger areas (Stilborg 2014) is thus logical if storage vessels, for example, are moved around and even travel with the potter from place to place. The ceramics which remain in a settlement should thus belong to the household in such an interpretation.

I have now discussed the picture I have arrived at with the help of artisanal interpretation and perspective for parts of what is today southern Sweden. We see mobility by interpreting the rock carvings as 'road signs', marking the waterways for people travelling greater distances (Ling 2008:228–230) by boat. In my opinion, a mobile social organisation can be the reason for the minimal differences in ceramic design, differences which indicate local variations rather than different artisanal expression in different cultural groups. This is valid for all types of crafts—there are

of course local variations but they are not significant. A homogeneous formal expression existing in a heterogeneous social organisation can be the most important factor for understanding who the passers-by were for a farm/settlement. It is objects, boats and people that allow recognition and identification.

Concluding Thoughts

Studying a mass material allows insights into the period of time being examined. Prehistoric times are often seen as short, intense snapshots created through specific finds. Making demarcations is a problem as the pictures that are created are temporary. If the whole material is used, one can achieve a more balanced view in terms of both the specifically unique and the more commonplace. Despite the fact that this is so, I have more or less no pictures of all the seemingly similar sherds which

I examined visually. It is the deviations which catch the eye. Ceramics is one of the materials that has a high degree of preservation. Despite this, the archaeologist realises that by taking taphonomy into consideration, she or he can take a sherd weighing for example 47 grams and envision the entire vessel, weighing perhaps a kilogram or 20 times the size. The ceramics that were once created have disappeared, leaving only a smaller selection for us to work with. Pryssgården's 126 kilos is a large find. It provides us with information about life and mobility, about how people organised their lives and how they learned things. Despite this, however, it is only a miniscule fraction of the whole. This is why I believe that awareness and knowledge of production processes in various crafts create pictures of the organisation of the farms and how they are anchored in the bigger social structure. The craft perspective is a good indicator of all the time and all the knowledge moving back and forth between people and natural resources, all the physical efforts, work and risks involved in transport metals, for example, to places far away from the sources. All the boats that were built, all the walking that took place, and all the processing of materials that needed to be understood and learned… what position did people with knowledge have. Knowledge is a large part of that which can be incorporated into what we call economy (Helms 1988:

ibid). How was knowledge valued in societies then and now? Craft knowledge, creativity and thinking out-of-the-box. A new social order like the one suggested by Holst & Rasmussen goes far back in time. Everything develops from something and grows into something else. The idea of transhumance and boat transport of metal is connected to ideas of mobility, trade and contacts. Thoughts about the great distances prehistoric people had to cover if they were mobile create scepticism and can even be met with disbelief. Despite that, and despite the seemingly ordinary life at Pryssgården, I am personally convinced of people's curiosity and interest in new things. Perhaps these things can be evaluated in economic terms. I do not do this—I try instead to extrapolate into human terms: impulses, inclinations, curiosity and interest in the world and the thought that several people together can enjoy small things as well as great things. In the picture that emerges in my interpretation, 'the house' in this meaning IS the physical house. Belonging to a 'house' in a social meaning can be belonging to a place. That you enter and leave the house, or simply 'are there', both physically and socially, is a question of temperament and conditions. In an organisation where people move between houses, there are also thoughts about there being groups who stay in place and use the areas in the farmstead and have different methods of subsistence. Through the transport routes by land and by water, not only raw materials special to one place or another but even crafts and agricultural products can be moved around in the transhumance group. Ian Hodder writes in *Symbols in Action* (1982:62ff) about how artefacts in groups who live far apart tend to resemble each other, while those of groups who live near each other do not. The groups living in close proximity to each other work harder at creating group identities. Such an interpretation could perhaps explain why artefacts and house constructions are similar despite great distances in the Late Bronze Age. Hodder's reasoning is clear and applicable here. Even the very complex organisation which is emerging here as more and more parts of life are interpreted can be linked to a greater thought, a thought about a lifestyle.

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Having a room at what was called then UV Syd and is now Arkeologerna at SMHH is belonging to a 'house'. In this house I have received invaluable help in developing into the archaeologist I have become. The archaeologists and specialists there have contributed to my work in uncountable discussions and in all possible situations, helping me in a way that would have been impossible to get in any other manner. I wish especially to thank Anne Carlie, who was my first contact with the office. She brought me into the house and let me talk about the artisanal perspective which later became my thesis work. The fact that this later turned into an archaeological contract to interpret the ceramics from a craft perspective together with Bo Strömberg and Håkan Aspeborg, who despite my inexperience with contract archaeology let my method contribute to the study, was invaluable.

