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# Ceramic Transition and Actor-Network Theory

The Gyllenkrok House, Lund

BY ERIK JOHANSSON

## Abstract

*During the 12th and 13th centuries the pottery assemblages in Scandinavia changed from hand-formed into wheel-thrown pottery. This transition has not caught much interest among scholars and has usually been explained with economic and functionalistic perspectives. Using actor-network theory, as applied by Astrid Van Oyen, this paper discusses the problem of how and why this ceramic transition happened. As a basis for discussion the case study of a high-status house in Gyllenkrok, Lund, is used. Here the pottery changed entirely following the construction of the house. By isolating ancient knowledge systems, i.e. actor-networks, different processes within this complex transition can be subjected to discourse. This paper draws from cultural hegemony, emulation and entanglement theory to open up the black-boxed knowledge systems, and considering that the household in Gyllenkrok only acquired about two new vessels each generation, I argue that the household inhabitants were passive in this process.*

## Introduction

In this paper I try to adapt Astrid Van Oyen's method, applying actor network theory (henceforth ANT), in the form of knowledge systems, to the process of the introduction of wheel-thrown pottery into the Scandinavian household. The transition from hand-formed pottery, mainly Baltic ware in the Scandinavian context, to wheel-thrown pottery, such as glazed redware and thrown greyware, is highly complex. It involves numerous aspects of medieval society and is

in itself a consequence of socio-political and economic change. By defining different actor-networks, or knowledge systems, this process can be subjected to discourse.

My main inquiry is how and why the pottery changed. Using ANT, the black boxes of the process can be opened up and analysed. ANT envelopes all actants in a process and conveys its true complexity. This, I believe, is a necessity in order to grasp how this ceramic transition happened. ANT refrains from

hierarchical theories that simplify the process, unjust to medieval society.

However, ANT also magnifies the problem of conveying a coherent discussion of such a complex process. In this article I have thus chosen to focus on a single knowledge system, namely the process of acquisition of thrown ware by a household.

The knowledge system of thrown ware is intertwined with the knowledge system of production, consumption and use of Baltic ware, and when these meet they become disrupted and we can discuss them. Influenced by theories of cultural hegemony, emulation and entanglement I subject this knowledge system to different models for how to understand the process of change. In the strict sense of ANT I try to move away from involved and active agents. Giving the evidence of the archaeological material, I propose passive actants.

Following the lack of attention in earlier research to the questions put forward in this paper, the archaeological strata containing ceramic material from the transition phase of 1150–1200 have been used to answer different questions: questions that are often essential to the excavation report, such as dating, evidence of social status and trade connections. The actual transition from one production technique to another has not attracted much interest.

## Astrid Van Oyen's paper and her methodologies

Astrid Van Oyen's paper is titled: "Knowledge Systems in the Production of Terra Sigillata. Moving Beyond the Local/Global Paradox". The production of Terra Sigillata is divided between the global "real" sigillata and local imitations. The local sigillata production in central and southern Gaul eventually developed into important productions sites of their own.

Traditional research takes for granted this existence of a dualist local/global reality but Van Oyen argues for the accountancy of how scale (i.e. the inherent scale of local and global) should be realized through world building practices. The importance of scale should be reformulated as a dynamic notion rather than a static category (Van Oyen 2012, 49). In her paper, Van Oyen, focuses on how ANT could mediate the local/global paradox. In this paper, however, there is neither necessity nor space to present Van Oyen's topic in any detail; however, her methodologies are the ones of importance.

