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Signing in the Margins:
Manifestations of Professional Identity and Creative Agency in Viking Age Oval Brooches

By

Ellie Howell

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Requirements of Independent Study
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Advisor: Dr. P. Nick Kardulias

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Abstract

This study examines stylistic and thematic variation as seen in a sample of P51 type Viking Age (approx. AD 700-1100) oval brooches excavated mostly from burial contexts in central Sweden. As examples of applied art heavily reproduced through casting and imitation, paired oval brooches have the potential to reveal a great deal about how artisans perceived their products, their position within an increasingly complex society, and how these perceptions developed and spread within the trade. In particular, heavily emulative “international style” brooches may reveal which aspects of the applied art held symbolic significance for producers, and which were simply aesthetic features expected by patrons. I examine both general stylistic variation and the persistence of several motifs throughout the sample. I isolate a number of distinct sub-types of the P51 type brooch, and investigate the processes and phenomena that drive variation in heavily reproduced applied art as well as those that could affect the persistence of certain motifs despite changing styles and geographic distance. I outline a series of those which apply to the sample and which may be used to analyze similar stylistic elements in future studies.

Acknowledgements

This work would not have been possible without the support of a number of people. First and foremost, I would like to acknowledge the gravitational center for this project, my advisor, Dr. P. Nick Kardulias. Without the guidance, grounding, and feedback that Professor Kardulias provided, this project would never have existed. I am certain that without his impressive patience and often unwarranted encouragement I would have been absolutely destroyed by this project early on in the process. I would also like to express appreciation for my second reader.

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Chapter One

Introduction

Problem Statement

Applied art – especially that which is part of clothing – has a tendency to be widely reproduced in part or in whole within a culture. Typically, we refer to this phenomenon of reproduction as “style” or “fashion”. In some cases, an instance of applied art strikes such a chord in its respective society that direct copies thereof become abundant in the archaeological record. Such is the case with the Viking Age bronze oval brooch, a hallmark of Scandinavian women’s clothing that saw several distinct styles rise in popularity and become widely reproduced. Wilson and Klindt-Jensen (1966) argue that while some examples of motifs or ideas appear to be imported (such as the lions of the Jellinge and Ringerike art styles), essential stylistic changes in Norse art were internal processes of the culture. Artisans rarely left Scandinavia, it seems, and there was significant sharing of traditions and methods among them. Wilson and Klindt-Jensen maintain that there was a general cultural consistency within Scandinavia, and that changes in fashion were a result of internal pressures. These pressures included the desire for conspicuous displays of wealth and power, and to increase the clarity of this message, established designs with clear connotations of finery were favored over new ones. To ensure that they could meet the demands of the public, artisans would adhere to these established designs through the imitation of existing brooches.

In the late 9th century, a widely popular variety of oval brooch emerged. The P51 type brooch (Petersen 1928) remained abundant in Scandinavia throughout the 10th century. The type is found throughout Scandinavia and the Baltic region and comprises the bulk of paired

oval brooch finds. Thus, they are an ideal type for the study of variation in heavily reproduced applied art. They are typically found in burial or cache contexts. The sample examined here is housed at the Historisk Museet in Stockholm and is part of one of the largest collections of Vendel and Viking Age oval brooches in the world. A number of the pieces were excavated in the 19th and early 20th century, and as such the details of their contexts have been lost. However, those excavated more deliberately have come mostly from burial contexts, with a few found in caches. The brooches are found in a fairly regular geographic spread within modern-day Sweden and represent the majority of provinces therein. They are visually similar as they all fall within the P51 archetype, although they possess some variation in design which is crucial to this investigation.

In the present research, I examine the P51 type brooch of Sweden as a case study for the events and processes that drive variation in heavily reproduced art. In particular, I compile an outline of the phenomena that could inform the persistence of a motif throughout a period of stylistic turmoil—the rapid transition of one form of regional stylistic determination to another entirely. These phenomena are crucial to our understanding of the lives and practices of artisans as both marginal and integral members of an increasingly complex society.

An account of this society in terms of its political, geographic, structural, and artistic background is therefore required. I will review the overall chronological context, including the broad social and political context of Sweden during the period in which the brooches were produced, as well as addressing in further depth the structure of towns and settlements, the function of trade as a crucial dimension of Norse society and social development, and the unique social position of non-ferrous metalworkers in Iron Age Scandinavia. In addition, I will

briefly describe the artistic context of the brooches – that is, relevant styles of Viking art and the brooch type’s situation within Petersen’s (1928) oval brooch typology.

Review of Literature

The Scandinavian Social Sphere

Scandinavia of the Viking Age was composed of multiple cultural groups within the “Norse”, including the Norwegians or Northmen, the Danes, the Sueones/Svear (who occupied what is roughly Sweden today), and the Götär (who occupied Götland and the surrounding region). The old idea of a single, unified Scandinavian culture has been disputed and disproved several times over (Sawyer and Sawyer 1993). Nevertheless, the region presents a number of similarities regarding social systems that remain fairly constant from the end of the Vendel period (550-790) and through the Viking (790-1100). The steady growth in population, urbanization, and gradual introduction of Christianity (culminating in the early 12th century) greatly impacted the roles of many members of society, making the late Viking period a fascinating interval of social change in Scandinavia.

One aspect of this dynamic social network that is relevant to this paper is that of slavery. A discussion of the concept of “freedom” in a Scandinavian context could comprise an entire thesis, so here we will review it only briefly. It is a vastly variable, complex system that does not appear to have had any official guidelines or adhered staunchly to general Scandinavian social mores about reciprocity, deals, or promises. Norse slavery encompassed numerous “levels” of freedom, including thralldom (typically seen as the lowest position in society and the form of slavery that we are most familiar with) and serfdom (which in Scandinavia had qualities of thralldom, but in many regions included particular civil rights that in lower castes

would not be typical). There is also evidence that both thralldom and serfdom sometimes existed for a pre-determined period of servitude, though whether masters always honored that time limit is historically dubious (Gustafsson 2013). Unless you wish to approach the question from a philosophical perspective, it is largely futile to examine the question of Scandinavian “freedom” in a modern judicial sense (as in the familiar 18th and 19th century North American form of slavery) as the Norse conception of it varied so greatly from community to community and followed such an entirely different ideology that it would, in essence, be unrecognizable today. Here, I will simply note that slavery was not limited by occupation and is known to have included both unskilled laborers and highly skilled artisans, possibly including metalworkers involved in brooch production. In addition, it is thought that the ownership of slaves was not a right limited by law or by social sanction to any particular stratum of society.

As most of this paper will focus on the social function of the producers of oval brooches, it is important to offer some context for the consumers. Oval brooches were consumed exclusively by women as an integral part of their everyday dress. While we know a little about the legal position of women in the Viking Age, the archaeology of female burials can reveal a good deal about their everyday activities, as well as their overall position in their society. While it is tempting to assume that any grave good would have belonged to and been used by the person it was buried with, there is general consensus that some examples of grave goods were symbolic – such as child graves in which can be found weights for trade (Jesch 1991). Therefore, a woman buried with a hammer may not have been a carpenter; a woman buried with a sword does not confirm the myth of shieldmaidenry.

Some extremely common female grave goods, however, might indicate a more literal use of the objects. These often include wool-combs, shears, and other weaving accoutrements,

suggesting that weaving was designated as female work. Women (especially adult and mature women) were also often buried with keys (Jesch 1991). In Scandinavian societies, women were considered the keepers of the household, which was in fact a powerful position in a society where a great deal of one's life revolved around the home and the farm. Burial with keys indicates not only a degree of importance, but also dependability and trust (Jesch 1991).

Most of the literature on women's societal roles alludes to the "private sphere". This broad term encompasses that to which women were particularly delegated – the keeping of the home, children, and the farm, as well as day-to-day operations, especially if their husband was a long-distance trader or raider. However, roles were not entirely domestic. Women in Viking Age Scandinavia tended to have a good deal more agency than their continental counterparts. The majority of their social power (at least as represented through the characters of Skaldic poetry, who inherited property, held strong opinions, and often pressed their men to carry out deeds of vengeance on their behalf) diminished dramatically with the introduction of Christianity (when female characters began to appear more passive and inconsequential) (Hedenstierna-Jonson and Kjellström 2014). In pagan Scandinavia, women had a multitude of religious functions in addition to their roles as heads of the "private sphere". They were associated with fertility, childbirth, and death (Helgadóttir 1985), as well as having the ability to transcend the physical realm and see into the future (Jesch 1991). Most importantly to this study, though, women seemed to have a fair degree of economic agency as well.

While the majority of population growth in the later 10th century did occur in rural areas, the growth of major nodal points was significant, and was accompanied by several shifts in social roles, especially for women, as compared to those occupied on rural farms (Sawyer and Sawyer 1993). At Birka, textile production (women's work) was undertaken at such a scale

that women having independent textile businesses — or at least having a degree of marketable skill and therefore personal power — is a fairly likely scenario (Hedenstierna-Jonson and Kjellström 2014). At Birka, women were producers as well as consumers. This phenomenon continued to develop within the major trade network towns of Scandinavia. The emergence of such towns will be discussed below. For the moment, however, we must review the political sphere of Viking Age Sweden.

The Scandinavian Political Sphere

In the early medieval period, most communities were largely independent of one another and each saw to their own affairs. Administration and decision-making were accomplished at assemblies which acted not only as legal and political gatherings, but as social and religious ones as well. To use more specific terminology, in many parts of Scandinavia, power rested in the hands of a group of lords and chieftains, each in charge of his own group of beholden men — an imperfect analogy would be to knights. These chieftains were *goði* (pl. *goðar*), a word which indicates lordship over men, rather than over land. The authority of these *goðar* was exercised at the *thing* or assembly (Sawyer and Sawyer 1993).

Individual rulership, especially in Sweden, was often unstable and overlordships and kingships tended to collapse within a couple of generations. Without clear guidelines detailing the line of succession (as could be found in continental societies), contestations of heredity were common and often resulted in violent upheavals. However, overlordship began to develop in the Viking period in places with particularly efficient communication, such as Denmark (Sawyer and Sawyer 1993). Logically, spreading authority to large expanses of land will be easier in a place with very little elevation and vast road networks, as opposed to dramatic landscapes of impassable mountains and endless winding fjords (Norway) or entirely

impenetrable forests (eastern Sweden and Götland). This early overlordship and infrastructure helps to explain why the history of Denmark is so well-documented in the early medieval and Viking Age (Sawyer and Sawyer 1993), whereas that of Norway and especially Sweden are less so.

Sweden was the last of the Scandinavian kingdoms to be established. Before the unification (which occurred officially in the 14th century under King Gustav Vasa – well after the production of our particular brooch type disappeared – but consisted of a gradual consolidation beginning in the 12th) a series of kings, not linked in any historical capacity to a particular piece of land, depended heavily on local rule conducted by jarls – who held an office roughly similar to a duke (McKitterick 1995). Sweden was also the last region to officially adopt Christianity – some sources refer to Christianization as more or less having taken hold by the mid-12th century, while in Denmark and Norway it was the dominant religion by the mid-11th (McKitterick 1995).

Emergence of Towns

Especially in the early- to mid-Viking Age (that period of time which covers the production period of the P51 brooch) we should keep in mind that a clear hierarchy of sites within a trading network was not necessarily the result of a corresponding hierarchy of power. Instead, a hierarchy of trading sites should probably be analyzed mostly as a result of the internal processes of trade itself. Chieftains cannot be said to have held any direct influence over where trade occurred, so it appears that the activity was, in a way, self-directed into a clear geographic hierarchy. This can be explained by the desire on the part of traders for a degree of stability and security. Undoubtedly traders would have operated through a combination of long-standing agreements and business relationships and market trade.

Because of the risk of these business relations failing or falling through, traders would need to have a viable operational marketplace to depend on to sell their goods. As trading sites emerged on a small scale, traders would flock to these areas for safety, themselves then contributing to the growth and therefore the financial security of the sites. It should be noted that these sites did not emerge randomly—originally, the locations depended on topography and accessibility. As Sindbæk (2007:129) has it, “long-distance exchange brought its own rules, which did not necessarily support existing political structures”.

Genuine towns in the early Viking period were few and far-between. Rapid urban development did not really begin until the early 11th century (Sawyer and Sawyer 1993). As towns developed, they acted as anchor points of trade and as travel destinations. In terms of the overall distribution of the population of Scandinavia, towns were marginal, but “the sort of margin from which social change happens” (Sindbæk 2009). Some of the largest and longest-lasting town sites were understandably located along major trade routes, and include Heðeby, Ribe, Birka, Kaupang, and Åhus (Figure 1.1).

In general, scholars agree that the majority of production occurred in towns, within a network of workshops and artisans. Waste materials from brooch production (principally mould fragments and some scrap metal) have been found at sites such as Ribe, Birka, Åhus, Hedeby, and Kaupang (Sindbæk 2009). However, there is still significant evidence suggesting that smaller-scale operations took place at family farms and in small villages (Gustafsson 2013). Middens from these sites indicated that *in towns* the locations of such workshops did not tend to change for extended periods of time, indicating long-lasting “houses” of production. For example, abundant production site waste from Ribe allowed Fèveile and Jensen (2006) to construct a meticulous chronology of Berdal style variation that occurred in “short, successive

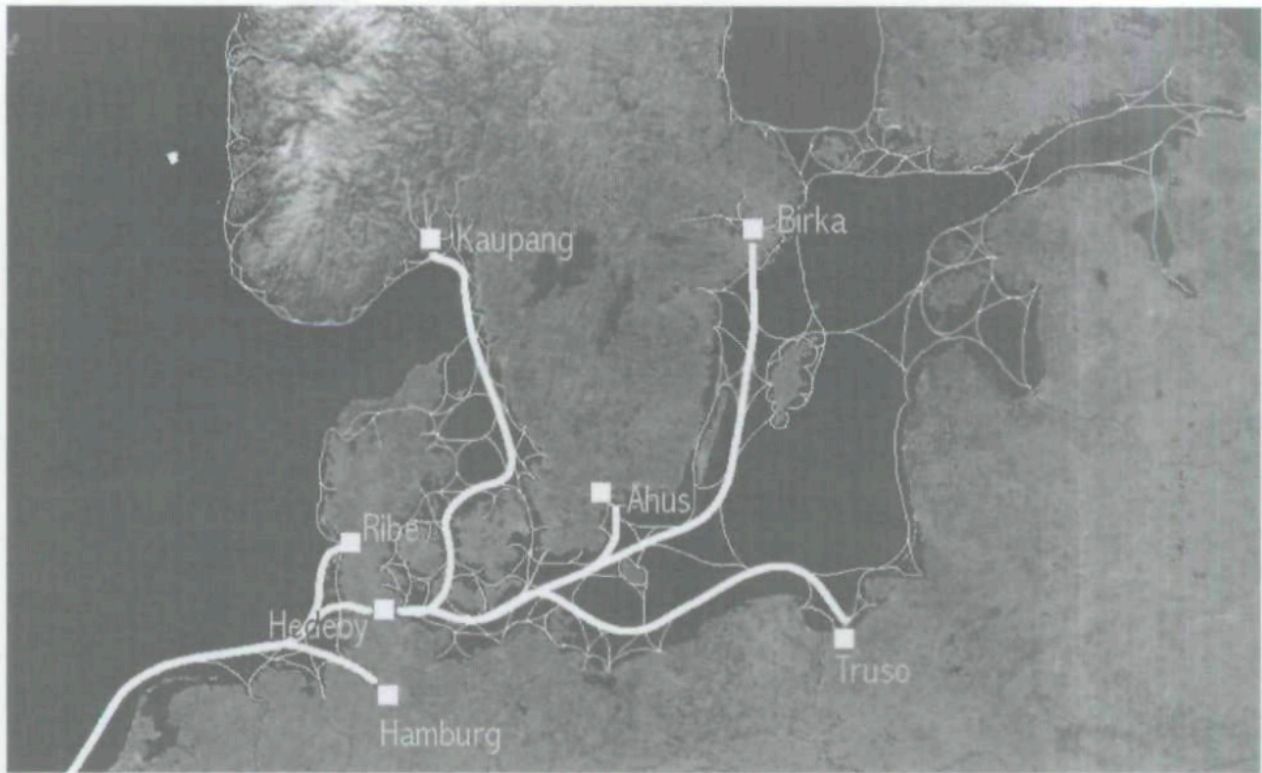


Figure 1.1. Suggested map of trade routes and nodal points in early Viking Age Scandinavia (Sindbæk 2007:121, Figure 1).

phases, some lasting little more than a decade” (Sindbæk 2009:412). On farms, however, it appears that small-scale non-ferrous metalworking structures followed the movement of the main group of buildings as they were rebuilt over generations (Gustafsson 2013).

Some (e.g., Hodges 2006) argue that specialized craft production workshops were the impetus for the formation of permanent emporia even more than long-distance trade routes. However, this is highly contested, and because both standing production houses and long-distance trade routes emerged simultaneously, it is nearly impossible to determine whether one had undue influence on the other. In trading centers, crafts that required easily-accessible raw materials (textiles, iron-forging, comb-making) were widely found, whereas crafts that worked with more specialized raw materials (glass-working, copper alloy casting) were relatively rare. Sindbæk (2007) identifies a number of nodal points (trade centers that were crucial points within a network of long-distance trade routes) by the presence of Badorf-ware ceramics,

which were not produced within Scandinavia during the period in question. He was also able to determine that sites that yield more ceramics also have glass bead and cast bronze production loci. There is heavy casting activity at Heðeby, Ribe, Birka, Kaupang, and Åhus, sporadic casting activity at Strömkendorf, Menzlin, and Fröjel, and none at all at Wolin, Löddeköpinge, or Sebbersund (Sindbæk 2007). Essentially, the large-scale manufacture of specialty objects such as oval brooches occurred only in major nodal points—there were no tertiary long-standing production houses.