Håkan Aspeborg has stubbornly taught me more and more in his own way, something which I am happy about. The secure support and confidence I was given by many experienced field archaeologists such as Magnus Artursson, Stefan Larsson, Katalin Schmidt Sabo, Björn Wallebom, Tyra Ericson,

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Appendix

In the following appendix the technical steps in making a ceramic clay will be described and considered. These technical preparations of the raw material can be visible and connected to the activity areas unearthed by archaeological excavations. What actually took place at these areas is often hidden. By *describing* these concealed work steps, which are part and parcel of the craft, new archaeological interpretations can be made. In order to provide a clear picture of how the prehistoric ceramic craft was carried on, I will describe here some of the lesser known technical processes which are necessary for making the ceramics we find traces of at Pryssgården. This description can be used in other connections and in more extensive interpretations of the activity areas.
Illustrations by Henning Cedmar Brandstedt.

I The Path of the Clay

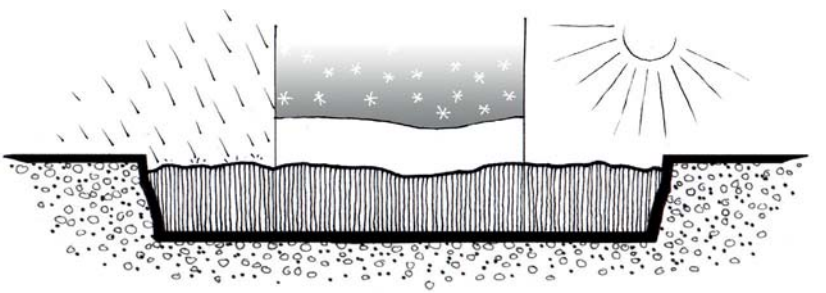
Here the whole process necessary to have a good ceramic clay for ceramic production (Hamer 2004:387) is described briefly and connected to the finds of work pits, preparation areas and storage places taken up and analysed in the text.

I:I Clay Beds

The clay is dug up from the ground and laid out. *When excavating, the clay bed is visible as a pit with a rounded profile and clayey sides, soft, flat, smooth, and 'fatty' to the touch (if the wall is damp).*

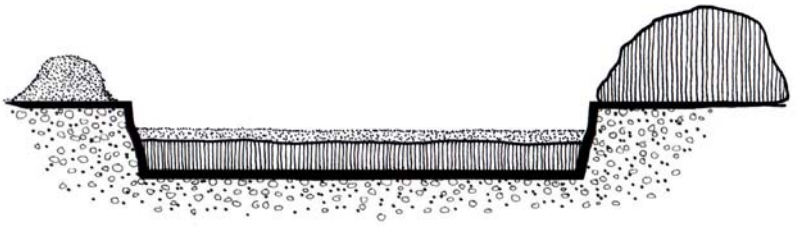
I:II Weathering the Clay

The clay is then dug up late in the summer when the ground is a dry as possible and the clay and earth are not soaked with water (which makes the work much harder). After this, the clay is put in a pit dug into the earth. The clay lies spread out 10-20 cm thick. It will be weathered by staying outside and freezing in the winter: this causes every clay particle to separate from the other particles. Sometimes the bottom of the pit can be lined with stones, or if possible the pit is dug in a sandy place near the work place. In order to hold a ton or so of clay, the very shallow pit should be about 2-5 m long and 1-2 m wide. This continuing process now infuses/mixes the clay with water from the autumn rains. When the frost comes and the clay is frozen during the winter months, the clay particles make the prescribed change and when the warmth of spring dries up all excess water, the clay is 'weathered'. In warm climates, the same procedure is made by drying it in the sun. The warmth causes the individual particles to separate from each other in the same way, and also results in a weathering of the clay. This process is a speeded-up natural one which the prehistoric artisan understood and used. I will use weathering for Pryssgården where the climate during the Bronze Age and definitely in the Iron Age was cold or was exposed to frost in the winter