The aim in Van Oyen's paper is twofold: She wants to bypass the problem of the use of global/local labels using ANT concepts. From a case study dealing with the choice of clay in Terra Sigillata production at Lezoux she renews the approach to questions and categorizations that have long paralysed debates in Roman archaeology. By implementing ANT through the use of knowledge systems and applying these to technological choices within the Terra Sigillata production, she moves beyond the current questions and categorizations (Van Oyen 2012, 57). Van Oyen concludes early on that flexible model building is needed for ANT to work for archaeology. As I see it, by regarding different actor-networks as separate knowledge systems, it becomes possible to discuss their changes over time. Van Oyen focuses on one single knowledge system, the choice of clay, which she finds does not undergo inherent changes. Instead the actor-network changes when external conditions do so, or when it comes in contact with another knowledge system. In the case of this paper, concerning the introduction of wheel-thrown pottery in Scandinavia, the knowledge systems are numerous and change in different ways. This will be discussed further on in the paper.

## Actor-network theory

ANT is concerned with the study of relationships between actants. Actants can be humans and non-humans as well as abstractions. The network is thus made up of the interactions of actants. In ANT there is symmetry between actants. This means that they exert equal power on each other. In this way we can distance our analysis of society from determinism and hierarchy. A suitable example in this case is the actor-network of pottery production. Actants are for example the potter, the potter's wheel, the clay, the kiln, the knowledge of throwing pots, the knowledge of firing a kiln, the consumers and so on. If we regard these entities as equally interacting with each other, we can begin to discuss and understand how this actor-network function and changes. ANT places the potter and the clay on the same ontological level and therefore agency exudes from both entities. As Van Oyen puts it: "Importantly, there is no place left for any notion of essence or substance superseding the concreteness" (Van Oyen 2012, 49). Another crucial part of ANT is the disregard of scale. When studying a local actor-network such as pottery production in Scandinavia, ANT allows for huge actants such as trade, or the Danish geo-political system, to take equal part in the network.

Ian Hodder developed ANT into what he calls entanglement which is essentially the co-dependencies of heterogeneous things and humans (Hodder 2012, 207). He argues that his theory "avoids subject/object, material/ideal dualisms. Entanglement is a mix of humans and things, culture and matter, society and technology" (Hodder 2012, 208).

## The black box

Black-boxing is when an actor-network is regarded as a single actant. Pottery production can easily be regarded as a black box. We take its content for granted, especially in archaeology where we mostly come in contact with discarded and broken pots in the form of sherds. In a basic pottery analysis we determine, for instance, whether the sherd belonged to a vessel that was hand-formed or wheel-thrown. In cases when misfired pottery sherds are found, the black box of pottery production is suddenly interrupted and the actants become visible, or turn into "a heterogenous assemblage of materials, formulas, handiness, physical laws, financing and so on" (Van Oyen 2012, 50). Not until now can we begin to discuss the pottery production at the site. Before, the sherds were just a consequence of human waste management. The change makes the actor-network (or knowledge system) visible. If, however, the actor-network falls into routine, the actor-network is again black-boxed.

An actor-network falls into routine once it establishes itself again after a period of change. For instance, the production and consumption of wheel-thrown pottery during the 14th century, long after its predecessors are gone from the archaeological record, could not give any clues to the transition from hand-formed Baltic ware to the wheel-thrown reduced ware and redware that occurred two centuries earlier. The actor-network has become black-boxed. Instead the period of transition is the one that has to undergo analysis and discussion. Determining different knowledge systems and their interactions during the transition period is what can tell us about the reasons behind the change in pottery.

## Research history

There has not been much dedication to the questions of how and why thrown pottery was introduced into medieval society, at least not in Scandinavian archaeology. And since this article deals explicitly with the change in pottery, I will not list the many works that deal with different medieval pottery types. A comprehensive bibliography can be found in Johansson (2011, 2013 and 2014). The Swedish and especially the Lundensian tradition, of leaving room for interpretation, has been summarized by Jette Linaa in her chapter on pottery research (2006, 18f.).

In his chapter “Om Grytor” from 1985, Claes Wahlöö describes the change in pottery as revolutionary and profound. He dates the change to the mid-13th century and connects it with the emergence of the Hanseatic League. The pots are now beginning to be equipped with a handle and three legs, itself an imitation of the metal cooking pots developed in German towns during the previous century. The change, Wahlöö writes, from the globular based pot to the tripod must also be seen in context with the change of the fireplace where built-up stoves now replaced the ancient open fireplaces (Wahlöö 1985, 109).