Trade

To understand why these production sites were so reliant on continuous trade, we must understand the sources of the raw materials involved. The primary material used to cast oval brooches was bronze, which is an alloy of copper and tin, typically with the addition of other metals like lead and zinc. Copper was found commonly in both Anatolia and south-central Europe, and it is likely that these were the primary sources for Scandinavians. Lead extraction occurred in central Europe and the British Isles, and tin may have come from the southwest corner of England. Zinc is not found in Europe, so its use in copper alloys in Viking Age metalworking is very rare. Silver and gold (which were used in the common practice of gilding oval brooches) mostly reached Scandinavia in the form of coins, which, having no civic value in the region, would have been melted into ingots. The areas providing the bulk of these coins changed over time – in the early Viking period, coins came from Rome. In the 9th and 10th centuries, most were Islamic dirhams. In the late 10th century, coins came from England and Germany, and some of the Norse polities that had begun to construct mints and produce standardized currency (Gustafsson 2013).

Other materials necessary for bronze casting include stone for crucibles and beeswax. Beeswax (the specific function of which is discussed further in the data chapter) cannot be traced to a source in Scandinavian archaeology because it is so quick to decompose. However, the sheer amount that was required for Scandinavian metal casting activity suggests that it was at least partially imported. Silver, gold, and copper alloys have high melting points (well over 1000°C) that require specialized tools with refractory capacity (made of steatite). Most of this stone would have come from within Scandinavia, and there is some evidence that forging tools were created on-site by stone-working specialists and shipped as finished products (Gustafsson 2013).

It is interesting to note that raw materials may in some cases have been provided by the clients of metalworkers. The evidence for this includes several finds of hoards of scrap metal and ingots found at farm settlements (Gustafsson 2013). The hoard context indicates that they were not likely being immediately used in farm workshops and were instead being saved for future commissions. It is likely that both “bespoke” and “off-the-rack” systems of purchase were occurring, due to the presence of both “elaborate one-off brooches” (Gustafsson 2013) and somewhat crude copies of simple designs in the archaeological record. As of this point, I do not believe any study has been done to determine whether both styles of production were occurring in the same spaces or not.

Workshops

After raw materials were procured, specifically designated spaces were required to process and cast pieces. In archaeology, there is some debate over the frequency of workshop finds. Gustafsson (2013) believes that workshops are often overinterpreted in the archaeological record. In many investigations, a building containing a hearth feature (usually

a hearth pit) and metal debris is described as a workshop when in reality the space was likely to have had many other uses, or had only been used as a workshop very briefly. Early period workshops can only be identified in the archaeological record when there is either a large amount of waste material or a high-temperature hearth pit (raised hearths are typical only to post-Viking period smithies or, if presenting earlier, have been plowed over). Also, these features only represent the activity of mould-casting, not any of the other crucial steps to making objects like oval brooches. Other metallurgical processes like filing, pressing, etching, etc. leave very little trace and could have occurred in other locations (Gustaffson 2011).

Gustafsson (2013) argues that there is some evidence for specialization in particular objects (i.e. oval brooches) but it was more likely that (especially in rural settings) non-ferrous metalworkers knew how to make many types of objects. Fuglesang (1987) theorizes that less experienced craftspeople (or, rather, less specialized and therefore less skilled in certain styles) might have worked outside production centers or urban areas. This would mean that workshops in major towns likely had a measure of exclusivity and distinction from the consumer's point of view (Sindbaek 2009). In this case, the exclusivity might also have existed from the producers' point of view.

Towns might have had just one workshop (as in Ribe) or multiple (as in Birka, where a number of different workshops were found in “a single plot near the waterfront” [Sindbæk 2009:414]). This means that the level of artisanal competition would have varied from town to town, and with it, the emphasis on professional pride and individuality—and more specifically an emphasis on differentiating one's work from the competition. However, during the period where both Berdal and Lattice types (both with gripping beasts) were being produced, “workshops in each town adhered staunchly to their own types” (Sindbæk 2009:416) indicating

that regional cohesion was more important than differentiating one's work from that of the neighboring workshops.

While the social processes and phenomena occurring within the smithing community are crucial to our discussion of the motivations behind late-period stylistic variation, it is also important to understand the wider public opinion of smiths within the community. In mythology, which is viewed here as both a product of and an informant to public opinion, smiths are often portrayed as marginal, insular, and solitary. They are reactionary and vengeful, as in the legends of Weland and Regin. This indicates a perception of smiths as “somewhat outside of the norms and regulations of their contemporary societies, and their domain, the smithy... the symbolic border zone where the unknown lurks in the shadows,” (Gustaffson 2011:20-21).

In reality, opinions of metalworkers may have varied greatly across regions, and they may have occupied a number of social strata. There is some debate surrounding Scandinavian metalworkers as to whether they and other specialized craftspeople were typically free or unfree. One particularly interesting addition to this debate is the runestone from Hørning, Jutland which reads “Toki Smith raised the stone after Þorgils Guðmundarson who gave him gold and freedom” (the particular form of the word “freedom” being that which refers specifically to freedom from thralldom) (Gustafsson 2013:73). In this case, Toki had been a thrall working as a specialized craftsman under Þorgils Guðmundarson, who it seems decided to free his slave and provide him with gold. Therefore, smiths were capable of being thralls, and also capable of being freemen.

There is also a question of heredity in metalworking: in Götland, the repeated relocation of small-scale workshops over time, mimicking the movement of farm buildings, indicates that

these workshops were highly connected to family farms. Here, metalworking would require an insular type of apprenticeship – metalworkers in training would not likely be flocking from distant places to apprentice in the extremely small-scale workshops of the family farm of a stranger, as they might for huge production centers like Birka. Instead, trainees would likely be local, perhaps the kin of a metalworker if he had any.

Stylistic Variation

Regionalism

As previously mentioned in the discussion of workshops as a social arena, early brooch production (through the 8th century) adhered to a mode of production that could be described as staunch regionalism. This included the adherence of regional workshops to a single design (either a Berdal or a Lattice type) despite clear avenues of communication between production centers that otherwise allowed for the sharing of new technologies, methods, materials, and

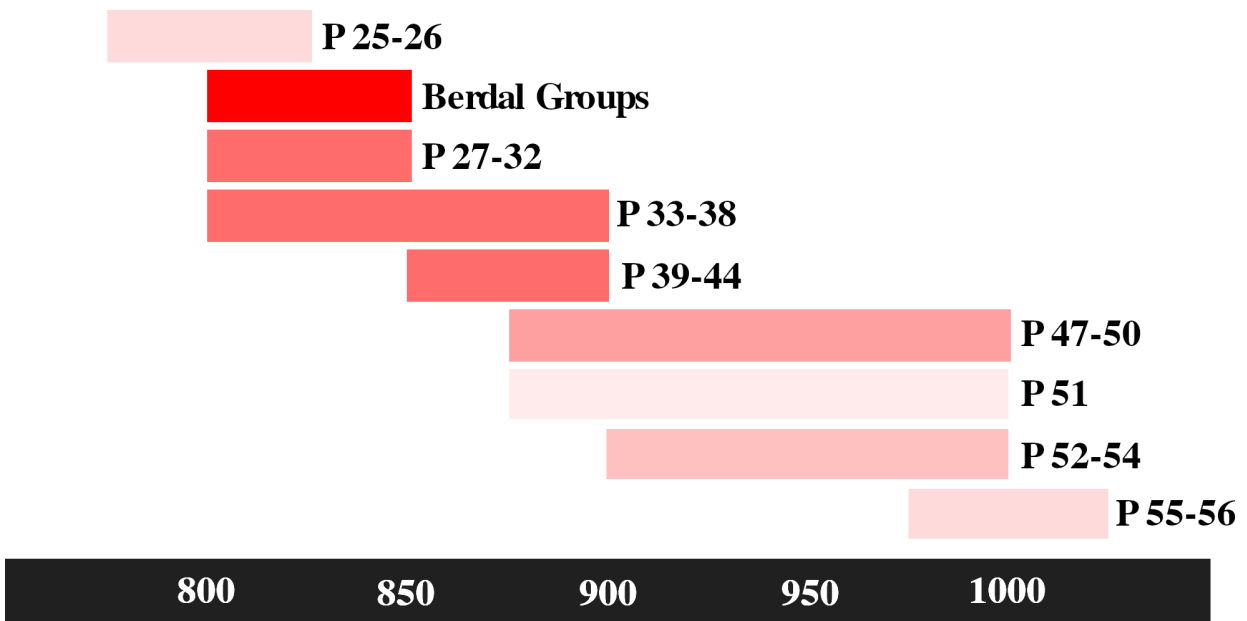


Figure 1.2. Seriation of oval brooch type groups of the Viking period, based on Petersen 1928. Color intensity indicates degree of stylistic variation (darker colors exhibit more described sub-types in Petersen's typology). Note the shift from highly variable types in the 9th century to less variable types in the 10th century.

motifs. This presents in a typology of oval brooches as an abundance of distinct “versions” of a style— that is, brooches with the same overall composition exhibit highly variable iconography and style when compared to later brooches (Petersen 1928; Sindbæk 2009) (Figure 1.2). Numerous studies have roughly identified distinct stylistic regions in Scandinavia throughout the Vendel and early Viking periods (Ørsnes 1966; Høilund Nielsen 1991; Callmer 2008). For context, recall that this period was characterized politically by administratively independent communities, regulated only by local powers.

Despite heavily regionalized production, the archaeological recovery of consumed brooches (either from burials or hoards) points to a fairly unbiased geographic distribution of the types – there are even cases of different styles of brooch being recovered from the same grave (Sindbæk 2009). It seems, then, that in this early period style was a matter of personal taste for the consumer and a matter of severe specialization for the producer. Whether this represents professional pride, peer pressure, or perhaps a sense of “community spirit” will be explored in the analysis as I attempt to link this phenomenon to later “international” styles that by definition did not adhere to such strict regional designs.

Emergence of International Styles

As we move into the mid-9th century, the Berdal types begin to die out and are eventually replaced by an increasing interest in lattice types and variations thereupon. These include types such as the P25/26 (Figure 1.3a) and P27/28 (Figure 1.3b). The first utterly “international” design is the P37 (Figure 1.3c). This is a single-shelled variety which incorporates a loose lattice structure with a heavy interest in the partitioning of space. This type is similar in appearance to type P25/26, including the general format of the lattice—diamond-shaped lattice work crossing through a central boss. From a distance, this often appears as two diamond

shapes corner-to-corner vertically. What distinguished P37 from P25/26 is a lack of emphasis on (or the complete absence of) side bosses and accompanying lattice work. The lack of attachment on the lateral sides of the brooch allows for several variations on the style, all based around the general diamond lattice form. In general, the lattice has more of a curvilinear form than one would find on an P25/26 type. In some examples, the flattened P37 type bosses are topped with prominent false bosses of opulent materials such as glass and amber. Intermediate decoration varies, but some recurring motifs (such as horned animal and bird forms) are notable.

The P51 type (Figure 1.3d) emerges in the final part of the 9th century and presents a similar interest in the partition of space, albeit in a double shell with a more distinct focus on naturalism and the third dimension. P51 type brooches are the most abundant throughout

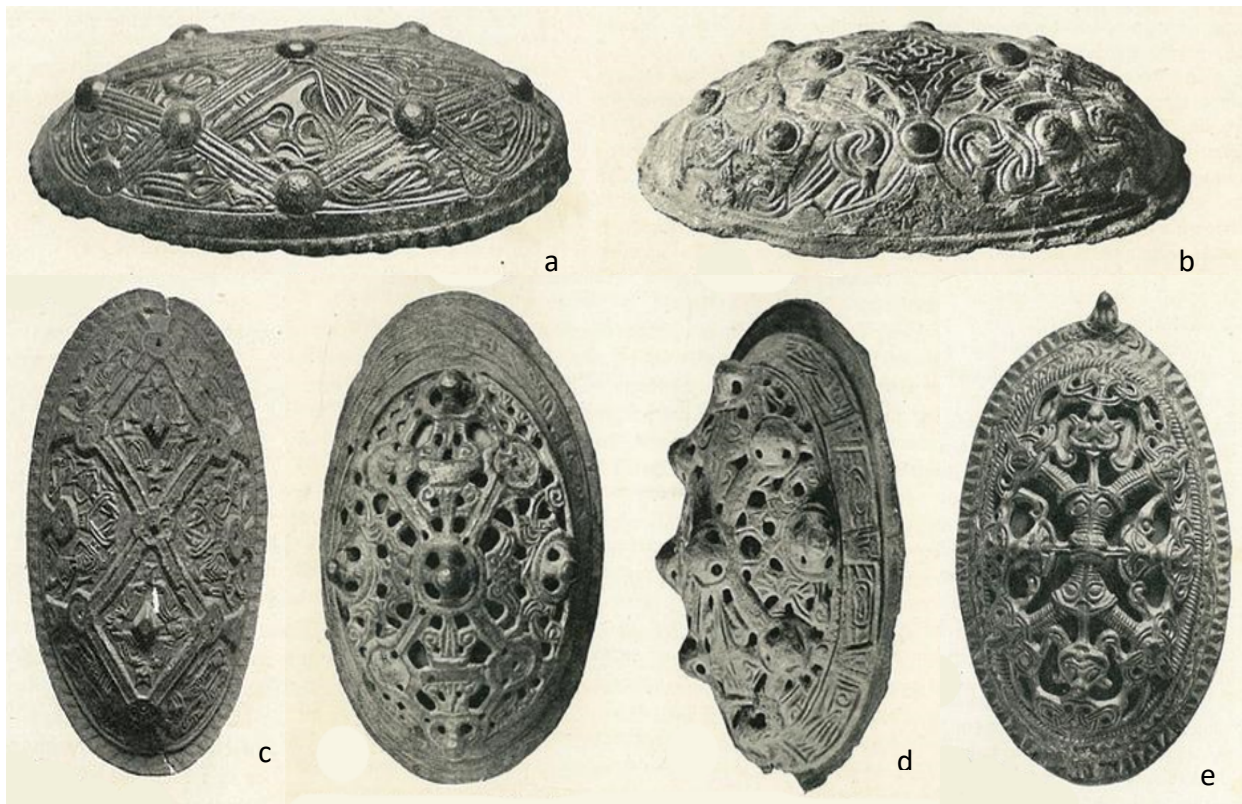


Figure 1.3. Viking Age oval brooch types: (a) P25/26, (b) P27/28, (c) P37, (d) P51, (e) P48/49. (Petersen 1928:23, 27, 31, 61, 55)

Scandinavia. The type is characterized by a diamond lattice over a double shell, with jutting bosses. The five cardinal bosses (the center and non-diagonals) often protrude, while the remaining four are flattened onto the shell. In some cases, this may have been as a setting for the application of false bosses in precious materials (as in the P37) that have been lost or removed over the centuries. The P51 type tends to have a deep profile, a flat skirt, and a tertiary band as in the (possibly contemporary) P48/49 form (Figure 1.3e). This brooch type is discussed further below. I should note that this later period is also characterized by the branching-out into other lattice styles (Wilson and Klindt-Jensen 1966), which is discussed further in the data chapter.

What is crucial here is that the emergence of the international styles almost entirely eclipsed the regional tradition within just a few short decades. If the adherence to regional designs was indeed an expression of personal or community pride, the disappearance of that physical embodiment of such an important concept should be considered a significant cultural shift for metalworkers. This study, therefore, examines the processes of design specification within the context of these later workshop practices—those which I hope to prove represent a conscious clinging to tradition within an increasingly competitive market. Variations may not have been as extreme as they were in the late 8th and early 9th century, but small differences in style on an overall stylistically homogenous brooch type may point to the persistence of early attitudes regarding regional identity and professional pride.

The Oval Brooch

Before I begin to discuss the oval brooches themselves, it is important to note that what people wore in the grave was highly regulated and ritualized, and may not be representative of everyday dress. That said, this increases the likelihood that the symbolic cultures of masculine

and feminine gender, of upper classes and serfs, etc., could be overtly expressed in the ornamentation found in burial contexts (Callmer 2008).

The brooches included in this study are all examples of the P51 type brooch (Petersen 1928). They each display a degree of variation, although there is one consistently varied aspect of the design that is central to this study: the imagery and iconography on the tertiary band that encircles the P51 type brooch. To understand why this variation in design is investigated in the context of Norse social complexity, it is necessary to understand the anatomy of the brooch itself.

The P51 type is characterized by a fusion of the Jellinge and Borre art styles in a diamond-lattice over the top shell. In the middle of the 9th century, the Borre style emerged in Scandinavia, incorporating aspects of the earlier Gripping Beast style. The Gripping Beast style, which dominated the earlier half of the 9th century and slowly declined in prominence until the 10th, is composed of naturalistic forms with clearly-defined limbs that occupy the entire surface of a piece, leaving minimal negative space. The limbs, heavily realized with strong scoring and an emphasis on three-dimensional space, grip everything in reach of the cat-like, eared quadrupeds (Wilson and Klindt-Jensen 1966). In the Borre style of the P51 brooch, masks are incorporated with gripping beasts, though negative space is more common and the beasts are more slender. The Borre style introduced an emphasis on geometric design with a “ribbon plait” (a symmetrical interlaced pattern) with intersections ornamented by circle and lozenge shapes. This Borre concept of the division of space is particularly visible on oval brooches and, once introduced, it remained a characteristic aspect of the brooches despite changing artistic traditions.

The Jellinge style developed later and is most often associated with the AD 983 erection of the funerary monument at Jelling by Danish king Harald Bluetooth. As evidenced by its name, the Jellinge style correlates with the intensification of Danish interest and influence in greater Scandinavia. This style is more difficult to define, as it concerns thematic shifts—the portrayal of pronounced quadruped actions and distinct “knots”—rather than strictly aesthetic ones. The creatures in Jellinge art are easier to identify, and often include exotic motifs in the form of snakes and lions. This style is also associated with the formal introduction of Christianity to much of Scandinavia by Harald Bluetooth (Wilson and Klindt-Jensen 1966), and is therefore often analyzed as the result of continental influence in Norse art.

The brooch sports a deep, rounded profile with a narrow belt of framed designs (our tertiary band) that ends in a skirt perpendicular to the curvature of the shell. This curvature ensures that the band around its base is all but invisible in a frontal view. Even from the side, the brooches require close scrutiny to reveal the motifs framed within the band. The front portion (referred to here as the shell) is more or less directly copied from brooch to brooch. While some variation exists in the prominence of the bosses, the presence or lack of a thin decorative wire within the lattice channels, and the silhouette of the skirt, there is little to visually separate one brooch from another except the overall quality of the cast. It would seem to follow that the tertiary bands from the study sample would display the same variety of imitation.