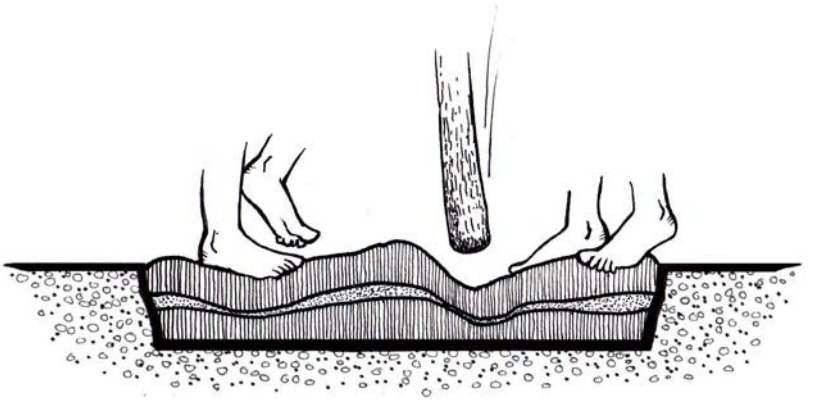


I:III Preparing the Basic Claybody

The weathered clay in the spring is crumbly, which means that mixing in the basic temper is the next step in the process. Half of the clay is dug up and placed next to carefully chosen sand which was gathered and is now spread out in a layer over the clay that was left in the pit. The clay should be about 1/5 the volume of the clay, or a 20% sand mixture: this can vary somewhat depending the natural amount of sand in the clay.

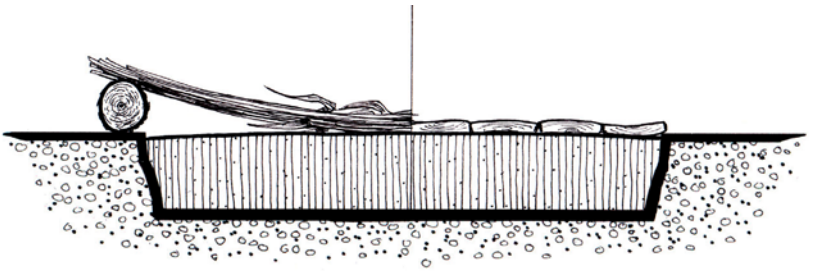


The dug-up half of the clay is put back and spread over the sand. After this, the clay is mixed with the sand by treading on it and/or stamping it with a club or similar tool to obtain as homogenised a mass as possible (see the picture below).



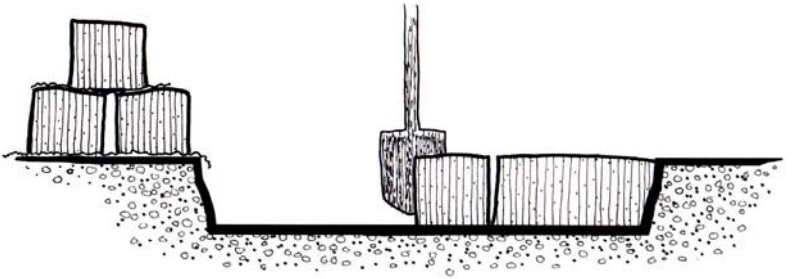
I:IV Maturing the Clay

The clay is smoothed and allowed to rest for several weeks. It is protecting from rain or drying out with boards or mats woven from reeds. Before it is divided up into suitable parcels for storing, it is tested by rolling out a coil and making a knot. The clay should be plastic but not too 'fat'—if it is, more sand can be added. This test (Hamer 2004:387) is made throughout the tempering process described below. If the clay is 'short', the knot breaks before it can be completed.



I:V Dividing and Storing the Clay

The next step is to divide the basic clay into suitable carrying and storing bits. Several houses (the artisans belonging to the house) can take their shares and store them in a temperature-controlled (to avoid frost and moisture) cellar pit as in building 172 at Pryssgården (see. Köpingebro house 4 Tesch 1993:165) or stored in shallow clay holes in the workshop—(see. Köpingebro 4 Tesch 1993:138). The clay parcel can be wrapped up in cloth which is sprinkled regularly with water in the cellar pit. If the clay dries out or freezes, the whole procedure must be redone from the beginning.



II Preparing the Clay for Special Purposes

The clay parcels are plucked up when needed and mixed with a temper suitable for the function of the vessels. For large vessels it can be a very coarse temper with small pieces of brittle stone up to 1 cm in diameter. This extremely coarse temper is good for pots which must tolerate great changes in temperature but can also be a choice for making big vessels. For medium coarse, smaller pots for cooking, one sees often a considerably more sandy consistency for the brittle stone that is ground down with a grinding stone Sometimes the artisan chooses to add crushed, already-fired clay (chamotte) in the clay to be used for small and medium-sized vessels.