Mats Roslund re-evaluates Baltic ware in his dissertation (2001) and argues for the emerging craft specialization and changing consumption patterns during the Early Middle Ages. Even though the wheel-thrown pottery is not the subject of his research he connects to it when discussing the decline of Baltic ware. He writes of the powerful and rich merchants from Flanders, the Netherlands and Germany and how their presence cut into the private sphere of the Scandinavian households where the consumption patterns grew more complex (Roslund 2001, 239).

Jette Linaa discusses the pottery change during the 15th century, more specifically the change from medieval redware to the late

internally glazed redware types. She shows how the new pottery production becomes more standardized and professionalized compared to the medieval production. She connects this to immigration from Holland and Germany and points out that the change happened in what seems to be a quite non-ceramic 15th century (Linaa 2006, 177). Innovation, she writes, is the same as acceptance of a new form or production (Linaa 2006, 164).

## Historical background

During the Early Middle Ages, Europe saw an increase in population. This led to colonization of new territory, resulting in lower taxes and more freedom for the medieval farmers, especially in Germany (Hunt & Murray 2001, 47). Different regions produced different crops and traded for what they needed. This interregional dynamic economy gave rise to large market places. Craft specialization and new technical innovations such as the plough and the mill ensued. At the same time the monetary system developed and new towns were founded (Hunt & Murray 2001, 56; Wickham 2016, 126).

There were also important changes occurring in Denmark during the 12th century. Royal power was consolidated and the church established itself as a powerful actor in Danish medieval society. In 1137 Eskil became archbishop and founded several monasteries. Among them were the Premonstratensians who were innovators in agriculture and technology with grandiose buildings and churches (Cinthio 2002, 146f.). Denmark kept an aggressive foreign policy during the reign of the Valdemarian kings, and several north German towns were included in the realm over a period of about 20 years at the beginning of the 13th century (Andrén 1985, 82; Carelli 2012, 224).

From the middle of the 12th century

both local and inter-regional trade increased and trade initiatives started to come from the merchants themselves rather than the king, as exemplified by the Schleswig privilege from 1146–1157 (Andrén 1985, 83f.).

Lund saw a massive increase in population and housing plots, from about 70 at the end of the 11th century to about 700 around 1150. Then the street shop [Swedish *bod*] together with the market made up the central nave of production and consumption. It was the church and the monasteries that controlled the shops, which they rented to merchants and craftsmen (Carelli 2001; Gardelin 2012; Johansson 2014).

## Written sources

In archaeology the source material is of course the pottery sherds themselves, but there are some written sources that provide valuable information. From medieval Denmark the sources are indeed few. In a text from 1370 there is a mention of the term “*ollificum*”. *Ollificum* is derived from the word *olla*, which means pot. The quote is: “*Tres areas locales dictas bodestede ... inter areas ollificum in Schonör*”. This has been translated into “Three plots called shops ... among the potters’ plots in Skanör” (Höhlbaum 1896, 138).

In the medieval Latin texts, potters are referred to as *pottarius*, *ollarius* or *ollator*. However, the term could also refer to foundrymen since the term actually has to do with the clay moulds that were shaped on a lathe and used in the casting process (Le Patourel 1968, 102). This is important because metal crafts were of higher status than pottery making and were more likely to be mentioned in the written sources. In the 14th century the word *potter* always meant metal workers and it was not until the 15th century that written sources mention ceramic potters (Le Patourel 1968, 108). The single

quotation, as seen above, mentioning a potter from a Scandinavian context could after all be referring to a metal craftsman, perhaps someone casting copper alloy cauldrons. If that is the case the number of medieval written sources that mention ceramic potters in Scandinavia is zero.

The potters we meet in English sources are usually farmers who had fewer demands on them to farm and thus had spare time to produce pottery. The situation was different in Germany and France; there were more than 50 potters in Paris and in Aulgasse in Siegburg, where pottery production was extensive already in early 13th century (Le Patourel 1968, 112).