However, what we see in this area is an entirely different type of copying. Here, the exact style of decoration often varies – from strikingly naturalistic to almost unrecognizably stylized. Each band, however, appears to feature a similar animal motif in an identical location. To contrast this, motifs expressed in the spaces immediately adjacent to these animals differ

remarkably from brooch to brooch. The possible sources of these motif and the likely roots of their variance in the changing social structures of Viking Age Sweden will be explored in this study.

What we understand for certain is that the metalworkers of Viking Age Sweden occupied a highly complex and nuanced niche in their society. With the emergence of large towns and prominent trade routes, the promotion and regulation of specialized crafts – including oval brooches – began to occur on an industrial scale, supplanting more traditional and localized modes of production. This monumental shift almost certainly brought with it significant changes in the social perceptions of these crafts from the perspectives of both the consumer and producer. To contextualize and understand these perspectives, I turn now to the theoretical model that I employ to analyze my data.

Chapter Two

Theory

Introduction

There are two primary levels of theoretical model that I employ in this study. The first, drawing from Jules David Prown's (1982) art-historical perspective of material culture theory and H. Martin Wobst's (1977) information exchange theory, justifies the study of brooches in order to reveal the social dynamics of Viking Age Sweden. The second is an analytical model that addresses the level of agency of producers not only in determining the stylistic qualities of their own products, but also in developing and influencing the symbols that convey social ideologies within their cultures.

This second level incorporates aspects of Thorstein Veblen's (1899) theory of conspicuous consumption, contextualized within a system that focuses on the producer's perspective. This perspective involves the use of V. Gordon Childe's (1942, 1956) Marxist approach to the relationship between elite control of production in a market and the corresponding character of its trade. This approach is subsequently mitigated by an exploration of the importance of producers to the production and reproduction of social and cultural forms based on the work of Carole Crumley (1979). The model considers her discussion of the spectrum of specialization within an economic system, taking into account the factors of supply, demand, and skill availability. For the purposes of this study, I limit this spectrum to two opposing modes of production – specialist and non-specialist – illustrated by the work of Costin and Hagstrum (1995) and Brian Hayden (1998). Below, I review the theories and

outline the model I use to analyze the oval brooches in their socio-political context, structured around a series of central questions that guide the analysis of the sample.

The first question demands that we recognize that the material products of a culture are sufficient evidence for determining past human activity, and that the visual symbolism embedded in these materials is significant and can act as evidence for the abstract social dimensions of a society. “Material culture” is defined in many ways in the social sciences, and each discipline tends to esteem it variably as an area of study. In archaeology, of course, material culture comprises the bulk of the subject matter. Historically, archaeologists have referenced folklorist Henry Glassie’s (1969) definition—material culture as “the conventional name for the tangible yield of human conduct,” or something that “records human intrusion into the environment.” The present study requires a more robust approach. To expand on Glassie’s work, I utilize the slightly different perspective of art historian Jules David Prown.

Prown’s (1982) discussion of material culture as an object of study elaborates upon Binford’s approach to material culture (Binford 1962). This approach begins with an assertion that artifacts—the physical creations of human beings—can be used as evidence, rather than simply illustrations, of the inner workings of the societies that make them. In other words, through the examination and evaluation of the physical characteristics of artifacts, social beliefs (ideas, values, attitudes, and assumptions) can be understood. Although this may seem like a simple restatement of Glassie’s and Binford’s theories, it is Prown’s explicit argument that the makers of artifacts will transmit—directly or indirectly, consciously or unconsciously—the beliefs of their society into the form and function of artifacts that makes this particular theoretical framework valuable to my study.

The types of materials that can be analyzed through the material culture process, as defined in this model, include art (expression for expression's sake, with little to no utilitarian value), diversions (such as books, games, and performances), adornment (jewelry, tattooing, etc.), modifications of the landscape (buildings, agriculture, mining), applied arts (furnishings), and devices (implements and technology). The breadth of the categories allows for considerable overlap, but this rarely causes issues when it comes to analyzing artifacts. Prown's observations of these categories lead, essentially, to the conclusion that it is the visual dimension of artifacts—the way the maker fashions the object to look—that offers the clearest path to a greater understanding of culture.

The second question, which elaborates on the concerns raised in the first, is whether object symbolism (the primary focus of the data) is significant – whether actual ancient social information can in any way be derived from such a study. To address this, my theoretical model incorporates the concept that prestige goods necessarily materialize ideology (DeMarrais et al. 1996), and therefore they materialize power and social hierarchy (Cohen 1979). In addition, it incorporates the responses of Ian Hodder and contributors (Hodder 1989) to the central assumption in archaeological research that the visual appearance (the “style”) of an object or work of art is expressive of significant social information.

DeMarrais et. al. (1996) approach ideology as a source of social power within a cultural system. In essence, their paper outlines cases in which the control of ideology is employed to identify, centralize, and consolidate both social and political power. Approaching the theory as archaeologists, DeMarrais et. al. seek to provide concrete sources of this strategic control in ancient societies. They determine that these sources are, broadly, ceremonies, monuments, symbolic objects, and writing systems, and as is relevant to this study, that these include

prestige goods. This viewpoint is corroborated by Cohen (1979), who emphasizes that prestige goods—those goods that are difficult to obtain, as they either demand a steep price or require significant amounts of labor to produce (or, in most cases, both)—are inherently symbols of political power (in addition to being symbols of economic power). In many cases, he argues, it is the aesthetic dimension of prestige goods (including the visual appeal of valuable materials such as gold) that communicates this power.

The effects of the aesthetic dimension are explored in a more concrete manner in Wobst's (1977) information exchange theory, as this aspect is credited with the ability to convey both conscious and unconscious information through artifact production. However, it is just one method of signal exchange, and in this model all other dimensions of a physical artifact can be used to convey those signals as well. In essence, Wobst's theory incorporates an algorithmic conception of energy and matter exchange into a more abstract discussion of the ways that humans use the information contained in artifacts to aid in their survival and prosperity.

The theory is founded on two basic assumptions. The first is that artifacts (human-made objects with an intended use) positively contribute to the survival of the humans that utilize them as efficiently as possible within a system of energy and matter exchange. The second is that the production and use of artifacts involves the potential for the exchange of information. The conclusion that can be drawn from this is that the human tendency to imbue the objects that they create with information for the express purpose of exchanging it with others is altogether unsurprising. This is especially applicable within the study of Viking art, as the principle of efficiency is clearly expressed in the Vikings' tendency to only produce art as decoration on useful objects (Wilson and Klindt-Jensen 1966).

Wobst argues that these exchanges of information through artifacts are helped enormously by the human ability to create and understand symbols. Symboling, when applied to interactions between humans, is an undeniable adaptive advantage, because symbols are a remarkably efficient vocabulary by which to communicate complex social ideas. In turn, concepts of identity and the symbolic self contribute to social complexity, networks of exchange, and communication.

Perhaps implicit in the concept of the symbolic self is the concept of superiority. Here begins the separation of humans through symbolic means into categories—the elite and the non-elite. The exchange of information can now be monopolized by individuals or groups who find a way to claim a particular resource and exploit it for the production of more artifacts. This information will generally serve to elevate and solidify elite status. This concept is explored further through Veblen's conspicuous consumption theory, described below within the question of specialist versus non-specialist production and the corresponding bases of consumers implicit in each mode.

The third central question of this model rests on whether producers in Viking Age Sweden had the agency to change their own symbolic output, and what effect this had on the symbolic traditions of their culture as a whole. To begin to address this question, my theoretical model employs the work of scholars focused on the dichotomies of elites versus non-elites, attached versus independent specialists, and specialist versus non-specialist production modes.

V. Gordon Childe (1956) argues that the market for craft goods in Bronze Age Sumer was limited by the concentration of power and wealth in the hands of a small number of elites. This led to the gradual estrangement of artisans from their products, thwarting economic expansion and the development of trade networks. He presents an analogy to contrast this

system, pointing to Europe's itinerant smiths, who functioned largely free of elite intervention, and who, Childe argues, had a direct impact on the evolution of the sociopolitical structures of their cultures.

Although Childe's work set the stage for the majority of 20th century research into craft specialization and its applicability to social stratification, this model is currently viewed as somewhat simplistic, with limited applicability beyond the strictly dichotomous examples given (Tringham 1996). This study recognizes the nuance that must be navigated in order to directly apply Childe's theory to the broad spectrum of specialized production models observable in Viking Age Sweden, so in general this application is avoided.

However, his pioneering investigations in the domain of craft specialization and social evolution offer two important functional aspects of theory that greatly impact the rest of the model (a great deal of which is derived from the work of those responding to Childe's work throughout the latter half of the 20th century) (Schortman and Urban 2004). The first is that there is a relationship between the amount of elite control over production and the nature of trade in an economy. This will help to explain the importance of specialized production under elite patronage (discussed below) in the determination of the specific visual cues that determined power. The second is that there is a distinction between an "independent mobile specialist" (referred to in most modern literature as an independent specialist) and a "patron-client" (attached specialist) mode of production. This concept is central to my theoretical model, as it addresses a dimension of the production type dichotomy observed in Viking Age Sweden.

It is important to note that these dichotomies – that of the attached versus independent specialist and that of specialist versus non-specialist, as my model presents – are not the same.

While the discussion of whether bronze brooch producers were largely attached specialists or itinerant craftsmen merits some discussion within this paper (see literature review of Sindbaek 2007; 2009), my theoretical model is primarily concerned with whether these craftsmen were highly specialized (producing only oval brooches or only non-ferrous jewelry items) or non-specialized (meaning they were able to produce a broad range of objects depending on their marketability in certain contexts). This consideration allows me to discuss the relationship between these different types of producers and their corresponding consumer bases (elites or non-elites).

First, however, because hierarchy (i.e. elite patronage) is so heavily emphasized in the study of craft production, to the detriment of other formal investigations, it is necessary to here introduce the concept of heterarchical organization in craft production. Heterarchical organization refers to a system of distinct units that are either unranked or are capable of being ranked in numerous ways depending on the circumstances of their comparison (Crumley 1979). What this largely entails in the context of the social dimensions of craft production is the study of “commoner” participation in production activities. This is a system in which, to varying degrees, the relationship between producer and consumer is an egalitarian one.

The participation of non-elites in production shifts the investigative paradigm, placing significantly greater emphasis on heterarchical relations, rather than those that echo institutional disparities. The majority of the literature on this subject diverts attention to how the identity of an artisan is expressed through technological and stylistic choices made in their craft (Schortman and Urban 2004). Essentially, stylistic choices fall to the artisan when the mode of production is non-specialist and independent. This distinction and the significance of this categorization is outlined through the theoretical approaches of Costin and Hagstrum

(1995) to ceramic production in late prehistoric highland Peru, and of Hayden's (1998) deconstruction of the aggrandizer model of prestige technology.

There is a fundamental dichotomy in any economic system between producers and consumers. Both participants are addressed in this theoretical model. However, there is also a linked dichotomy that involves elite versus non-elite patronage—each form of patronage encourages a distinct production model that has the potential to present uniquely in the archaeological record (refer to the literature review for information on urban versus rural specialization strategies). *My theoretical model emphasizes that creators and consumers alike participate in the transmission of information, and though it is typical to assume that in a stratified society the dominant and fundamental source of the paradigm of social meaning begins and ends with the elites, there is a significant locus of change and evolution of these meanings that occurs within the ranks of producers and non-elite consumers as well.*

Costin and Hagstrum's model outlines a series of economic and social factors that result in a production model that is best described as highly specialized and attached. Broadly, these factors include a higher demand for a particular product, a diminished source of raw materials, and a lower availability of individuals with the necessary skills (whether this was a phenomenon independent of the economic model or a result thereof is unclear). These factors produce a highly specialized mode of production – a situation in which producers become highly skilled in a limited number of objects, thus contributing to the desirability of the products, as they meet requirements for being considered prestige goods. This mode tends to encourage elite patronage, the purpose of which is to obtain symbolic material proof of one's economic, social, and political power. Attached specialization can be considered a form of this

production model, wherein elite patrons take full control of process, product, and distribution, transcending the role of simple consumers.

Hayden's model is in many ways an opposite to Costin and Hagstrum's – it relies on a moderately high, constant, and widespread demand for the product, a greater availability of raw materials, and a lowered skill threshold for producers to meet. This results in a non-specialized mode of manufacture, in which producers became moderately skilled in numerous types of products, ensuring that the production and distribution of their goods functioned largely or entirely outside of elite intervention. This is the mode of production which tends to encourage a heterarchical rather than hierarchical consumer-producer relationship (Schortman and Urban 2004). Possibly as a result of the detachment from hierarchical systems of symbolic power, non-specialist production tends to heavily emulate existing objects (discussed below). Hayden argues that consumers favor emulated designs because they symbolically seek to participate in the dominant ideology of their society, despite their inability to participate in highly-specialized modes of production. It is important to emphasize here that Sweden has produced evidence for both of these modes of production occurring simultaneously during the Viking Age (Sindbaek 2007, 2009).

In essence, the specialized model lends itself to explaining those examples of the brooch trade which were sumptuous, unique pieces. These had a disproportionate effect on considerations of which visual cues conveyed power – these transmit more information to consumers, while mass-produced “common” brooches echoed these ideals (Hayden 1998).

The fourth question, therefore, involves the theory of conspicuous consumption (Veblen 1899). Specifically, the model posits that consumers respond to an increasingly complex society by participating in, or catalyzing, conspicuous consumption, and that the

concurrent processes involved therein—emulation and amplification—are inexorably linked to the interplay of specialized and non-specialized producer strategies. This can be observed in the determinative qualities of hierarchically-commissioned specialist production, and in the emulative qualities of heterarchically-driven non-specialist production.

Veblen's theory centers on the tendency for societies to structure themselves into two classes: the leisure class and the working class. This divide is developed through the strategic exploitation and privatization of resources to support the development of the leisure class—that is, a class that does not necessarily need to work to secure those resources, instead relying on the labor of a working class to secure the resources for them. When societies develop a surplus, private property becomes increasingly indicative of one's status. Veblen notes the placement of particular value on inherited wealth as opposed to wealth gained through strategy and efficiency. In his conception of this process, the greater the distance between an individual with wealth and the labor expended to acquire that wealth, the more elevated their position in society.

A crucial element of the theory is that status derives entirely from the judgments of the society. To secure a favorable judgment from their society, an individual must make their position clear through displays of their wealth. There are two main ways this can be accomplished: through participation in leisure activities (those activities that do not contribute to one's survival), and through the extensive consumption of luxury goods and services. Theoretically, both of these methods will convey status with equal efficiency. However, Veblen (1899) notes a change in societies as they become larger and more decentralized. When it is no longer easy to demonstrate one's ability to engage in leisure activities due to an expanding, less close-knit social network, it becomes increasingly important to participate in

the lavish consumption of goods. Therefore, in societies on the path to economic and political complexity, the consumption of goods becomes increasingly important. Veblen labels this behavior “conspicuous consumption”.

The process that powers the competitive aspect of conspicuous consumption is emulation. Veblen remarks that “the members of each stratum accept as their ideal of decency the scheme of life in vogue in the next higher stratum, and bend their energies to live up to that idea” (Veblen 1899:84). This pressure to engage in emulation of higher strata, especially on a material level, is observable even in the lowest levels of society. The result of emulation is an endless drive to outpace the mimicry of lower strata by consuming more numerous and more lavish objects.

This is certainly not to minimize the overall agency that producers in Viking Age Sweden had in determining the visual dimension of their products. While there was certainly a significant degree of elite control over the symbols that came to function as indicators of power, especially in the specialized production mode, and a significant demand for emulation of these symbols in the non-specialized production mode, these were not the sole sources of variation in style.

Theoretical Model

To simplify and synthesize this, I provide here a theoretical model (Figure 2.1) by which my dataset is analyzed. I incorporate the above theories regarding both consumer and producer influences, dichotomous modes of production, and general approaches to material culture and symboling in order to establish a thorough picture of the events and phenomena that drive variation in heavily reproduced applied art.

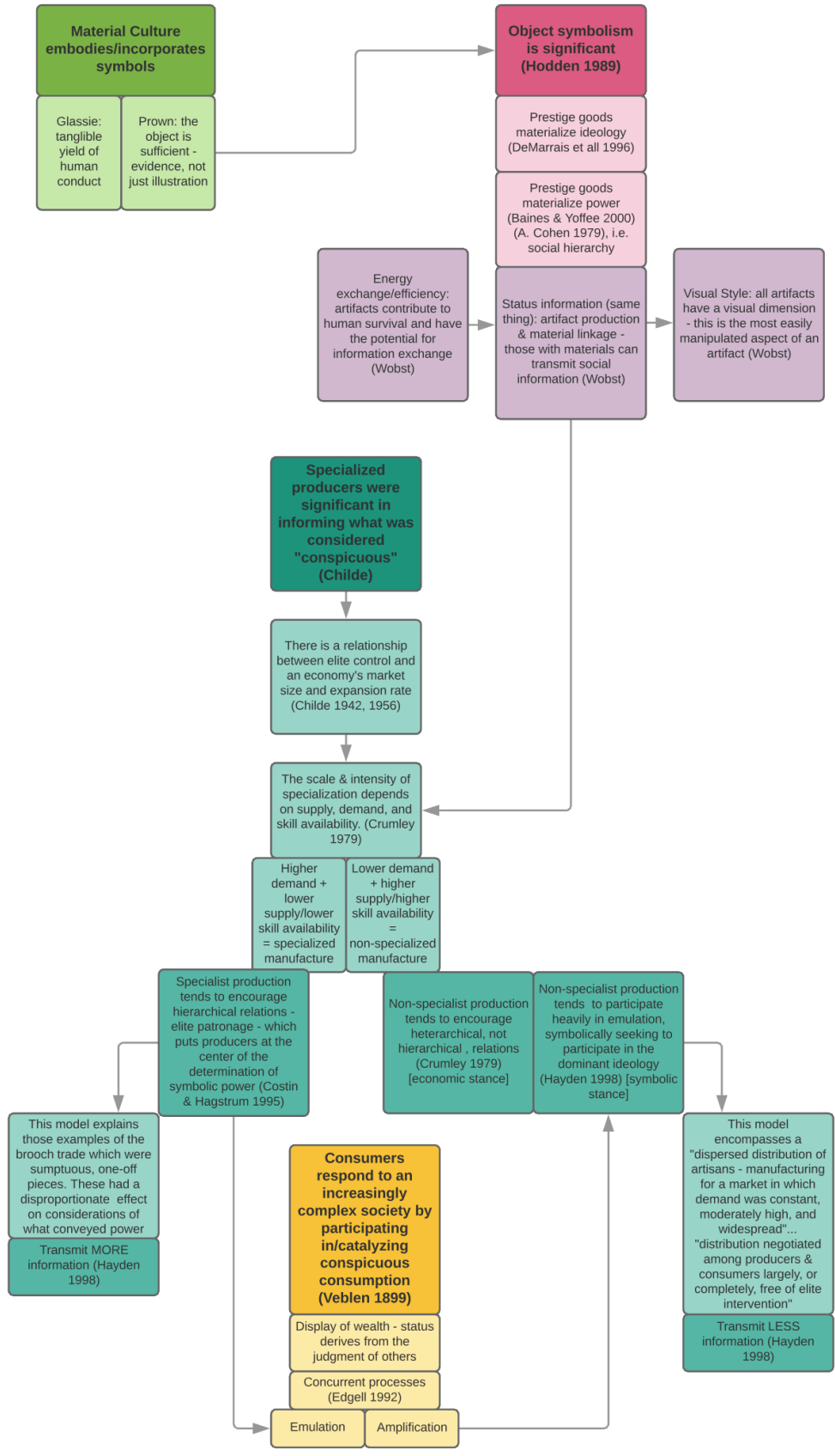


Figure 2.1. Theoretical model.