Mixing with chamotte 10–20%

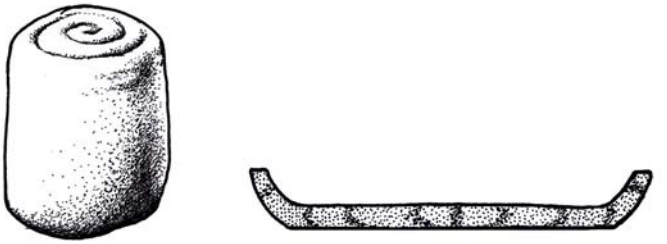
Mixing with additional fine sand (often from the mouth of the stream or the beach) up to 40%. Different kinds of temper can also be mixed with each other to achieve for example very tolerant technical ceramics. The choices of temper are one of the parameters than can be tracked over time: different artisans can have different backgrounds and thus choose very different tempers. In these cases, even though the mineral content of the clay in the ceramics does not differ from the local clays, one should be able to trace an unusual technical craft knowledge which most likely means that certain vessels were made in a non-local tradition (see the discussion regarding find F30059 from area E).

III Clay Ready for Forming

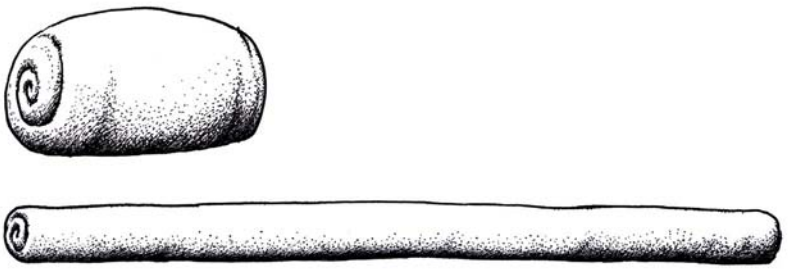
The processed clay is often put aside for a day to allow an even spread of moisture in the tempered, finished clay parcel. This parcel is then divided into several pieces which are kneaded according to needs and pinched or built up with the 'paddle and anvil' method (Hamer 2004:116 and 251).

III:I Paddle and Anvil

This method is based on a pinched (Hamer 2004:264–265) low form designed to be the bottom with the right diameter. Thick coils of clay are laid on it and pushed down and then beaten with the paddle and anvil. It is important that the newly kneaded lump is placed one end (as shown in the fig.).



And is then beaten out to a slab and after that, pushed down to a low wide form with a well formed curve between the bottom and the sides to make it strong enough for handeling in the differenst steps in the manufacturing, drying and firing pricesses. A wellformed curve is important to make strong fired pots that will last for years in domestic use. The description in the example is the size of a cooking pot with a flat bottom and a thickness of 1 cm or slightly less. The low form is dried almost leather-hard.



The next step is to build up the sides. Rolls are rolled on a flat surface in the direction that the kneaded lump had so that the clay particles lie in a spiral form going in the 'right' direction—otherwise, it is difficult to get a roll that is even and equally thick to build up the wall with.

The roll is attached by the edge that has been roughened up especially for this purpose, allowing a greater fastening surface and can be made in a variety of ways. Each roll is attached separately and the clay is cut at a 45° angle on the ends for better attachment (this angle makes longer areas for fastening the clay coil in itselt). Then the sides are pressed and beaten up until the walls have the right thickness. Each coil must dry enough to hold up the next one without collapsing. The time needed to finish the vessels depends on the weather and the humidity in the air: also, working in direct sunshine, wind or rain is not good, either. Each ring is kneaded and rolled and applied before doing the next— otherwise the roll will break when it is bent (it starts to dry and stiffen immediately) and the joint will be more delicate if repeated repairs are made (more likely to break in drying and firing). An experienced artisan who is familiar with the technique can build three to five vessels at the same time in a temperature of around 20°: there is just the right time between steps and the artisan can work in a rhythm, gaining momentum. When the vessel is of the intended size, it is smoothed and then finished according to the tradition that the artisan and her/his group works in. Finishing techniques and decoration and firing techniques are discussed in the chapter connected with the Pryssgården finds.

Glossary

Glossary/definitions in ceramic crafting: These definitions are often of a comparative nature—one compares the various conditions of the material with other materials in order to describe the condition of the clay. The glossary is based on the expressions that are used in my own practice-based knowledge; in those cases where I explain concepts with the help of literature, there are references. There are a large amount of different expressions in descriptions in the world of crafts, but I choose here those which are used in this work.

Bon-firing: The dried objects are fired with the help of fires fuelled by organic material like wood, sod or manure directly on the ground.