Le Patourel presents two examples of the low status of potters: In Linton, Kent, two potters are mentioned in connection with the stalls along the market street. They pay 4 and 6 pence respectively for permission to sell their goods. The best places at market cost one shilling, and the worst 4 pence. The two potters are located at the lower end of the market street. In the second example we meet Hugh Porter. He is the only potter mentioned in written sources who had his pottery valued. Hugh Porter belongs to the poorest 11 per cent in Colchester (Le Patourel 1968, 112). In Scandinavia, potters do not appear in the written sources until the late 15<sup>th</sup> century.

## Results from the excavation of the Gyllenkrok house

The archaeological excavation in Gyllenkrok 30 was carried out in the spring of 1992 by the Kulturen museum. Gyllenkrok 30 is situated in the north-east part of the block alongside Stora Södergatan, the main street in Lund. Before the reformation in the 16th century, this area belonged to the parish of St Stefan. Between 1989 and 1992 several



archaeological excavations were carried out in the Gyllenkrok block (Carelli 2001, 111).

During the 12th century there was much activity in this part of Lund. A new Romanesque church was built and towards the middle of the century a broad west tower was added. During the first part of the 13th century, brick vaults were constructed and a new glazed brick tile floor was put in (Mårtensson 1981). The church stood diagonally across the street from Gyllenkrok 30 and it is not hard to imagine that the ongoing construction characterized the local environment at this time. Kent Hansen argues that the house north of Svanegatan was dominant in the block and that both

the church of St Stefan and the house in Gyllenkrok 30 belonged to the same complex (Hansen 2013, 28).

The stratigraphy in this flat area of Lund measures about two metres and is well preserved from the 17th century back to the 11th century. A large part of the excavation in Gyllenkrok 30 consisted of a 70 m<sup>2</sup> cut/pit, interpreted as the cellar of a large house. During the construction, large deposits from the cellar were redeposited in the area around where the house was being built, causing older artefacts to mix with those belonging to the cellar phase. The cellar was eventually filled with rubble from the destruction of the house and the material became rather fragmented.