The model is centered on four questions. The first asks whether we can say that the material products of a culture provide sufficient evidence for the reconstruction of past human activity. The second elaborates on this, questioning whether the visual dimensions of an object—its symbolism—can convey the kind of social information that this study investigates. The third question asks whether producers (specifically, producers situated in a socioeconomic system like that of Viking Age Sweden) had the agency required to determine their own symbolic output. The fourth question asks to what extent consumer dynamics influenced this specific result of producer agency.

To address the first question, I apply Glassie's definition of material culture as the tangible yield of human conduct, and Prown's assertion that artisans both intentionally and unintentionally transmit information through their products. In essence, these theories establish that the object is sufficient evidence of ancient human activity and positionality. This justifies the continuation of my study.

To address the second question, I draw on a number of theoretical approaches. The overarching argument here is that object symbolism is significant. DeMarrais et al. assert that prestige goods function to materialize ideology, and Cohen asserts that this ideology includes concepts of power and social hierarchy. Wobst's theory of information exchange contextualizes these contentions—the reason that goods materialize ideologies is that their visual dimensions, specifically, offer the most efficient way to convey complex social information. Wobst also stresses that the ability to convey this information relies entirely on one's relationship with both raw materials and artifact production.

This brings us to the third question: whether this group of influencers could include producers. Childe asserts that there is a relationship between elite control and an economy's

market size and expansion rate, and Brumfiel stresses that individuals and factions are important to the production and reproduction of social and cultural forms. To contend with what exactly this means, a discussion of specialized vs. non-specialized manufacture is required. In essence, the scale and intensity of specialization depends on supply, demand, and skill availability (this corresponds directly to Wobst's understanding of who influences information exchange). Therefore, a higher demand in conjunction with lower supply and scarce skill availability results in specialized manufacture. Specialized production tends to encourage hierarchical relations—that is, elite patronage—which positions producers centrally in the determination of symbolic power while simultaneously removing some of their agency in determining which symbols convey social information. This model is illustrated by sumptuous, unique pieces possessed by the elite, which had an overbalanced effect of conceptions of symbolic power.

On the other hand, a lower demand, combined with higher supply and broader skill availability results in non-specialized manufacture. This mode of production tends to encourage heterarchical relations—a system in which, in essence, the relationship between producer and consumer is an egalitarian one. The exchange of objects—and therefore of social information, per. Wobst—is negotiated between these parties, crucially resulting in a transactional structure with an enormous capacity for the distribution of producer-driven symbols. This mode of production participates heavily in emulation, symbolically seeking to participate in the dominant ideology established by specialist production.

This brings us directly to our fourth question—what effect consumer dynamics had on this process. In essence, this question can be answered by a description of conspicuous consumption: consumers (those participating in non-specialist production practices) respond

to an increasingly complex society by participating in the emulation of well-known symbols that convey wealth and status. In order to distance themselves further from now-common symbols of power, the leisure class (the elite) begins a program of amplification that exaggerates these symbols, which will be subsequently emulated again. Therefore, specialist production is inexorably linked to non-specialist production, and vice-versa.

The third question is the most central to the investigation presented in this paper and is addressed thoroughly in the analysis chapter. The symbolic output of the producers of oval brooches is considered in the context of their socioeconomic environment in order to understand the possible motivations behind a specific series of motifs. In other words, now that I have established the agency of producers to advance and modify their own symbolic output, I investigate the motives they might have had to do so. I describe here the methodology utilized in the investigative process.

Chapter Three

Methods

Data

Acquiring Data

The data was gathered during a two-week visit to the Statens Historiska Museet – the Swedish History Museum in Stockholm, Sweden. This research trip was made possible by Copeland Funding, the independent study funding program of the College of Wooster. The Swedish History Museum often hosts student researchers, so special permits to view the collections were not necessary. I was able to speak to Gunnar Andersson, the research director of the museum, who arranged for my arrival and study space.

Because of the limited time that I was able to spend at the museum, I selected an initial sample of 23 brooches from the online collections catalogue of the museum (mis.historiska.se/mis/sok/sok.asp), which included information on the find location, Petersen type, inventory numbers, and occasional photographs. On arrival I was able to collaborate with senior curator Thomas Eriksson to select an additional 10 brooches to study, bringing the total to 33.

Sampling

The initial selection was made with two primary factors in mind – type and location. All of the selected brooches were of the P51 (Petersen 1928) type in order to limit the variation described in the analysis to that which occurs within a single type over a relatively short period of time. A broad range of geographic locations was sampled intentionally, in order to limit geographic bias – location frequency table is provided (Table 3.1) listing the historic counties

in which the brooches were found. Because a fair amount of my analysis will rely on concepts of consumption and trade, the brooches needed to represent a variety of locales, not just those close to major trading or production centers.

Table 3.1. Geographic Distribution in Sweden of Brooch Sample.

| County | Frequency |
|---------------|-----------|
| Småland | 4 |
| Blekinge | 6 |
| Södermanland | 2 |
| Uppland | 4 |
| Öster-götland | 6 |
| Gästrikland | 3 |
| Birka | 3 |
| Jämtland | 3 |
| Medelpad | 1 |
| Öland | 1 |
| Total | 33 |

Selecting only brooches of type P51 raises the issue of designed vs discovered types – that is, whether the typology used to separate styles of the artifact was recognized by their producers. Because the systematic reproduction of bronze oval brooches requires an understanding of design and form – especially in the distinction between single- and double-shelled designs (i.e. P37 vs. P51) – and because oval brooches experienced several distinct stylistic horizons within an extremely short period of time, this study assumes that the Petersen types are discovered types. Crucially, this allows us to assume that any variations or deviations in this reproduction process have the potential to represent producer intent. This study remains cautious on this front, however, as it is controversial as to whether modern criticism can truly reveal the intent of ancient creators.

A brief and incomplete typology (describing the two most prominent forms of oval brooch as well as mentioning relevant contemporary designs) is included in the introduction. The transition from one heavily produced type to the other is significant in this study, as it

represents a rapid change that took place in this middle of a period characterized by the growth of towns and trade routes and a shift in modes of production. This is not to say that other styles were not being produced simultaneously nor that these two types represent the entirety of the lifespan of oval brooch production—only that they were the two most widely reproduced styles, and that the P51 type, significantly, followed directly on the heels of the P37 type.

Data Collected

The data that I collected for each brooch was comprised of an object identity number and an inventory number, each of which referred to a unique directory within the museum and in its national network; measurements of length, width, and height; notes about the condition and appearance of the metalwork, including comparisons with other objects in the sample; and a series of photographs. Other information included in the sample – largely the location and provenience – were provided by the museum, through the online catalogue. As a number of the brooches were excavated before modern archaeological methods became widely used, the context has been largely lost. However, for those whose provenience was well-recorded, the information was included in the artifact notes.

Each set of photographs was as comprehensive as possible, as returning to reshoot would not be viable, and as I planned to do most of the formal analysis work off-site. Whenever possible, whole brooches were photographed from at least 18 points – from the top down and the back of the brooch, as well as direct profiles at roughly 45-degree intervals and three-quarter profiles also at roughly 45-degree angles. In cases where the designs in the metalwork were not particularly visible in the digital capture, multiple photographs with raking light at different angles were included. This system ensured that each brooch could be analyzed remotely with little difficulty in determining motif and style information. A select number of

these photographs were provided to the museum to aid in building the online catalogues, which were incomplete when the initial brooch selection was made.

Analysis

The analysis of the brooches is largely visual and comparative—figures showing panel iconography are examined in relation to other panels in similar locations, leading to the creation of certain iconographic schema, and subsequent groupings described in the analysis chapter. A geographic plot of the data based on these groupings is constructed using ESRI GIS mapping software (version 10.3.1). Geographic coordinates were obtained through the museum's online catalogue—while some objects had geographic find locations listed, others were described only with the village and county name. These were somewhat inexactly converted to decimal degrees for use in ArcGIS. The data was displayed in GCS_WGS_1984, and the SWEREF99 TM Transverse Mercator projection from Lantmateriverket (The National Land Survey of Sweden) was used. Geographic distribution was measured using the median center and standard distance tools. For clarity, the final map showing brooch locations was edited with the disperse markers tool so that brooches with similar find locations are distinct from one another (this was not executed until after the in-program analysis was performed so as to preserve statistical accuracy).

The literature reviewed was acquired through services and catalogues provided by the College of Wooster. This includes the online databases of JSTOR, EBSCOhost, and OhioLINK Electronic Journal Center, as well as physical resources from campus libraries and from the OhioLINK interlibrary loan system. The majority of sources are relevant chapters within compiled texts and journal articles. The visual and comparative analysis is examined through

the theoretical lens detailed in chapter two and compared with information on the emergence of social complexity in Norse society. The sub-types of the P51 brooch determined by this visual analysis are described, contextualized both artistically and socially, and interpreted as functions of the social complexes surrounding non-ferrous metalworkers in Viking Age Sweden. The following chapter details the data gathered at the Swedish History Museum.

Chapter Four

Data

Introduction

The brooches described below comprise the data used in this visual analysis. To aid in comparative study, each panel of the brooch (abbreviations for which are provided in Figure 4.1) is described in detail, and occasionally comparisons are drawn within these descriptions for clarity. Museum inventory numbers have been replaced by a simplified numbering system—Table 4.1 (p. 45) provides a comparison of the museum inventory numbers and the simplified numbers. In the interest of brevity, the overall pattern of the P51 type (observed in all brooches in the sample) is described here once, and variations found in the brooches are elaborated upon individually.

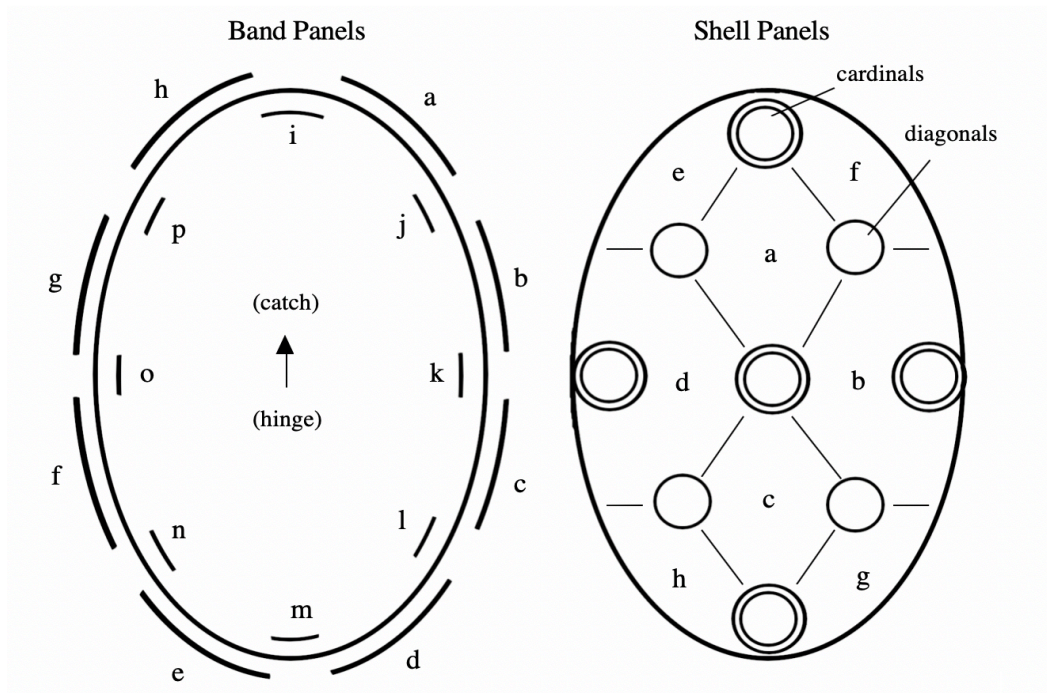


Figure 4.1. Panel abbreviations for formal analysis.

The type is characterized by a diamond lattice over a double shell, with jutting bosses. For clarity, the upper shell is referred to here simply as the shell, and the lower shell is discussed in terms of its band (described below). The five cardinal bosses (the center and non-diagonals) often protrude in either a single dome or a double-tiered dome, while the remaining four are flattened onto the shell. In some cases, this may have been as a setting for the application of false bosses made of precious materials that have been lost or removed over the centuries. However, remaining “button holes” indicate these may have been left flat as an artistic choice. Each boss features four evenly-spaced holes in its lower portion (close to the surface of the brooch) which, in conjunction with fairly common punctures in the edges of the diamond lattice, may have in some cases acted as anchor points for a decorative net of wire or



Figure 4.2. Top view of a brooch showing diamond panels.

thread, the remains of which exist on some brooches in the sample (i.e. brooch 7A). The spaces in between the lattice and boss structure (referred to here as panels) are characteristically filled with openwork designs of the Borre or Jellinge style.

The central diamond-shaped panels (Figure 4.2), located above and below the central boss, feature a distinct bull- or ox-like animal mask, with relatively naturalistic horns and eyes, as well as occasional cheeks and a curled or knotted moustache-like feature. This “moustache” may reference a

bridle or other harness if the mask is indeed meant to indicate an ox. This moustache is at times joined by either a knot or a scroll motif. The masks face the center of the brooch, horns extending away from the central boss. Above these horns sits a small scroll or knot, which serves to fill the space between the animal mask and the vertical cardinal bosses. The space below the ox's "moustache" (directly next to the central boss) is filled with a v-shaped feature, which in some cases is articulated as an extension of the cheeks of the mask (in other words, a nose).

The lambda-shaped side panels (Figure 4.3) do not contain such distinctly naturalistic forms, instead featuring a knotted design. Although the identification of animal forms within Viking knot-style ornamentation requires a fair degree of expertise, the presence of spirals at the outermost edges of the panel likely indicates a hip or shoulder joint, as in numerous styles of Viking art. This spiral is connected directly to a nearby three-toed gripping paw. Therefore, we can tentatively identify a set of symmetrical, intertwined, abstract "gripping beast" figures within the side panel.

The remaining area on the shell is the diagonal panel (Figure 4.4), a small trapezoidal or pentagonal area that occupies the outer space between the vertical cardinal bosses and the diagonal bosses. This somewhat negligible area is filled with what might



Figure 4.3. View of shell side panel.



Figure 4.4. View of shell diagonal panel

the relative homogeneity of the design across the sample merits some scrutiny.

The tertiary band of the brooch extends below this upper shell. It is actually a feature of the lower shell, which was in most cases attached to the upper by means of pins placed through the diagonal bosses or the space just to the outside of them. The band features a sequence of square and rectangular panels. The small square panels typically feature simple engraved patterns, if they contain any design at all (Figure 4.5). The rectangular panels are highly variable. Side rectangular panels are typically relatively symmetrical or mirrored abstract designs (Figure 4.6). Each rectangular end panel depicts some variation of a wide-headed, large-bodied animal motif (Figures 4.7, 4.8). As can be seen in Figures 4.7 and 4.8, the exact articulation of the band animal can vary even in a single brooch. More profound variation can be seen between individual brooches.



Figure 4.5. Distal square panels from the same brooch showing engraved patterning.



Figure 4.6. View of band side panels.

Below the band, a flattened skirt (Figure 4.8) extends a few millimeters around the circumference of the brooch. This skirt can be unembellished or decorated with stamped granulation, scalloped edges, etc. On this skirt or on the band above, brooches occasionally exhibit structures associated with the suspension of

of cords, chains, or strings of beads and tools between the two brooches. The brooches were worn vertically; of the brooches on which could be found either structural components or perforations associated with the suspension of objects (8 of the 28 brooches or brooch pairs in the sample), all eight exhibited these components on the end of the brooch where the pin's hinge was located, suggesting the brooches were worn with the pin catch up.



Figure 4.7. View of band animals on different brooches, showing variation in style.



Figure 4.8. Top view of brooch skirt with embellishment.

Dataset Descriptions

To simplify the descriptive process, I convert the Object Identity Numbers, Asset Tracking Numbers, and Subheadings listed for each object into a new “Study ID”—that is, a single number used to identify the brooches in the context of the study (Table 4.1).