Bone hard: Clay which is the last stage of possible working—it is 'hard as bone', which means that the surface can be burnished to a high shine, cut or etched into with very thin and exact decorations without the surface chipping or splintering, decorated by punching in with an instrument.

Burnishing: A traditional method for making a surface shiny and dense which makes the clay less porous after firing. In certain cultures it is used to make a pattern of matte and shiny ornamentation on the surface. Burnishing is done when the clay is bone hard.

Chamotte: Word to denote a clay temper made from crushed, already fired ceramic sherds.

Filler and packing material: Different kinds of material which are used as fillers and protectors in a ceramic kiln. The kiln is prepared for the firing by putting this material under and around the unfired vessels. They create a safe environment for the vessels. Nowadays

the term is most often used for platforms or plates made specially for this purpose of inflammable material which protects the objects from each other or parts of the oven, which can be as much as 1300 °C. In outdoor firing, in pits and more simple kilns, large ceramic sherds are used to protect the newly-made objects from wood thrown on top of them or from getting damp from the ground.

Firing: Different heating methods to cause the clay to change to ceramics which means that the temperature must be at least 500 °C (932 °F). When the clay can no longer return to a formable material, it has become ceramics (Lindahl et al. 2002:30).

Leather hard: A leather-hard clay is no longer soft—it is sturdy and can be changed in form up to a certain point. It got its name because when you stroked the surface of the vessel it reminded you of leather—hard but pliable at the same time.

Oxidation: Total access to oxygen. In this connection both 'oxidation' and 'reduction' are connected to ceramic firing techniques. A simplification can describe the differences between these techniques: an oxidising firing is made with good access to oxygen, and the ceramics does not turn black or gray (think of brick, for example)—instead the natural color of an iron-rich natural clay is orange-red when fired. An open bonfire or a pit-fire is often an oxidation firing.

Paddle and Anvil: Is a hand technique which is often used when building larger ceramic vessels. The kneaded clay is rolled out in long rolls which are then put on top of each other and joined to each other. Used often in combination with pinching.

Pinching: Pinching is a hand technique that means that one takes a piece of kneaded clay from a clay mound or a lump and sets one's thumb in the middle, slowly stretching out and forming the clay until by rotating it by hand one creates the underpart of a vessel, its base or bottom.

Pit firing: A firing similar to an bonfire firing but occurring in a pit. This type of firing is more controlled than open-air firing. Sometimes

the pits are covered over with organic material after firing so that the vessels cool more slowly, a method which brings out the red-grey-black surface that is so characteristic of pit-fired objects.

Reduction: Limited access to oxygen while firing or cooling—in this connection the iron in the clay (Fe2O3) reacts by returning to the black or grey tones (depending on the degree of oxygen insufficiency) that iron has when it is not oxidised. Reduced iron has lost oxygen atoms, which occurs when the lack of oxygen 'takes' the good three (O3) oxygen atoms and only reduced iron gives colour to the fired wares. This lack of oxygen is achieved either consciously (black ware) or accidently on undersides of vessels where flammable material was still there when the vessels were cooling.

Reoxidation: When the artisan fires in pits or open flames that are covered with flammable material, s/he is often conscioulsly 'reducing' the ware while it cools. If the ware is taken up too early or the flammable material gets overheated and starts to burn, the reduction (creating an oxygen-free atmosphere) disappears entirely or in part. If it vanishes in part, the effect can still be seen as a grey stripe in the middle of the ware. Normally the reduction disappears completely and the ware returns to a brick red colour throughout the fabric. Reoxidation can also occur when someone uses everyday ceramics which were originally black and puts them into an open fire: the high temperature and presence of oxygen returns FeO to Fe2O3.

Smoothing: Smoothing is a polishing technique which is used mostly on the inside of the vessel in order to scrape away excess and end up with a perfect inside. It is used on both storage vessels and thin ceramics.

Soft clay: A soft clay is completely formable and plastic. It is saturated and is somewhat damp; it should not be 'loose' or 'hard', however—one should be able to freely shape it.

Sooting: A simple technique for making ceramic goods totally black and shiny. One can either 'grill' the object above an open fire so it gets covered in soot, or throw it hot in a pit with straw (bigger vessels can be covered with flammable material which it begins to glow,

leaving soot on the vessel surface) and then polish it with bee's wax until the surface is compact and and black. In addition to the desirable surface treatment, sooting also has a practical function—it makes the vessel impermeable so that the porous, unglazed ware does not lose as much moisture.

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