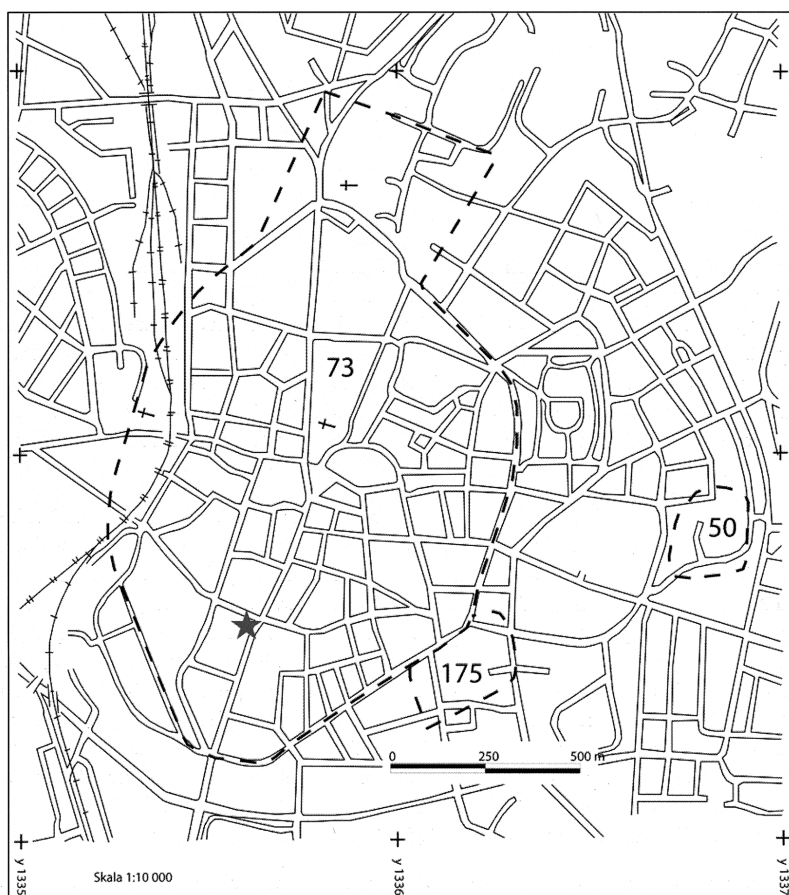


Fig. 1. Map of Lund. The star marks the location of Gyllenkrok 30. Map by Gunilla Gardelin, Kulturen.



Fig. 2. The excavation of Gyllenkrok 30 in 1992. Photo by Kulturen.

The cellar is called A13 in the unpublished report and was dated to phase II, representing the High Middle Ages, by the excavating archaeologists. A rim sherd from a Siegburg stoneware vessel could be dated to 1300 based on a very similar type from Aulgasse, Siegburg (Beckmann 1975, 119f).

A pit called A59 that cuts the A13 infill could be dated by means of a coin to 1319–1332, giving us an approximate time of the

destruction of the house. Thus we can conclude that the Gyllenkrok house was built sometime in the early 13th century and stood for about a hundred years (Johansson 2014, 25).

## The pottery from the Gyllenkrok house

The pottery assemblage from Gyllenkrok 30 is made up of 74 per cent Baltic ware (2015 sherds), but only one per cent in A13. Glazed redware dominates in A13, but there are also sherds of wheel-thrown reduced ware, Siegburg stoneware and proto-stoneware.

Another important dating indication is the absence of the Scanian jug in the A13 pottery assemblage. The Scanian jug is commonly found in Scania and is the only high medieval pottery that is thought to be locally made

Table I. The number of sherds for each of the main pottery types from Gyllenkrok 30.

| Pottery type              | Number of sherds |
|---------------------------|------------------|
| Baltic ware               | 2015             |
| Glazed redware            | 427              |
| Stoneware                 | 173              |
| Wheel-thrown reduced ware | 88               |
| Total                     | 2706             |





Fig. 3. A Scanian redware jug.  
Photo by Erik Johansson



Fig. 4. A wheel-thrown reduced ware tripod vessel.  
Photo by Erik Johansson.

(although the production sites remain to be found). The Scanian jug dates to after 1300 in Kv. Apotekaren 4 in Lund (Johansson 2014, 25), from 1275 in Dalby (Lindahl 1986, 24) and 13th–14th century from Kv. Spritan, Åhus (Svensson 2005, 76).

From the rim sherds found in A13, six redware jugs could be reconstructed. They are all different shapes and sizes, but a parallel could be made with a sherd from Apotekaren 4 (KM 70361:452) which dates to the second half of the 13th century (Johansson 2011, 18). There is also a parallel to the Dalby material (rim type 3h, fig. 12, Lindahl 1986, 41). The 13th century thus seems to host a number of different workshops (Bäck & Roslund 2017, 64). This was also concluded by Catherine Svensson from the analysis of the large redware assemblage from Kv. Spritan, Åhus, where no fewer than 11 different groups were identified based on the different rim types (Svensson 2005, 26).

Since the cellar was dug in the Middle Ages the stratigraphy has been destroyed and fails to provide exact dates for the foundation of the house. However, the very small amounts of wheel-thrown reduced ware and hand-formed reduced ware (*kugeltopf*) which

normally occurs together in the last quarter of the 12th century, indicate a somewhat later date.

The site was dominated by Baltic ware up until the construction of the house, and then the pottery assemblage changed completely. Comparing the glazed redware and thrown reduced ware in Gyllenkrok 30 with the rest of the Gyllenkrok block, we see that the house site and A13 contain almost 25 per cent more glazed redware. There is an apparent connection between this household and wheel-thrown externally glazed redware.