Table 4.1. Simplified Numbering System

| Object Identity Number (Föremålsidentitet) | Asset Tracking Number (Inventarienummer) | Subheading (Undernummer) | Study ID |
|---|---|-----------------------------|------------------|
| 36892 | 31573 | A4 | 1 |
| 106571 | 2509 | | 2 |
| 364340 | 22868 | 7 | 3 |
| 364348 | 22868 | 7.grav2 | 4 (a, b) |
| 445397 | 2544 | | 5 |
| 446455 | 18780 | 1.F1 | 6 |
| 449595 | 34000 | Bj.644 | 7 |
| 454799 | 1452 | 234 | 8 |
| 454802 | 7869 | | 9 |
| 454846 | 1452 | 40 | 10 |
| 454862 | 9410 | 64a | 11 |
| 454875 | 1453 | 356 | 12 |
| 454876 | 1453 | 410 | 13 |
| 456793 | 7762 | | 14 (a, b) |
| 462934 | 34000 | Bj.564 | 15 (a, b) |
| 555757 | 34000 | Bj.505 | 16 |
| 867192 | 13804 | 2 | 17 |
| 884047 | 7090 | | 18 |
| 1076159 | 12428 | 5 | 19 |
| 1089226 | 4573 | 1 | 20 |
| 1089227 | 4573 | 2 | 21 |
| 1090671 | 10289 | X | 22 (a, b) |
| 1166991 | 20430 | | 23 |
| 1315164 | 2390 | | 24 |
| 1339506 | 16194 | | 25 (a, b) |
| 1339507 | 11817 | | 26 |
| 1339508 | 19278 | | 27 (a, b) |
| 1370450 | 2509 | | 28 (a, b) |

1. The brooch is missing a significant portion of the shell. Pieces remain around the lower edges of the upper shell, where it was most likely fastened with pins to the lower. The lower shell is missing a portion of the band and skirt as well, and the band is cracked along

approximately one quarter of its circumference. A significant portion of the pin, hinge, and catch remain. Pins used to connect the upper shell to the lower shell are still visible on the underside.

A unique characteristic is the remnant of a probable ring on the lower end of the brooch, most likely associated with the suspension of cords, etc. Due to the state of the upper shell, designs on the shell panels cannot be described, except that the remains of panel d show a well-articulated spiral hip. The animal on panel a exhibits a pronounced forehead and a porpoise- or eagle-like hooked beak. The hook is less pronounced than in other examples and projects the same distance as the forehead, distinguished only by a notch near the eye. The head extends backward in a three-stranded arc, interrupted by a set of bands representing the body which extends back in a notched arc from a point on the lower jaw. The back is minimally arched, and the rear of the body is unclear. There is a possible hind leg, but no spiral joint that would definitively indicate its presence.

Panels b and c are probably knot motifs, but the articulation is not exact and appears to have been made with a more general knot shape in mind rather than the intricacies of the knot itself. Half of panel d is missing, but the remaining end (rear of the animal) appears to show a spiral hip. The style of this animal is somewhat more geometric than the one in panel a, with a heavy focus on vertical and horizontal lines. The remains of panel e show a head similar to that in panel a, with a slightly more rounded beak. The remaining rectangular panels are either mostly or entirely missing, and the designs on the square panels are no longer visible.

2, Brooch A. Corrosion makes the identification of shell decoration difficult, but designs appear to be standard. The horns of the ox motif on panels a and c on both brooches appears to be significantly arched, as opposed to flat, and the motif located above the horns is

scroll-like. Horns are differentiated by a slight depression at the center, lending to the naturalism of the depiction. Panels b and d appear to depict the standard animal motif – a spiral hip is located near the band, with possible heads located near the peak of the shell. Filling the space entirely does not appear to be a primary focus in these panels – they exhibit slightly more open space than in other examples. Bosses on the second brooch are double-tiered and less rounded than the first, and diagonal bosses are constructed as part of the shell itself. This (along with further ornamentation described below) may indicate that the second brooch is of a higher grade than the first, or that it comes from a different workshop or tradition. Whether the two differing brooches were worn as a set is unclear.

The animal in panel a is possibly hook-beaked. The style in which the band animal is depicted is abstract, and the mouth is differentiated from the forehead and eye by a deep cleft, indicating it is meant to portray a feature that is separate and elongated. The body fills almost the entire panel and is composed of a series of largely horizontal slashes. A possible hind leg extends forward, but the hip is described with a contained circle rather than the expected spiral. The rear of the animal is composed of two vertical slashes. The animal in panel h of the first brooch may indicate, however, that that in panel a does *not* have a hooked beak. The two lines used to indicate the anatomy below the eye of the animal are, in this panel, connected to indicate a single, open lower jaw (a space in front of the animal that is connected to the triangle of the open mouth supports this interpretation). Thus, the animal in panel a may be reinterpreted, as these lines are only slightly less connected and may be falsely indicative of the hooked beak feature. The body of the panel h animal is similar to that of the panel a animal, with a circular feature that may be meant as a spiral hip. The panel e animal exhibits the ambiguous mouth features of panels a and h, as well as a more clearly depicted spiral hind

joint. The same ambiguity applies to the jaws of the panel d animal. Panels b and c are abstract knot motifs, similar to those of Brooch 1, but are more loosely conveyed. Panels f and g are likely knot motifs as well but are highly abstract. Panels i through l and n through p exhibit a simple scratched-in pattern consisting of two perpendicular lines crossing inside of a square to create a windowpane-like design. Panel m's design is three vertical lines, but may have originally had the same windowpane etching as the other square panels.

2, Brooch B. Panel a of the second brooch suggests a very different approach to the rendering of the animal motif. The overall shape of the body appears to be the most emphasized aspect of the portrayal—the central details only serving as a knot-like interior for the double-mounded shape. There is no eye depicted in this panel, and the mouth is likely not hooked. A hind leg with spiral joint is fairly clearly articulated, and the two lines indicating the rear of the animal appear to be a possible tail. The panel h animal has a similar body, but the mouth seems to be porpoise-like, not fish-like. The panel d animal has the spiral hip and a similar knot-centric body shape, but the mouth is more porpoise-like. The panel e animal is unique—the jaw is described with a single stroke rather than two, making clear the fish-like face of the animal. There is a spiral hip, but it is differentiated from the front section, making it less likely that this is meant to be a land mammal's hind leg. The lines indicating the rear of the animal are more separated from the rest of the body, possibly indicating a tail.

Panels b, c, f, and g are all knot motifs. Panels j through m are similar to the windowpane design of Brooch A, but the interior lines are turned 45 degrees, creating an x within the square boundary. The remaining square panels are unclear. While the skirt of the first brooch was unembellished, the skirt of the second brooch has a distinct scroll

ornamentation on the outer edge. The scrolls are located approximately opposite panels a, k, d, e, o, and p (six equally spaced pieces).

3. The openwork of the shell is standard. The ox motif has somewhat differentiated horns, with a scroll above them. The eyes are relatively small when compared with other examples, and the “nose” is thin and connected to the horns only through the center. Channels between the bosses contain numerous perforations, the purpose of which remains unclear. Three of the diagonal bosses are covered with the remains of a different kind of corroded metal, likely an iron alloy based on the color. This may have been less expensive than bronze bosses, or this could have been a stylistic choice. We know from particularly sumptuous examples that diagonal bosses were sometimes augmented by bosses of precious materials.

The panel a animal is highly stylized, and although corrosion obscures parts of the head, the eye is not prominent as in other panels on the brooch. There appears to be a single lower jaw articulated. The body fills the entire rectangular panel, and the outline of the back, limbs, and rear are unclear. The panel h animal likewise has an incorporated maxilla, and the body fills almost the entire panel (the forehead of the animal slopes down, leaving one corner empty). A set of three lines behind the head could indicate a gripping paw, and there is a possible hind leg, though no spiral hip is clear. The panel e animal has a less pronounced yet distinct upper and lower jaw, giving it a porpoise appearance. Two curved lines in the back half of the body may indicate both rear and fore limbs in a crouching position. The panel d animal has a much clearer porpoise jaw, and the same limb layout as panel e.

Panels b, c, f, and g are all knot motifs. It is interesting to note that the motifs appear to have been constructed independently of pre-made rectangular panels—that is, the knots were drawn freeform, without being staged inside of rectangles at the beginning of the process. This

is evidenced by the irregular spacing and the uneven shapes of the square intermediate panels. Although corrosion could have obscured scratched-in designs, it does not appear that these square panels were originally ornamented.

4, Brooch A. The shell of this brooch is noticeably light on openwork, appearing more solid and heavy than other examples. Scroll ornamentation of the skirt (as described in Brooch 2B) and inscribed patterns on the outer edges of the skirt contribute to this effect. Upon close inspection, the openwork of the shell appears to have been created by casting the shell as a solid piece and boring round holes in strategic places to create the double-shelled effect. This is also evidenced by the cardinal bosses, which appear to be (in most cases) entirely solid, rather than hollow as in most examples. This may be standard practice, but in this case the execution was not entirely successful. Cardinal bosses are double-tiered, and the remains of string or cord can be observed in the channels between the bosses. The ox in shell panels a and c is highly simplified, appearing as a geometric T-shape with squared eyes and a minimally pronounced moustache. The motif above the horns is a pretzel knot rather than a scroll. The designs in the diagonal panels (e, f, g, and h) are unique, but recognizable forms are elusive. While the general layout of panels b and d are adhered to, details such as scoring lend this piece a unique style and limit the naturalism of the forms.

Panel a depicts an animal with a distinctly incorporated upper jaw (fish-like rather than porpoise-like) and an open mouth. The eyes of all animals on the brooch are articulated as slits rather than the standard convex circles. A set of curved lines behind the head may indicate gills or a forelimb. There is a clear rear joint, but a rear limb is not clear as in other examples. The rear of the animal is articulated using horizontal, rather than vertical lines. Panel h, though noticeably shorter than panel a, depicts the same type of mouth, curved lines, and spiral joint.

Panels d and e are highly analogous. Panels b and c and panels f and g are merged into a single long side panel along both sides of the brooch. Both depict a unique motif of two animals (wide-mouthed like in panels a, h, d, and e) with gills/forelimbs (although I lean toward a gill interpretation here) facing outward, toward the ends of the brooch. In the center of the panel, the rear of their bodies are connected in a clearly articulated knot motif. Of the square intermediate panels where designs are still visible (i and p), both exhibit a clockwise-facing pinwheel pattern inside of a square frame.

This brooch is quite unique and may offer a glimpse into the process of its creation. It is possible to interpret the length of the panels in terms of the order in which they were conceived: Panel a, the longest diagonally-situated panel, may have been the first put to clay. As the artist traveled clockwise around the band, they may have misinterpreted the amount of space left on the oval. The f/g side panel is the longest, and is placed slightly too far forward, perhaps speaking to the artist's confidence in recreating the scene from the b/c panel. However, the extreme brevity of panel h attests to the fact that the remaining space was minimal. Panel h was most likely the last to be created.

4, Brooch B. The approach to the overall design of the shell (simplistic forms with a straight-horned ox) is similar to that of Brooch A, with the exception of the presence of "cheeks" on the ox motif, but the approach to the openwork is less likely to be the same. The upper shell may not have been cast as a solid piece and bored through, although the level of corrosion on this example makes this determination difficult. The bosses are two-tiered, and the skirt exhibits scroll ornamentation. Some string or cord remains in the channels between the bosses. Panels b and d exhibit largely standard organization, but there is a distinct presence of two spiral joints, rather than one. These joints are stacked vertically, and though the upper

joint appears to be connected to a set of gripping paws, it does not appear the lower one is, as one would see in a standardized design. This determination is not definite, however, as these “paws” may simply be portions of the three-stranded knotwork exhibited in the panels.

The band is in poor shape, but panels b, a, and h are still visible. The animals of panels a and h have distinctly concave foreheads that curve around the eye. The upper jaw is incorporated, although the slope of the forehead sets it forward from the rest of the head. The mouth is open, and relatively naturalistic. The forelimb of the animal appears to be backward-facing (like a flipper rather than a paw) and the hind joint is incorporated fully into the curvature of the back, lending these animal panels a distinctly aquatic quality. Panel b is not a typical knot motif. The panel consists of a spiral on the inner (center) end, circled by a long curved line that connects to the outer edge. This line is crossed by a double-grooved terminated ribbon shape that juts into the center of the panel from the upper right corner. Unfortunately, designs on the square panels no longer exist, although a lack of design on panel k (which appears largely uncorroded) puts into question their existence at the time of the brooch’s creation.

5. Neither a pin catch or hinge remained for this brooch, so top and bottom panels are assigned arbitrarily. The ox horns of shell panels a and c are somewhat shortened and upturned, and they retain the cleft feature that helps to differentiate the left from the right horn. A scroll motif is located above the horns, the general shape of which is imitated in the moustache. The articulation of the nose is not as clear as in previously described objects. A second set of masks is curiously included in shell panels b and d, in place of the crossing monster heads (to the inside of the panels, facing out). The presence of circular convex eyes makes these masks clear. Spiral horn-like features branch off to either side of these eyes, similar to spiral features at the

top of the ox horns in panels a and c. Aside from the masks, however, the ornamentation of the side panels is not entirely clear. Diagonal panel ornamentation (panels e, f, g, and h) is standard.

Band panel a is largely corroded, but may feature a bent, forward-facing forelimb, spiral joint, and vertical lines describing the rear. Panel h is interesting as the jaws are incorporated, open, tapered toward the center, and upturned (as if the animal is facing up). This articulation is particularly fish-like and may include a downward-facing fin feature behind the head. The back of the animal is cloven and knot-like, as in Brooch 2B. There exists a possible crouched hind limb, although this interpretation is not definite. The animal on panel e exhibits this body type, although the rear limb is more definite. The mouth is upturned. The rear of both of these is vertical, as in panel a. Panel d is largely corroded, but there is a likely crouched hind limb and the rear is portrayed using a longer outwardly-curved crescent line with a short vertical line to the inside. This feature resembles a wagging dog's tail (by a stretch of the imagination). All side panels are loosely-articulated knot motifs. Patterns in the corrosion on some square panels indicates a *possible* X-shaped motif inside a square frame.

6. This brooch is heavily corroded, but some panels are still visible. Shell panel c exhibits an abstract ox motif, characterized by straight, unified horns and close-set eyes. Cheeks are present, and the moustache or noseband feature is curved, lending a sense of naturalism to the panel. The overhead motif is a pretzel knot. Panel b, interestingly, is more naturalistic than many other examples. It features the double animal motif, where the animals are crossed at the neck. Eyes exist to differentiate the heads from the other features, and the necks of the animals curve backward gracefully—it is clear in this example that the animals are hooking their necks around the other and looking back over their own shoulder. Two spiral joints exist in the bodies of the animals, identifying them as quadrupeds. There may be a bent

hind leg traversing the lower edge of the panel. Slender noses and differentiated features on top of the heads *may* indicate we are looking at deer-like creatures. The left animal is highly detailed, with possible ribs articulated behind the elongated neck. The limbs are difficult to distinguish in this case.

The most complete diagonal band panel is panel h. This panel features what is likely an aquatic animal. The forehead is convex, thrusting the open jaws forward and creating a porpoise-like head. A differentiated forelimb is clearly backward-facing, like a flipper or fin. While the spiral joint remains, there is no crouching hind limb. The rear is created with horizontal lines, drawn into two distinct points, likely meant to describe a porpoise's flukes or a fish's caudal fin. Panels g and f depict the wave-like spiral and cross-hatching seen in Brooch 4B. Unfortunately, none of the square panels contain surviving designs. It should be noted, however, that they are cordoned off by distinct square etchings. It is possible that they did not originally contain designs.

7, Brooch A. This set of two brooches found in grave 644 at Birka has been fragmented significantly. Both pieces in the set are similar in overall appearance to Brooch 4A in that they possess a more solid appearance, scroll skirt ornamentation, double-tiered bosses, wire channel embellishment, and geometric ox motif with a pretzel knot. Both brooches exhibit clear evidence that they were once gilded.

The pretzel knot—or, rather, a similar conception of space—makes an appearance in shell panel g in lieu of the typical scroll motif. Other diagonal shell panels appear to depict an animal figure (see panel f, which appears to sport both a spiral joint and forward-facing forelimb). Panel f's overall composition bears an interesting resemblance to band panel a, directly below it, and may even include a head, located to the upper right corner of the panel.

Shell panels b and d contain two distinct spiral hips on either arm of the lambda, as well as a distinct crossing point in the necks of the depicted animals. There is a strikingly brusque quality of line visible here especially, as short, strong strokes indicate a sense of motion travelling upward toward the heads of the creatures.

The band panels exhibit a couple of slightly different approaches to the animal motif. Panel a is highly stylized, but a set of clear horizontal lines indicating the body make outstanding features clear: There is an open mouth with an incorporated upper jaw, followed by a possible pointed crest or ear. There is no distinct eye indicated here. Two vertical strokes indicate either a forward-facing limb or a set of gills. A spiral hip exists, although no hind limb is clear. The rear is indicated by a continuation of the horizontal body lines. Panel h is similar, with the addition of a set of short vertical strokes to the lower right-hand corner of the panel, interrupting the horizontal motion. Panels d and e are similar to panel h.

Panels b and c and panels f and g are combined, as in Brooch 4A. It also exhibits the same knotted animals motif as the panels in Brooch A. It is extremely difficult to make judgments about what may have originally existed within the square band panels, but it is clear that designs were once present.

7, Brooch B. This brooch differs only slightly from Brooch A. Shell decoration is highly analogous, as are the band panel motifs. Panel h, one of the remaining visible panels, is noticeably short when compared to panel a of Brooch A. This indicates a possible similar conception of space as seen in Brooch 7A. While very similar to those band panel motifs seen in Brooch A, it becomes clear here that the artist is constructing the directionality of the series of lines that describe the top of the head, the continuation of the lower jaw, and the forelimb/gills as a sort of trefoil knot. The rear is described in both vertical and horizontal lines.

The fragments that remain of the other diagonal band panels indicate similar features. A unique feature of this brooch is the remains of an ornamental cord that runs around the lower reaches of the band. This appears identical to the type of wire or cord used to ornament the shell of the brooches in this set. The skirt decoration is particularly visible in this brooch and appears to indicate a diagonally-scored rope-like pattern that connects the skirt's scroll ornamentation. The prominence of etched frames in the square band panels with no internal designs indicates there may have been only square frame designs when it was originally made.

8. This brooch exhibits particularly rotund dimensions. Lines are rounded, rather than squared, as they jut from the openwork and band panels. Bosses are just barely double-tiered, and this second tier is rounded. Thus, the brooch overall has a distinctly soft appearance when compared with brooches like 7A and B. The horns of the ox in panels a and c are gracefully curved and distinctly attached to a central forehead feature. A scroll tops each ox, and the vertical presence of the nose outweighs the importance of the moustache feature. Remaining shell artwork is largely standard, although ambiguity of design in panels b and d calls into question whether the depiction was primarily of two intertwined animals or a third and fourth mask feature.

Panel a depicts an animal with a less pronounced lower jaw (the jaw itself takes up about a quarter of the frame) with a heavy, block-like head. There is a clear eye, and the cloven back conception is similar to that depicted in Brooch 2B. There is a possible spiral hip, and the rea is formed with vertical lines. Panel h shows a slightly different head shape, this one with a notably concave forehead along with the less-pronounced jaw of panel a. The body focuses more heavily on the knotted effect, with the central cords of the knot overlapping more clearly than in panel a. There is a spiral hip and a possible hind limb. Panel e is more similar to panel

a in composition and animal head style, but there is more clearly a crouching hind limb and a possible forward-facing forelimb. Panel d is more comparable with panel h, and includes a concave forehead, a clear distinguishing line between the head and the body, and a strong focus on the knot-like quality of the body. This particular panel seems slightly more abstract (or rushed) than the other three.

Panels b, c, f, and g are all knot motif panels. It is interesting to note that in all of the panels, but especially the side panels, it is clear that the band ornamentation was constructed freehand, without strict adherence to pre-determined rectangular spaces, as seen in Brooch 3. The vertical lines marking the ends of these selected spaces extend up to the top of the band, but not to the bottom.

There is some ornamentation of the skirt, although it appears minimal—far less detailed than in examples such as Brooches 7A and B. It does not appear that the square panels included incised designs. The channels connecting the bosses are filled—they do not have room for the inclusion of ornamental wires, as we see in somewhat more sumptuous examples.

9. Only the lower shell remains of this piece. There is some slight evidence of gilding, but no skirt ornamentation. Panel a presents an animal with a heavy, block-like forehead and a slight lower jaw. Two short vertical lines distinctly separate the head from the body. The cloven body type is somewhat adhered to, although articulation of the overlapping band features does not seem a priority. There is a spiral hip, and the rear is communicated in vertical lines. Panel h also utilizes an interpretation of the cloven body type, although the arching lines that extend back from the head are given the majority of the panel. The lower jaw is slightly more pronounced, and the nose of the animal is somewhat abbreviated. Panel e's animal is characterized by a flat, sloped face and a small lower jaw. A short line juts from the eye to a

point behind the mouth, separating the jaw from the body. A nominal hip feature is nonetheless indicative of a crouched hind leg, and like the rest of the panels, the rear lines are vertical. There is a possible crouched forelimb, or perhaps a backward facing flipper feature (the minimalistic style of these panels makes the distinction difficult). The body features of panel d are likewise difficult to discern. The nose, however, is distinctly concave and the lower jaw is more pronounced, giving this animal a more porpoise-like face.

There remain on panels l, j, i, and p evidence of X-shaped patterns inside of square frames. Panel n, however, sports a windowpane design, and panel m shows the rather unique design of a smaller windowpane design inside of a larger square frame. A crescent-shaped flaw in the top third of the panel may have been an error in the casting model that the artist had to work around, if indeed the square panels' ornamentations were incised after the casting models were removed from the master mould.

10. This piece exhibits a unique dimensionality—bosses and channels are far more prominent than the openwork shell. The cardinal bosses are formed with a strong cruciform shape, and the settings for diagonal bosses are particularly deep. Panel b and d decoration is standard, including gripping paws and a single spiral joint. However, panels a and c are highly irregular—they eschew the typical ox mask in favor of a diamond shape, surrounded by channels that link the corners of this shape to the corners of the panel. Scroll motifs appear above and below this diamond, although the directionality of the innermost is reversed in panel c. The panel a animal is highly naturalistic when compared to other similar panels. The animal sports a clear, downward-curving beak-like mouth, crouching limbs and an appropriately sloped back, and the fairly clear articulation of an upright “tail” feature. This is copied nearly

exactly in panel e and is very similar to panels h and d. Slight variations are evident in the delineation of the hind limb and the length of the face. Panels f, g, b and c are knot motifs.

11. Despite the corroded appearance of this brooch, adherence to popular motifs is clear. The horns of the ox mask are somewhat understated, and scrolls appear both above and below these horns. Shell panel b is standard, although it does not appear that gripping paws were intentionally included. The animal of panel e has a very blocky structure, including a squared face and strong horizontal body lines. The upper jaw is possibly differentiated, and the rear is composed of vertical lines. The only remaining animal figure, in panel d, has an incorporated upper jaw and a shortened body. The spiral hip is minimally present, and the rear is vertical. There is little evidence of a forelimb. The side panels are knot motifs.

12. Like specimen 10, the roundness of the forms seem to be particularly emphasized. The diamond shell panels (a and c) depict the horns of the ox mask with an internal tracing of the form in order to ornament the fairly broad, flat surface. There is a wide scroll above the horns, large square eyes, a pointed nose, and a downward-facing moustache motif. The heads of the crossing monsters on panels b and d are accentuated, and gripping paws are present. In this example, it may be that some of the internal decoration of this motif (those lines drawn within the bands to add interest) is meant to convey a closed eye.

The animals of band panels h and d have distinctly porpoise-like open mouths, rear-facing limbs, and downward-facing spiral hips—the directionality here allows the hip to be drawn as an extension of the back of the animal. The rear of the animal is created with horizontal lines. All of this applies to panels a and d as well, but the elongated noses here are slightly less pronounced. All side panels depict the spiral motif of Brooch 4B. The frayed ends

of the motif opposite the spirals face outward toward the ends of the piece, and are loosely articulated. There is an interesting mirrored step-like design in panels o and m.

13. Little remains of the upper shell of this brooch. The remains are of a standard diagonal panel. The animals of panels a, d, and e all possess gently sloping foreheads, cloven body forms, minimal spiral hips, and vertical rear lines. . Panel h is slightly different, and depicts an animal with a heavily protruding, slightly hooked mouth. The body gradually slopes down to the rear, and is moderately congruent with the cloven body type. All side panels are knot motifs. The square panels depict a design with an interlocking “T” and “U” shape, or a possible stepped motif (see panel i).

14, Brooch A. These brooches portray a very different type of panel decoration than others in the sample. The head feature remains in its traditional position, near the ends of the brooch. However, what would otherwise be considered the eye of the animal is depicted using an extended spiral. This aids in partitioning off space for what is still likely the head of an animal. A crest-like feature extends straight back from the top of the head, in panel e incorporating into the subsequent body knots. A spiral in the central dorsal portion of the animal may indicate a perceived joint. However, the use of the spiral as an eye at the head of the animal undermines this usually safe assumption. The lower “belly” of the animal is designated with a crossing of two double-bands associated with the back and front portions of the body (one of these is attached to the dorsal spiral). The rear of the animal is depicted, like the others, with a slight spiral shape and with a vertical “tail”.

The side panels all depict the same motif—two spirals, curling in opposing directions (tails facing the outside of the panel), surrounding two three-pronged “forks”, of which one

faces up and one faces down. Square panels contain an inscribed blocked “H” motif. This motif is also present on the portions of the diagonal bosses that connect to the edge of the shell.

The shell ornamentation of panels b and d are largely standard. In the central panels (a and c), the horns of the ox motif are heavily curved. A distinct forehead feature neatly divides the horns, and the eyes are featured centrally on the mask. There is a unique symmetrical scroll feature below these horns, consisting of a central spiral, connected to the central portion of the mask, with two arms than extend to the horns and to the central boss.

14, Brooch B. The side panels, square panels, and central shell panels (a and the remains of c) are nearly identical to those of Brooch A. Band panel e appears to have a more pronounced downward-facing nose feature, and the eye is more clearly described using a circle. Panel d has a particular emphasis on openwork that allows its forms to become very clear: upper and lower jaws, as well as eyes and ears of the crossing monster motif are visible. It appears, as in many styles of Viking period art, that the animals are biting each other or themselves.

15, Brooch A. The shell decoration of this brooch is largely standard. Panels b and d contain the crossing monsters motif with two spiral joints. The central diamond panels are relatively flat when compared to other examples, but they contain the moustache motif, slightly curved horns, and a scroll motif above. Square panels contain the stepped motif. All of the animals in the band panels are shown with concave foreheads, protruding noses, open mouths, distinctly backward-facing forelimbs, primarily horizontal body descriptors, and downward-facing spirals as continuations of the spine. The rear is horizontal. The body type is not quite cloven, as little of it relies on a crossing cords motif, but there is a distinct dip behind the head

which differentiates it from the rest of the body. Side panels are composed of the spiral motif with ribbon-pieces crossing each other in an X shape on the outside edges.

15, Brooch B. The shell designs of this brooch are very similar to that of Brooch A, although the eyes of the ox mask are slightly rounder and the moustache and scroll motifs are more distinct. Band panels contain all of the crucial elements of those on Brooch A, with slight (normal) variation in the utilization of space.

16, Brooch A. The shell panels of this brooch are defined by a wide, flattened style. The masks in panels a and c are depicted with large round eyes centered on the head, with short, curled, downward-sloping horns and a round nose-like feature. There are scroll motifs above and below the mask, along with a central dividing line. Wide channels connect particularly heavy boss settings and bosses. There is minimal evidence of gilding.

The diagonal band panels are unique on this brooch, as they may depict an animal, but with distinctly different proportions than previously seen in the sample—the (possible) heads are minimal and are characterized only by a small, gaping, square mouth. This is dwarfed by two large spiral shapes, connected in the center by crossing ribbons. Square panels are large and may contain mask motifs. Although corrosion of the brooch obscures much of the ornamentation, it appears that the side panels are a variation on the spiral and ribbons motif.

17. Panels a and c of this brooch contain a variation on the ox mask motif that emphasizes the breadth of the horns. They are wide with an upward curve with central tracing that gives them a triple-banded appearance. The eyes are understated and sit to either side of a narrow forehead. There is a distinct depression dividing the horns. There are scroll motifs above and below the mask, similar to those in Brooch 14A. Panels b and d appear standard. The bosses are double-tiered.

Each of the animal band panels depicts a hooked beak feature, in differing levels of naturalism. Panel a shows a differentiated upper jaw, with a single gash in the center of the mouth feature to indicate that the animal is facing down. The front half of the body is formed using bold horizontal lines, interrupted by the back half of the body, composed of two ribbons that slant downward. There is a spiral hip, a possible crouching hind limb, and a vertical rear. Panels e and h both depict a more naturalistic hooked beak, along with a slightly cloven body composed of double-stranded ribbons, with distinct short, somewhat vertical lines in the center of the body. There is a spiral hip and vertical rear. Panel e also shows a backward-facing ear or crest, while in panel h this crest has been incorporated into the rest of the body. Panel d shows the most naturalistic hooked beak, with a line separating it from the rest of the face. The body is composed of a horizontal ribbon indicating the back, a possible hip, and vertically articulated rear. The center of the body is composed of a square feature surrounded by crescent-shaped ribbons on either side. The side panels contain knot motifs, and the square panels show some evidence of decoration, though wear makes the exact variety unclear.

18. The masks of this brooch have a memorable appearance, with rounded, slightly curved horns, large, central eyes, and a slight “nose” feature. The ornamentation above the horns is an abstract scroll, and there is a knot or moustache motif below the mask, with a strong bow-like appearance. The knot appears to pass under the horns of the mask and enter the space above, adding a sense of dimensionality. The side panel decoration is in some ways standard, but the right-hand figure of panel b differs from the left-hand figure. The central portion of the ribbon body of the right-hand figure crosses over itself so as to form a single, uninterrupted arc from the spiral hip to the head. The channels between the bosses contain a string of

granulation that may be meant to mimic the presence of ornamental wires or cords seen on other brooches (i.e. Brooch 4A)

On the band, the animal panels all depict creatures with incorporated upper jaws and wide, wedge-shaped mouths. These panels also feature the downward-facing spiral joint as in brooch 12. The rear is horizontally depicted, and there is a backward-facing front limb in varying levels of clarity. The shoulder area is depicted as a set of diagonal lines moving from the middle of the head to the back. The side panels depict the knotted fish motif, as in Brooch 4A. While panel f/g is fairly standard in this respect, the animals depicted on panel b/c possess small eyes at the tops of their heads and semi-circular gaping mouths. In addition, the knotted tails are more stylized, and do not appear to cross in any way. The bodies of the fish themselves, however are knot-like (as is standard to this motif). The square panels contain an “H” shaped motif, with space above and below. Panel n, however, shows a motif with two crescent-shaped lines hugging opposite sides of the square. There is a possible line between them, which would indicate the conception of the other square panel motifs as actually “H”-shaped, rather than conceiving them as two knobbed panels on the top and bottom of the square. However, this is far from definite.

19. Panels a and c of this brooch contain the mask motif with scrolls above and below. The horns are not differentiated (are represented by a single bar with upturned, tapered ends) and contain ornamental tracing. The face of the mask is depicted with a square addition to the underside of the horns, and the eyes are combined with the arms of the lower scroll motif. The bosses are possibly double-tiered.

Band panels e and a contain animals with distinctly block-shaped foreheads, incorporated upper jaws, vertical rears, and possible crouched hind limbs. The bodies are

derived from the cloven body shape. Panels d and h, however, depict the forehead as a downward-slanted plane, pushing the mouth feature forward and creating an elongated face. The body is an abstracted version of the knotted, cloven body type, and the spiral hip of panel h is downward-oriented. The side panels are knot motifs.

The square band panels introduce a variety of designs. Although wear has made some impossible to interpret, panels include the “H” and “I”-shaped design, and the step-like pattern seen on Brooch 12.

20. The masks depicted on this brooch are highly stylized. They are composed of a single, square-ended bar which curves upward slightly. The eyes are small and square, and squared additions extend from the center of the horns on both the top and bottom. Scroll motifs exist above and below the mask but are oriented in different directions—in panel a, the spiral portion of both motifs extends toward the center of the brooch, while in panel c the spiral on the outer end (top of the mask) scroll points toward the center while the spiral on the inside motif points to the end of the brooch (up toward the mask). The side panel ornamentation is standard. The bosses are particularly simplified and rounded, although the center outside bosses (east and west, if we adhere to the “cardinal” metaphor) are double-tiered.

The animal motifs in the band panel exhibit a variety of different mouth shapes and body types, possibly indicating an interest in portraying different types of animals. Panel e uses a pared-down version of the cloven knot body type, with a distinct spiral hip and vertical rear. This body applies to the other representations as well, although the straightness of the back varies. Panel e’s animal has a differentiated upper jaw which juts out slightly from the head. The differentiated jaws of panel d are singularly elongated, creating an especially beak-like mouth. The panel a animal has an incorporated upper jaw, rounded forehead, and open mouth.

Panel h contains a mouth similar to a hooked beak, with the upper portion differentiated from the eye area. The side panels are knot motifs. Some etching on the square panels indicates there were likely once designs, but wear has made them difficult to identify with certainty.

21. The orientation of the scroll motifs above and below the animal masks of this brooch is reminiscent of that of Brooch 20. The masks themselves utilize a simplified version of the horns, which consists of a rigid, squared bar, slanted upward. The bar is interrupted in the center by a rounded plane depicting a forehead. The eyes are small and fairly wide-set. The nose feature comes to a sharp point at the center. The horns and forehead both contain internal tracing. The side panels are standard. The skirt of the brooch is ornamented.

The three remaining animal band panels are similar to Brooch 20, in that the mouths are significantly different. Panel e is differentiated, but fairly short, while the differentiated jaws of panel h extended far beyond the end of its forehead, creating a beak-like appearance. There is a spiral hip and vertical rear on both panels, but panel e is more reminiscent of the cloven knot body type than panel h. Panel d may be intended as a hooked beak, but the upper jaw is somewhat undermined by the line separating it from the eye area. It is not likely that this was meant as an open-mouthed creature, as there is a raised area to the front of this separating line that is distinct from the background of the panel. The side panels are knot motifs.

22, Brooch A. The ornamentation of these brooches has a somewhat flat appearance, and the quality of line is succinct and abstract. The mask's horns are conveyed with a broad, flat bar with upturned, tapered ends. The eyes are small, and the mask contains the cheek feature, which extends to the end of the nose. There is a knot motif above the horns, and a moustache motif below. The side panel decoration is largely standard and contains two spiral

joints. The heads are not heavily distinguished from the ribbon bodies. The bosses are single-tiered, and the skirt is ornamented.

All of the animals in the band panels are open-mouthed, and the body contains a downward-facing spiral hip as an extension of the back, horizontal rear, and distinct backward-facing forelimbs. The noses of panels h, e, and d are fairly pointed, and flare out slightly, creating a snub-nosed appearance. The mouth of panel a is wedge-shaped and does not appear snub-nosed. The side panels are spiral and ribbon motifs. Most of the square panels contain the windowpane motif, but panel i also contains four dots drawn in the center of each of the windowpanes.

22, Brooch B. The ornamentation of Brooch B is highly comparable to Brooch A, suggesting similar places and processes of manufacture. The band panel animals contain the same body types, and all of the mouths are open and have snub-nosed appearance. The only distinctive difference is a lack of designs on the square panels. Weathering that might explain this deficit does not seem to have affected the frame on these panels, so it is likely that the brooch never had square panel ornamentation.

23. The ox mask motif is fairly abstract and contains no openwork in the central portion of the panel. The horns are not differentiated, and consist of a single straight bar with tapered, upturned ends. The eyes are square shaped, and the mask contains cheeks that extend down into a pointed nose. There is a scroll above the horns and a moustache motif over the nose. Side panel ornamentation is standard and includes gripping paws near the spiral hip at the outer edge of the panel. The skirt is ornamented.

Two and a half of the diagonal band panels remain, and they utilize a body plan similar to Brooches 22A and B, with a backward-facing forelimb, downward-facing spiral hip

incorporated into the back, and a horizontal rear. The animals of panels h and a exhibit a face shape with no eyes, and open, tapered mouths. Panel a's forehead is slightly concave. Panel h uses a dynamic, energetic style to articulate the animal's shape, including double lines on the top and bottom of the head and crisp, wedge-shaped lines to indicate a uniquely small mouth. The side panels depict the spiral and ribbons motif. Although some of the square panels may have contained designs, they are not immediately apparent. Panel p may contain an "H" shape, but this is not certain.