However, one must not imagine that the household carried large amounts of this new pottery. As mentioned above, only six jugs could be reconstructed from the redware sherds. This number is calculated from the unique number of rim sherds. For wheel-thrown reduced ware the same calculation amounts to three. The interpreted time span of the house is about a hundred years. That means the inhabitants acquired one new vessel every decade or so. This low number correlates with results from both Nyköping and Åhus (Bäck & Roslund 2017, 56f.).

## Knowledge systems

There is an important difference between hand-formed and wheel-thrown pottery. When a potter throws a clay vessel he/she uses rotary kinetic energy and centrifugal force as an active agent in the forming and shaping of the vessel (Orton, Tyers & Vince 1993, 117; Roux 2019, 54). The methods are very different and the knowledge to hand-form a vessel does not imply the knowledge to use a potter's wheel. Roslund argues that the hand-formed pottery that dominated the household assemblages in the 12th century had already begun to imitate the rounded shapes with everted rims that had started to emerge on the continent (Roslund 2001, 238). The pottery was part of the individual habitus and the Scandinavian potters were influenced, making hybrids, not copies (Roslund 2001, 321). This difference in production and craft technique suggests that the Baltic ware potters did not switch to the potter's wheel. The new pottery was made by new craftsmen, perhaps from Germany or the Netherlands. This model is supported by the somewhat later established local production.

However, the introduction of wheel-thrown pottery ties in closely with the decline of Baltic ware. The emergence of thrown pottery could in this way be seen as a material consequence of this decline. So, rather than viewing the introduction of thrown ware as a success, it is the failure of the Baltic ware that paves the way for the new pottery. Or rather still, it is a consequence of the changes happening to Baltic ware potters.

Van Oyen puts forward two things that are of importance in my case. Firstly, that choice does not always come from free will; rather it is denoted by daily routine. What we interpret as the transition from hand-formed to thrown pottery may actually stem from minor alterations of existing habits. Secondly, "choice" implies alternative ways of acting,

even though those other ways do not have to be known or thought of (Van Oyen 2012, 50). When thrown pottery enters Scandinavian households it can on the one hand be argued that this was by choice. In the example of the house in Gyllenkrok it is tempting to assume that the new pottery replaced the old Baltic ware as the result of one inhabitant's active decision. However, it is more likely that the new pottery was already connected to the new inhabitants and that those inhabitants brought with them their pottery. The transition process of the pottery has in this case been black-boxed. According to ANT, buying or making new vessels in a household was part of a knowledge system (an actor-network). When the wheel-thrown pottery appeared it represented a new knowledge system and when that encountered the old hand-formed pottery knowledge system, the black box opened up (Van Oyen 2012, 53, figure 2).

How can the meeting of the knowledge system of Baltic ware production and the knowledge system of thrown pottery help us understand the ceramic transition? We know that the existing knowledge system changed. The Baltic ware had begun to adapt, and there were internal movements within the group, perhaps different from region to region. In any case, however, the knowledge systems were tied into, entangled with if you will, different socio-economic relations. Van Oyen urges, in such cases, for a contextual analysis of the different entanglements. Otherwise there is a risk of assuming a "dominant one-to-one correlation between *chaîne opératoire* and economic opportunity" (Van Oyen 2012, 55).

In other words, the production of Baltic ware constitutes a knowledge system that undergoes internal changes, perhaps due to changes in the socio-economic and political complex. Thus, the inherent dynamics within this actor-network have to be acknowledged even before its encounter with the new pottery

actor-network. This, in contrast to the already established and old Baltic ware economy (i.e. its production and consumption), was new to Scandinavia and was of course complex to say the least.

As Van Oyen chose to focus on one knowledge system, I have chosen to focus on the acquisition of the new wheel-thrown pottery into the Scandinavian household, where the acquisition process is the knowledge system.

## Hegemony and emulation

The group responsible for the production of the new wheel-thrown pottery must have been “socially desirable”. If we imagine that a considerable part of these groups were made up of French kiln-firing monks, rich Flemish textile merchants and German ship owners, it could explain the fast transition of the ceramic materiality.