24. There is significant wear on this brooch, which makes the determination of motifs somewhat difficult. The horns of the mask are separated by a cleft, and curve down before tapering into a raised point. They contain internal tracing to add to the ornamental quality, and the eyes are relatively large, round, and close-set. There are no cheeks, and the scroll motifs follow the orientation described in Brooch 20. The side panels are standard and contain two spiral joints. The heads and curved snouts of the creatures within the side panels are distinguishable from the rest of the body. The bosses are double-tiered, and the second tier is relatively small. The skirt contains ornamentation on the inside edge next to panel f, and there is a broad-linked chain (approximately 25cm) attached to the skirt via an overlapped metal hoop looped through a pierced hole near panel m. There is evidence of gilding.

All of the animals in the band panels appear to have a form of the hooked beak, although they vary in style. In panel d, the forehead is convex and slopes gradually into a hooked beak. The tip of this snout touches the lower left corner of the panel, and the mouth curves up, down, and up again, and ends in a small crescent-shaped curve. In panel e, the mouth juts forward and away from the face, and the eye area is largely circular, meaning there is a slight divot between the forehead and the rest of the mouth. This is repeated in panels h and a. All panels

with the rear of the animal intact contain a spiral hip and vertical rear, and all appear to have a variation on the cleft knot style body. In panel e, there is a possible forward-facing forelimb. Most of the square panels contain an “X” motif, except for panel m, which contains an unclear (corroded) design with a square knob at the top and two short horizontal lines at each side just under halfway up the frame.

25, Brooch A. This brooch is similar in appearance to Brooch 16, in that the band panels do not depict animals, and the masks are uniquely exaggerated. The horns of the ox mask are not differentiated, and curve downward before turning sharply up and ending in a curled taper. The forehead is placed high within the horns and is described by a break in the tracing inside of the horns. The eyes are very large and round, and there is a distinct nose-like feature below them. There is a slightly disjointed set of scroll motifs above and below the mask—the spirals exist but are diminutive and topped by a disconnected second set of spirals on the inside of the panel. The side panels seem to focus heavily on the joints of the composition (where the ribbons intersect), giving the piece the general appearance of a series of circles connected in a grid. The skirt is ornamented, and the bosses are wide with gaping openwork.

The diagonal band panels contain a motif with two large spirals that are seemingly independent of (not connected to) a set of horizontal ribbons that cross once in the center of the panel. The side panels are somewhat unique, although the composition is similar to that of the spiral and crossed ribbons motif. There is a spiral on the outside half of the frame (in panels c, f and g this spiral is moving, wave-like, toward the center, while in panel b it curls back toward the end of the brooch). There is a crescent-shaped double line to the outside of the panel, and the inner half is occupied by a second, looser spiral with the same respective orientation in each panel. What would normally be the square panels are wide, rounded, and

those on the diagonals contain what are possibly animal mask motifs with large round eyes and a possible mouth feature, although the lower part of many has been shorn away.

25, Brooch B. The same generalities apply to the second brooch of this set. The only discernible difference here is that all of the side panels appear to possess the same directionality of spirals. It is important to note that the diagonal square panels on this brooch do not possess mouth features, but may still represent the mask motif.

26. The mask motif of this brooch is highly stylized. The horns are represented by a single blocky, straight bar. There is a slight square knob on the underside to indicate a forehead, and the eyes are depicted as large squares to either side. There are cheeks and a nose, as well as a moustache motif and a scroll above the horns. The side panel decoration is standard, and the heads of the figures are fairly distinct from the rest of the bodies. The skirt is ornamented, and the bosses are single-tiered. There is some evidence of gilding on the skirt near panel f.

The band animals feature open mouths and dainty, protruding, upturned noses, with the exception of panel h, which has a still tapered but downturned nose. While panel a is missing a large portion of the face, the directionality of the nose is still discernible. Panel e utilizes the cleft knot body shape, and the overlapping ribbons create a plaited effect. The remaining panels have an arched back that transitions directly into the spiral joint. The body is articulated through a series of feathery lines, loosely mimicking the plait of panel e. All of the animals in the end panels have backward-facing forelimbs. The side panels contain the spiral and ribbons motif, and there is no discernible design ornamenting the square panels.

27, Brooch A. This brooch depicts the ox mask motif abstractly, with a single squared, straight bar loosely upturned at the ends, small eyes, a narrow forehead, and cheeks. There is a scroll above the horns and a moustache below. Side panel ornamentation is standard, but the

eyes of the animals are clearly described within the arching top portion of the face. It is possible that the legs of the animals are depicted as extending toward the outside of the panel rather than toward the boss, reaching toward the central and diagonal panels. The skirt is ornamented.

All of the band animals have thin, upturned noses and open mouths. Panel h is interesting in that the upper jaw is significantly smaller than the lower, and both are described with square corners. All of the animals have the arched body type, with a distinct dip behind the head. All possess backward-facing forelimbs. Although only one of the side panels remains in any significant portion, it can be assumed that all of them depicted the spiral and ribbons motif. Square panels may depict an “X”-shaped motif.

27, Brooch B. The second brooch of this set shows a slightly different approach to the shell decoration. The horns of panel a are separated by a cleft, contain decorative tracing, and curve in the middle of each horn. However, the eyes are large, the cheeks are present, and the moustache and scroll motifs are highly similar to those of Brooch A. The skirt is ornamented.

The animal panels possess the same features as those in the first brooch, including the dainty upturned noses and the d panel in which the eye of the animal is distinctly high on the head. The side panels exhibit the spiral and ribbons motif, and the square panels, like Brooch A, do not have distinctive ornamentation.

28, Brooch A. Unfortunately, the upper shell no longer exists for either brooch in this pair. All of the end panels depict animals with hooked noses and cleft knot bodies. In panel e, this body is slightly different, as the back is nearly straight and the ribbon articulating the flank of the animal crosses on top of, rather than behind, the ribbon articulating the shoulder of the animal. All of the animals possess what appears to be a crouching hind leg. The hooked nose is described in a number of different ways—in panel h, it is minimally protruding and curved,

ending in a point at the lower corner of the panel. In panel e, the end of the mouth is flat against the side of the panel and protrudes slightly but not enough to eliminate the pinched appearance of the cleft indicating its beginning. Panel d depicts the mouth in an exaggerated fashion, with the upper jaw arching far over the top of the lower and pressing against the front of the panel. In panel a, the mouth curls over as in panel h. The side panels are knot motifs and the square panels may have depicted the windowpane motif.

28, Brooch B. The animals in these panels display a different approach to the mouth feature. Panels a and e have blocky, somewhat sloped foreheads that encompass the entire front of the panel. The upper jaw is incorporated, and the mouth is closed. The body is cleft and knotted, and there appears to be an elbow shape within the tangle of ribbons which indicates a crouched, forward-facing forelimb. There is a moderately to minimally present spiral hip on all panels, but none contain a distinct crouched hind limb. Panel d has a slightly concave forehead, and the mouth protrudes significantly in front of the eye. The nose is squared, and the line indicating the mouth curves downward. Panel h has a downturned nose with an incorporated jaw, as well as a possible crouched forelimb. All side panels depict the knot motif, and appear to have been drawn freehand, as in Brooch 3.

Conclusion

After careful examination, a number of categories emerge from the sample. While each brooch is distinctive in itself, a number of shared qualities in both style and iconography, especially in regard to the tertiary band panels, indicate that relationships exist within the sample. In addition to a description of the geographic associations between the brooches, these visual relationships are interpreted in the following chapter.

Chapter Five

Analysis

In analyzing this dataset, there are two primary levels of theory which are integral to the soundness of the claim. The first justifies the use of archaeological material to make assertions about the social dynamics of ancient peoples—we must understand the material products of a society as sufficient evidence of its cultural characteristics. As a ubiquitous object that has the potential to be a prestige good, the oval brooch necessarily materializes ideology—including information about power and social hierarchy. It also participates in symboling—that is, communicating complex ideas based on a vocabulary of widely-understood symbols from a particular society. In this case, symboling encompasses those signals conveyed by the prestige- and gender-associated object itself, as well as in the iconography intentionally included on its surface.

The second theoretical level concerns the question of whether producers in Viking Age Sweden had the agency to change their own symbolic output, and what effect this had on the symbolic traditions of their culture as a whole. The first aspect of this posits that there is a relationship between elite control and an economy's market size and expansion rate. In short, in broad, far-reaching craft-based economies like that of Scandinavia during the Viking period, there comes a point at which elite control is naturally limited in its scope and individuals and factions become important to the production and reproduction of social and cultural forms. Therefore, specialized producers such as non-ferrous metalworkers were significant in informing what was considered “conspicuous” in their respective culture. According to Veblen's principles, consumers respond to an increasingly complex society by participating in

conspicuous consumption, therefore empowering the symbols promoted by specialized producers. Thus far, the Swedish Viking period (in particular the 10th century) checks all the boxes: there is rapid economic expansion that begins to limit elite control (without eliminating it), allowing non-elite individuals and producers more control over the symbols which convey social information. This process is aided by a feedback loop facilitated by conspicuous consumption's concurrent processes of emulation and amplification.

At this point, highly specialized and mass-production modes diverge. Specialist production tends to encourage hierarchical relations, which puts producers at the center of the determination of symbolic power while simultaneously limiting their symbolic output to those symbols accepted by the elite few. This part of the theoretical model explains those examples of the brooch trade which were sumptuous, unique pieces. These had a disproportionate effect on considerations of what conveyed power—overall, they transmitted significantly more information than less rich brooches. However, this does not describe the majority of the brooches in my sample.

Instead, this model approaches those producers who participated heavily in emulation, symbolically seeking to participate in the dominant ideology (that of the elite). Because this model tends to encourage heterarchical relations, the appearance of these objects tends to be very similar across the board—“popularity” is the rule which governs reproduction. This, of course, we see in the appearance (composition) of the outer shell decoration. The crucial dimension of these mass-produced emulative objects is that they tend to transmit considerably less symbolic information than specialized products. This affords producers a level of freedom to transmit symbols and information of their own—for example, categorical identifiers of one's civic, geographic, or social identity, as discussed below.

Resulting Sub-Types

An analysis of the formal qualities of each of 28 brooches in the sample reveals a number of distinct sub-types of the P51 type brooch. It is most likely based on the formal content and geographic distribution of these sub-types, that they constitute a type of signature or identifier of the artisan's location or workshop. The sub-types are shown in Table 5.1, and the crucial elements—the varying contents of the band panels—are described:

Table 5.1. Sub-Types of the P51 Brooch.

| Sub-type – number and descriptive name | Brooches included in sub-type |
|--|--|
| 1 – knot type | 1, 2a and b, 3, 5, 8, 9, 11, 13, 17, 19, 20, 21, 28a and b |
| 1a – knot type variation | 10, 24 |
| 2 – knotted fish type | 4a, 7a and b, 18 |
| 3 – Uppland type | 4b, 6, 12, 15a and b, 22a and b, 26, 27a and b |
| 4 – round panel type | 16a and b, 25a and b |
| 5 – triglyph type | 14a and b |

The knot type is categorized by a loose, abstract knot-like image that adorns each of its four side band panels. The diagonal panels of the knot type are the most variable of the sub-types, but almost all of them are constructed around a cloven body, with block-like heads that fill most of the panel. Mouths are typically closed and upper jaws are often differentiated. The 1a knot type variation contains the same abstract knot in its side panels, but diagonal monsters are in much more naturalistic and more identifiable as land animals. They have large eyes and sharply curved eagle-like beaks.

The knotted fish type is characterized by a side panel configuration which fuses the typical two distinct side panels into one. In this fused side panel a double-headed fish, or more likely two fish that have been knotted together at the tail, are depicted with open mouths and what are likely gills. The open mouths are repeated on the diagonal animal panels, and in this

type the spines of the animals curl into a downward-facing spiral with backward-facing forelimbs, indicating this, too, is meant to be interpreted as a sea animal.

The Uppland type is named after the location upon which it converges densely in the sample, a pattern described below. The type contains four side panels which each contain the enigmatic spiral and ribbons motif. The motif consists of a large spiral which curls toward two crossing ribbons, the overall effect of which is a large “X” followed by a spiral of similar size. The animals of the diagonal panels have a similar body type to those in the knotted fish type, but the facial plane of these animals is concave, giving it a snub-nosed effect. This is the second-most common type behind the knot type.

The round panel type contains a unique addition to the band—large, half-circle mask- or button-like replacements for the typical square intermediate panels on the band. The diagonal panels, interestingly, do not contain animal images, but rather are composed of two separate spirals connected by a cross-hatch symbol similar to that in the side panel of the Uppland type. The side panels of the round panel type contain a somewhat anomalous symbol that consists of a mushroom shape—or, in some cases, what appears to be a backward-facing cresting wave—next to a small spiral and crescent moon.

The triglyph type consists of a single pair of brooches, but the pair was distinct enough that I chose to consider them as a separate sub-type entirely. The animal figure in the diagonal panel is more complex than other examples but maintains certain identifying features such as the crouching rear limb, “tail”, and spiral joints. However, this animal contains multiple segments and joints, and the head is highly unusual—there is a possible snout or beak, what is likely an eye (articulated as a slight spiral) and a long crest that shoots back toward the body. The side panels contain a set of three symbols in high relief—two of a type of wide, squared

spiral, circling in opposing directions, interposed by two three-pronged fork-like symbols facing in opposite directions.

I argue that these categories constitute a discovered type, rather than a designed type. The reasoning for this is that each of the elements that contributes to this judgment has the ability to occur independently of one another, but remains confined to a pre-determined “set” of images that does not vary significantly. Each of the images occurs within a distinct panel, and its configuration is entirely independent from those panels that surround it, aside from the condition in the majority of the brooches that the diagonal band panels contain an animal figure (the only exception to this rule is the round panel type). Therefore, it would be entirely possible for the elements to coexist in alternate configurations—the geometric, square-headed animal of the knot style could easily sit next to the swirling side panel motif from the Uppland style. However, this simply does not occur in the sample. Uppland style animals always have convex noses and swirling tails, and knot style brooches always contain both knot-like side panels and at least one block-headed animal.

Geographic Association

It is also worthwhile to note that at least the Uppland style (as evidenced by its moniker) has a statistically significant geographic association. In this sample, brooches containing the characteristic convex noses and wave-like side panel motifs do not occur outside of a highly specific locality (in and around the historic county of Uppland). When compared to the more numerous and geographically variable knot style, this geographic distribution is unusual enough to evidence the Uppland style’s distinction. To illustrate this, I provide a series of maps (Figures 5.1 and 5.2) describing the geographic distribution of the brooch types throughout central Sweden.

An analysis of these maps provides us with an idea of the distribution of the most populous three subtypes—the Upland type, the knotted fish type, and the knot type. The knot type is the most dispersed of the three and has a slightly more south-central median center. The knotted fish type and Upland type are more similar in terms of location, and are significantly more centralized than the knot type. However, because the Upland type was more numerous in the sample, the results are more conclusive for this subtype than for the knotted fish type. It would be reasonable to conclude that there is significant variation in terms of geographic expression between the Upland and knot types, the two most common types. It may be that given a larger sample, with a more diverse representation of the subtypes, other subtypes might begin to express more centralized geographic tendencies.

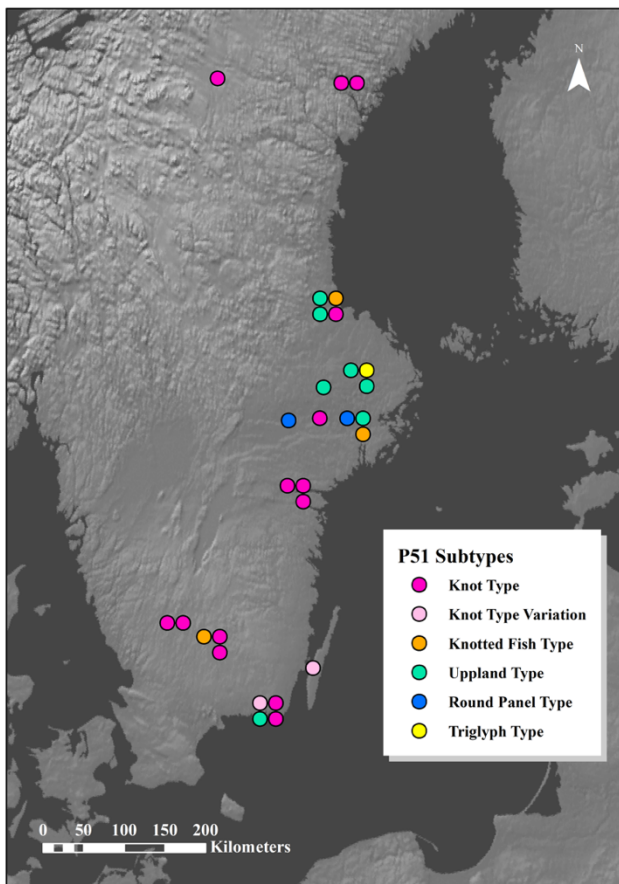


Figure 5.1. Map showing brooch locations by subtype.

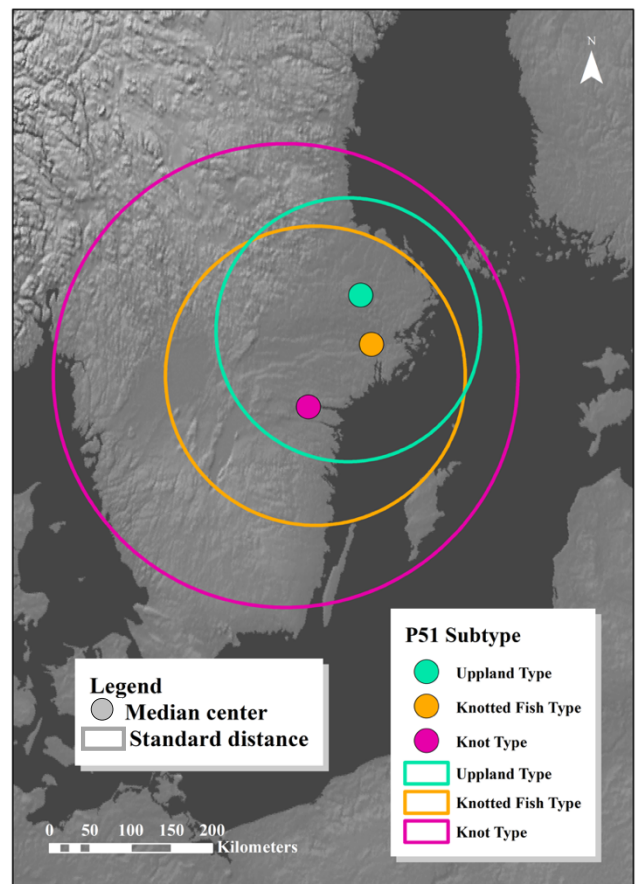


Figure 5.2. Map showing median centers and standard distances for significant brooch subtypes.