Ruling groups do not maintain their hegemony merely by giving their domination an aura of moral authority through the creation and perpetuation of legitimating symbols; they must also seek to win the consent of subordinate groups to the existing social order (Jackson Lears 1985, 570).

Lears is quoting Antonio Gramsci, whose theory of cultural hegemony gives a functional perspective on the pottery transition of the High Middle Ages: By establishing themselves in dominating positions the early traders and consumers of thrown pottery would eventually ensure the success of the new pottery. At the same time the vessels became *symbols* that perpetuated and legitimized those positions. When Baltic ware *type a* falls into decline and *type c* (Roslund 2001, 423 figure k-o) emerges as the last remnant of this craft tradition, it gives a sense of struggle of survival, a sense

of *consent* to the emerging social order. The Baltic ware potters now find themselves in competitive surroundings and, looking at the vessel shapes, they try to adapt.

Bridging the gap between the functionalistic and economic explanation that Wahlöö represents and the actor-network theories of Van Oyen and Hodder, there are the ideas of cultural hegemony and emulation. Emulation is when pottery acts as a synchronized cultural ware. The elite of society express their uniqueness by adapting new pottery and the subordinate groups, in their turn, copy them (Linna 2006, 165).

The Scandinavian entry into the European domain of thrown pottery may have happened because of political decisions, but the acquisition of that pottery came from an urge to distance them from the rest of society, according to emulation theory. The subsequent establishment of the new pottery can be explained as a later response from the lower classes. Following this line of reasoning, the act of copying the materiality of the elite requires active agency, a consciousness of one's own or the group's position. This could be argued to be validated by the rapid change in pottery during the 13th century. But the quick change could also be the apparent result of a quick decline of the Baltic ware. The Baltic potters would not exercise conscious and complete consent. Instead it was a mix, as Gramsci puts it, of approbation and apathy, resistance and resignation (Lears 1985, 570).

The decline of Baltic ware could therefore be interpreted as the decline of the social agency of the Baltic ware potters. Or rather, the process of change from Baltic ware to thrown ware is to be understood as the change of social agency among the Baltic ware potters. The dominant group of the late 12th and early 13th century, exemplified by the Gyllenkrok house, had access to greater resources and networks. To paraphrase Hodder, they channel change in the direction of their own interests

(Hodder 2012, 214). Hodder writes: “Agency is intimately tied to the state and trajectory of entanglements” (2012, 215) and the change is the encounter with a new knowledge system, a new actor-network. When thrown pottery enters the Scandinavian sphere it brings a symbolic value for its new users. Roslund describes the process of change as a continuous intra-group negotiation where values are “permanently reassessed in relation to new cultural patterns” (Roslund 2009, 188). If the new pottery appears suddenly, which could be argued is the case with thrown ware, “the newcomers’ social status will inevitably influence rejection or acceptance of the innovation in both cases” (Roslund 2009, 188). This proposition ties in, in my opinion, with Gramsci’s theories of consent (see above). What Roslund is describing here is essentially an entanglement. The reassessment of values is the ongoing dialectic relation between actants. They are entangled with each other and with their pottery in a web of social and economic dependences. But the tautness of the entangled strings is pushing and directing the transition from hand-formed pottery to wheel-thrown pottery forward.

## Conclusion

Why did the households in Lund start to use wheel-thrown pottery in the 12th–13th centuries? Was it German influence, trade activity, product superiority or a change in food culture? Jette Linaa asks herself the same question regarding the glazed pottery that made its entrance during the 15th century and Mats Roslund writes about the changes to Baltic ware in the early Middle Ages (Roslund 2001; Linaa 2006). There is a gap in Scandinavian pottery research where high medieval earthenware has been left out, mostly because of, in my opinion, a contentment with traditional explanations.

The narrative of the flourishing Middle Ages is part true, but it could be argued that it is indeed an *archaeological black box*. The narrative begins with an increase in population which automatically and naturally evolves into trade, markets, towns, money and, in the end, new household pottery. This narrative is flowing. This narrative is also the challenge that this article faces. How can the change in pottery be explained by taking into account the complexity of society? Economy has dominated the view of change, and it should not be disregarded, but: “a fuller account in which heterogeneous things and people are entangled in each other” (Hodder 2012, 207) has to be sought.

Only by studying the short time span when both old and new pottery co-existed is it possible to discuss how that change occurred. Although small changes always took place in the thrown pottery assemblage and its social dependencies, the actor-network did not alter until the late 15<sup>th</sup> century when the pottery and its production changed again. Van Oyen writes that all the actors involved in the process cannot be pinpointed archaeologically but ANT and knowledge systems, at least, introduce complexity and counter too simplistic explanations.

Following the beginning of the production of floor tiles and bricks during the 12th century, the possibility to fire large amounts of pottery ensued. Brick makers from both church and state invested time and knowledge in firing kilns and a co-dependency developed. Even though the old pottery production system was not broken, the socio-economic meshwork around the new pottery could not untangle itself nor be reversed. “Rather the entangling itself has tautness that channels and directs humans and things as they go about their daily business of dependence and co-dependence” (Hodder 2012, 208).

The following three steps can be regarded as a pedagogical framework in order to discuss

the complexity of the transition. In many ways I have reached the same conclusion as Van Oyen does in her paper, namely that the application of ANT generates new questions and avoids stagnation in a research topic. The use of knowledge systems helps to isolate certain processes within a complex actor-network and unlock affiliated black boxes. As for future studies, the identification and analyses of those contexts shared by Baltic pottery and thrown pottery must be considered key in order to further understand the introduction of wheel-thrown pottery into medieval Scandinavia.

Stage one, introduction: This stage was enabled by the intra-political activity between Denmark and the continent, where the materiality of thrown pottery had already emerged and begun to spread. Contact made the new pottery noticeable and available. Before, as with the case of early glazed redware, sporadic visits by potters using the wheel could not engage enough interest. I would argue that in this scenario we are dealing with consequences of trade but also, as Linaa puts it, emulation. Mats Roslund writes that trade cannot be the reason alone for the acceptance of novelties, it can only incite it. The acceptance must be sought in social agency, in human contacts on a household level (Roslund 2009, 188).

Stage two, establishment: The second stage, in which the pottery establishes itself locally, is related to the societal choice of the users and consumers, portrayed in this article by the inhabitants of Gyllenkrok house. These choices were, as argued above, defined by an act to position oneself in society. According to ANT and in line with the points made in this paper, practical life for the medieval person manifested itself as unconscious changes in the daily routine.

Stage three, normalization: This is linked to the spread of technology and expertise to medieval Scandinavia where local production is established, in this case made visible by,

for example, the appearance of the Scanian jug. According to emulation theory, this is the populous act of copying the elite. According to entanglement theory, it was an inevitable development since humans became co-dependent with a new type of pottery, hence that type became the dominant one. According to social agency theory in this scenario, group after group reassessed their relation to the new pottery and to the arena where it was attained, and that arena was the marketplace.

## Final remarks

The decline and disappearance of Baltic ware during the 13th century ties in with the changes that affected the communities of potters at that time. The emergence of wheel-thrown ware was from the beginning a separate process on the European continent. The relation between the two pottery types in the Scandinavian archaeological record speaks of replacement, which has been interpreted to be because of the superiority of wheel-thrown ware. In this paper, I have tried to consider the complexity behind this process. The pottery in the Gyllenkrok house changed because the socio-economic and political reality changed. The inhabitants, i.e. the consumers, were entangled with those changes, therefore they changed pottery. But the very few and seldom acquired vessels during the 13th century speak, in my opinion, of a passive act within this process. Changes in daily practice accumulate over time and when it came to the point of buying a new vessel for the household it was obviously wheel-thrown. The person did not think twice about choosing anything else.



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