Synthesis

Art does not occur in a vacuum. This typology has significance, and the reason for the distinct variation has deep roots in the social, political, and economic fabric of Norse society at the turn of the 10th century. Before we discuss the motivations behind this variation, it is necessary to describe the actors who would have influenced it.

Historically, the study of ornamental jewelry has upheld the influence of elite patronage and the workings of conspicuous consumption as the primary forces that drive the development of form, to the detriment of the artisans who produced the works. This is certainly not to say that both elite influence and conspicuous consumption did not influence the stylistic qualities of the P51 brooch—in fact, the opposite is true, and is discussed below. However, this study understands the primary actors behind these specific panels (the lower shell band panels that define each sub-group) to be the producers themselves.

To qualify this, we return to the history of the oval brooch styles as described by Sindbæk (2009). The period that preceded these oval brooches (early to mid-9th century) was characterized by staunch regionalism, wherein individual workshops produced styles specific to their region and then distributed them fairly regularly throughout their trade network, leading to a homogeneity in the archaeological record. It would appear that in this earlier period, style was a matter of personal taste on the part of the consumer, and a matter of strict specialization on the part of the producer. To explain this, Sindbæk identifies style variation of Berdal and transitional-type oval brooches based on workshops from Ribe and Birka, major nodal points in the trading networks of the late Iron Age. The fact that the brooches themselves were distributed broadly and evenly across the whole of Scandinavia apparently (according to the artisans) necessitated identification of where they came from. Therefore, metalworkers in

Ribe and Birka began to use distinct styles and compositions to identify themselves. This points to a rich sense of professional and civic identity—they saw themselves as an integral—and yet utterly distinctive—part of the fabric of their society, connected to their respective regions through a sense of identity rooted in place and community.

When the Berdal types transitioned into the “international” styles in the second half of the 9th century, this dynamic was upset. As patrons began to prefer only one or two popular styles (those styles that most efficiently and effectively communicated status according to the process of conspicuous consumption) producers were left without their traditional method of specialization. They were suddenly (within a few decades) unable to effectively differentiate their work from the work of others as they had in the past. This, I argue, led to the systematic variation of band panel motifs and styles.

To contend with a demand for top shell ornamentation that conformed to the style of the time—containing strict shell panel dimensions, boss proportions, and relatively standardized ox mask and other openwork—detached specialists signaled their professional or regional associations through the motifs and stylistic variations on the band panels. Distinctive symbols would have functioned to identify one’s own work among otherwise visually similar brooches.

It may be significant that these band panels are less immediately visible to consumers and are in some ways the least visually exciting space of the brooch, therefore making it the easiest to customize without affecting its adherence to the popular international style. The images on the front of the brooches simply do not change—there are stylistic differences, of course, but the same elements exist in the same spaces on every brooch. This, therefore, comprises the *style* of the P51 brooch—this was what the wearers demanded. It is possible to

read the diagonal band panels (containing an animal motif in almost every sub-type) as a part of this style. However, the iconography on the side band panels is highly variable. Here they act as qualifiers, helping to definitively place brooches within their appropriate regional or professional types.

It should be noted that the symbols gracing these side panels do not correspond directly with any known myths or particular meanings (Hupfauf 2003). They are important for a different reason, otherwise they would not be repeated faithfully over and over, spanning more than half a century and appearing on multiple international styles. By a happy accident, I have found in Petersen's typology (1928:55, 68) two illustrations that evidence this crossover. Figures 50 and 52 (Petersen types P48/49 and P52, respectively) both depict double-shelled brooches, the lower shell of which contains the knotted fish style of band panels. Figure 52, especially, has side and diagonal band panels so analogous to the knotted fish style that it appears the lower shell was originally designed for a P51 type, and simply had a more elaborate upper shell swapped for the original. This is significant, as it shows a separation of a significant set of band motifs from an overall style of brooch. This is further evidence that the typology is discovered rather than designed. Both examples come from the west coast of Norway, which speaks to the immense efficiency of Viking Age trade, as well as the capacity for goods, ideas, and technologies to be transmitted across great distances.

It is likely that in some cases these panels constituted a regional marker rather than one of a single workshop. There is limited data as to how prolific workshops might have been in this period, especially with mass-produced styles. However, the variability in top shell decoration as well as the variability of cast quality indicate that multiple makers were likely using the same symbols. Either the P51 sub-types were an intentional development of a

technique or brand unique to a particular artisan or workshop, or this brand was shared between artisans in a particular region, regardless of exact workshop or sponsor. Unfortunately, without access to highly specific site data—mould fragments containing recognizable designs from multiple workshop sites in a particular region—this distinction cannot be made. If mould fragments containing similar corresponding designs are found at multiple workshop sites, this would clearly evidence the approach of a regional design shared between local artisans. I believe this model to be the more likely of the two scenarios, given the variability in style within each subtype and the relatively small number of subtypes.

Nevertheless, these explanations would err on the individualistic side, pointing to concepts of professional pride and regional identity that are difficult to prove by the archaeological record alone. It is also possible that the re-creation of particular forms could have served a symbolic purpose. Contemporary records of the specific ideological meanings of these symbols are not easy to come by, so most of the research regarding symbols in Norse applied art groups symbols into broad created types based on connotations of activities, life stages, and gender, among other factors (Hupfauf 2003; Dickinson 2005). Unfortunately, the specific symbols and animal ornamentation are not discussed in the literature to the point that we can determine if socially symbolic meaning played a role in the selection of certain motifs over others.

The Viking age was characterized by massive economic growth, increasing trade, and emerging social complexity. For craft-based economies, each of these factors is an impetus for physical changes in the materials produced. Whether the imagery on the P51's tertiary band is related to individual identity, group identity, or a greater symbolic culture, it is certainly a product of its social, political, and regional context. The structure of trade and markets, towns

and workshops, and the social status of the artisans themselves in Viking Age Sweden are all crucial dimensions to understanding how the brooches and the designs on them functioned within their culture and how they can be examined as illustrations of social complexity and the development of personal or group identity within a rapidly expanding marketplace.

Conclusions

The present study approaches the question of both artistic intent and the capacity for the social influence of producers through an examination of the P51 type oval brooch. This brooch represents a widely-produced object of significant social value—it conveyed information about the consumer's gender, certainly, but also about their position in the hierarchy of their sociopolitical environment. The choice of the consumer to favor specialized or non-specialized production indicates their ability to participate in sumptuous displays of wealth and status. The brooches evaluated in this study fall into the category of non-specialized production, and as such I argue that they were able to convey information about the producers as well—namely, their regional and professional identity.

The P51 type emerged at a time of stylistic turmoil—the rapid transition of one form of regional stylistic determination to another at the turn of the 10th century. Because of this, we can begin to understand the specific values and intentions of non-ferrous metalworkers based on their reaction to such a change. After a long-established period of production that favored highly varied compositions and iconographic content that could clearly indicate one's professional brand, the emergence of the international styles was a systemic shock. To contend with this new, highly emulative mode of production, artisans turned to marginal areas on the brooches to convey their regional and professional identity.

An examination of these marginal areas was undertaken at the Statens Historiska Museet in Stockholm. With a moderate-sized sample of P51 type brooches, I was able to complete a detailed catalogue of formal characteristics that contributed to stylistic variance within the type. From this catalogue, I isolated a number of distinct subtypes. These subtypes

were expressed primarily in the band side panels, although variation in the articulation of the band animal motif contributed to this typology. At least the two most populous subtypes within the sample (the knot type and the Uppland type) exhibited significant geographic organization, which contributed to my reading of the types as discovered rather than designed. Because significant variation in stylistic rendering of both shell and band designs occurred within each subtype, I believe that the subtypes were likely produced by multiple artisans or workshops operating within a specific region.

The results of this study indicate that artisans adjusted to consumer tastes for extremely popular brooch types by expressing their regional identity in slightly more peripheral locations on their products. They also indicate that metalworkers—simultaneously marginal and integral members of an increasingly complex society—possessed a sense of regional or civic identity that was sufficiently consequential as to influence their visual engagement with consumers and with each other.

I believe that further study on this topic may reveal additional subtypes, as well as further narrowing the geographic frames for the production of the subtypes. This could certainly be facilitated by examining a larger sample. A lack of access to site reports that might detail evidence of their production—for example, mould fragments containing recognizable design details—prevented the study from making any exact determination of production loci for the P51 subtypes. Other brooch types may also merit investigation, as the discovery of P48/49 and P52 type brooches with knotted fish motifs indicated an adherence to similar regional motifs over time and across the boundaries of stylistic category.

It is clear that the rapid social changes which occurred in the Viking Age created a new tension between producers and consumers. The elite desire to control the symbolic content that

protected their socio-political status resulted in a new mode of production that curtailed artisans' ability to creatively manage their own works. In order to maintain a level of control in their work, these artisans began to modify marginal panels in intentional ways, effectively trademarking their products and asserting their creative authority and identity in a changing market.

Glossary of Terms for Formal Analysis

Animal mask – a feature of some Viking art styles wherein the front-facing head of an animal is shown, often divorced from context or a body

Arched body type – the body of the band animal is composed such that the back of the animal is arched—that is, there is a recognizable back feature which extends upward from the head and back down at the rear.

Band – the visible portion of the lower shell of the P51 type brooch, the circumference of which is circled by a regular procession of panels.

Band animal – an animal motif that appears consistently in the end panels of the band. It consists of a head with recognizable jaws and an eye. The articulation of the head and body features is highly dependent on the subtype, and common iterations of each feature are described here. This feature is described in terms of its anatomy—features that resemble a limb, a beak, etc. are referred to as such.

Bosses – hollow, perforated, domed protrusions on the outer shell spaced at regular intervals
Cardinal boss – those bosses that occur in “cardinal” locations—at the center, left, right, top, and bottom when viewed from the front.

Cloven body type – the body of the band animal is composed such that the back of the animal has a distinct depression in its center. This is often the result of an underlying composition of crossing strands.

Crossing monster (shell motif) – a motif found in side panels of the shell which consists of an interlace composition. It is occasionally clear that the interlace is devised of two long animals, whose necks cross over each other at the center of the panel near the center of the brooch.

Diagonal boss – those bosses that are spaced in between the cardinal bosses. These are flat in our sample, though they may have originally held bosses made of decorative materials.

Differentiated jaw – the mouth of the band animal is composed such that the upper jaw is distinguishable from the forehead—this is accomplished by indicating a cleft or depression between the two features.

Horizontal rear – the rear of the body of the band animal is defined by horizontal slashes.

Incorporated jaw – the mouth of the band animal is composed such that the upper jaw is indistinguishable from the forehead

Knot (band motif) – a motif found in side panels of the band which depicts an abstractly- or loosely-composed knot

Knot (shell motif) – a motif that appears above the ox/animal mask in shell panels a and c, consisting of a pretzel-shaped double-stranded knot.

Knotted fish (band motif) – a motif found in side panels of the band which depicts two fish-like animals facing the ends of the brooch, the bodies of which are knotted together at the center. To accommodate this design, the two side panels are combined into one.

Lattice – the system of panel divisions across the outer shell of the brooch, consisting of solid, straight lines, sometimes with a channel through the center. In the P51 type, the lattice partitions the panels (described below).

Mask (shell motif) – the iteration of an animal head on the P51 brooch, found in panels a and c. Interchangeable with “ox”.

Moustache – a somewhat enigmatic motif found in conjunction with the ox or animal mask of shell panels a and c. Its placement across the nose of the animal lends it its name. The motif consists of two double-stranded, upward-facing curls branching away from each other (to the sides of the panel).

Openwork – ornamentation that is perforated or that otherwise shows open space in the areas between designs and figures

Ox – the animal mask figure found in shell panels a and c. It is an abstract depiction, consisting of a set of horns, eyes set directly underneath, and often features that resemble a nose and cheeks. Some examples also contain the “moustache” motif. This feature is described in terms of typical bovine anatomy—features that resemble a nose, cheeks, etc. are referred to as such.

Panel – partitioned spaces housing illustrations. Shell panels are filled with openwork, and band panels contain incised designs.

Band panels:

End – rectangular panels (a, d, e, and h) which typically contain a band animal motif

Rectangular panels – the rectangular panels (a through h) that encircle the band.

Side panels – rectangular panels (b, c, f, and g) which contain a number of distinct motifs.

Square panels – the square-shaped panels (i through p) that are located in between the rectangular panels. These sometimes include simple scratched designs or patterns.

Shell panels:

Diagonal – four somewhat trapezoidal panels at the ends of the brooch (panels e, f, g, and h) containing an abstract spiral or scroll motif.

Diamond – two rhombus- or diamond-shaped panels on the front (panels a and c). These contain the ox/animal mask and associated motifs.

Side panels – two irregular pentagonal panels moving down the sides of the brooch (panels b and d), typically containing the crossing monster motif.

Rear limb – a prominent and somewhat consistent feature of the band animal, almost always indicated by a spiral hip

Ribbon – a discrete element composed of a double strand. Ribbon, here, is a term which can be used to describe any usage of a double strand to express a free-standing shape (not a part of an interlace composition)

Scroll (shell motif) – a motif that appears above the ox/animal mask in shell panels a and c. This consists of a spiral with a band that stretches away from it in either direction with a three-pronged deviation at the end, somewhat like the head of a toothbrush—these may be intended as gripping paws.

Scroll (skirt motif)/ornamented skirt – the decoration which appears on some skirts. It is typically composed of three symmetrical lateral protrusions at equal distances around the outer edge. These protrusions depict curling, scroll-like motifs.

Shell – the outer shell of the double-shelled P51 type brooch, on which are found panels, lattice, and bosses.

Skirt – the flattened lower edge of the brooch, sometimes ornamented.

Spiral and ribbons (band motif) – a motif found in side panels of the band which depicts a large spiral which curls toward two crossing ribbons, the overall effect of which is a large “X” followed by a spiral of similar size.

Spiral hip/spiral joint – a feature of some Viking art styles wherein an animal’s major joints (hip and/or shoulder) are indicated with a spiral.

Vertical rear – the rear of the body of the band animal is defined by vertical slashes.

Windowpane (band motif) – a recurring geometric square panel element which resembles a four-paned window.

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Appendix of Brooch Panels

1



Top



d



a



b and c

2, Brooch A



a



d



h



d



e



a



f and g



b and c

2, Brooch B



h



a



d



e



b and c



f and g



a



Top

3



Lower Shell



Upper Shell



d



e



h



a



b and c



f and g

4, Brooch A



Top



a



d



d



e



h



a



f and g



b and c

4, Brooch B



Top



b



a



h



a



b

5



d



a



c



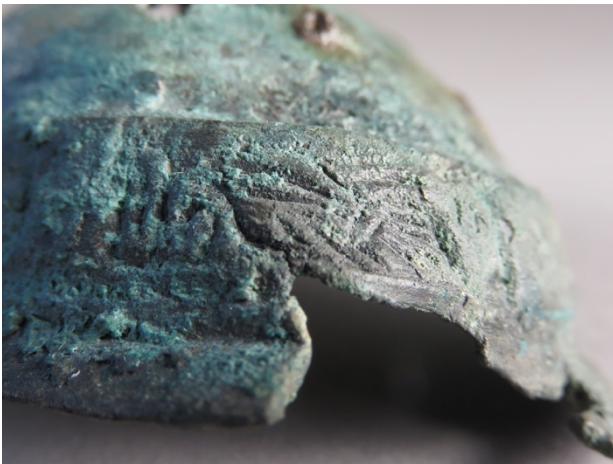
f



h



d



a



e



Rivet with pin to attach boss

6



a



d



h



b and c



d, fractured

7, Brooch A



Top



a



d



e



a



h



d

7, Brooch B



a



d



h

8



Top



c



d



h



a



d



e



f



g



b and c

9



Top



a



h



e



d



b and c



f and g

10



Top



b



a



c



a



h



e



d



e



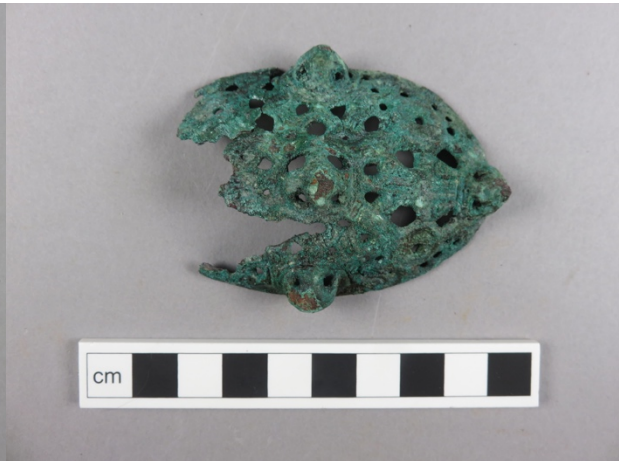
f



b and c



Lower Shell



Upper Shell



c



b



e



f



d and c

12



Top



d



c



d



a



e



h



b and c



f and g

13



Top



a



h



d



e



f and g



b and c

14, Brooch A



Top



h



e



d



a



g and f



c and d



a



d

14, Brooch B



e



d



h



f and g



a



d

15, Brooch A



b



c



a



h



e



d



g



b

15, Brooch B



Top



c



b



a



d



e



b and c



f

16, Brooch A



Top



c



d



h



e



d



a



b and c



f and g

16, Brooch B



a



a



b



h



e



d



f and g



b and c

17



Top



a



b



e



d



a



h



b and c



g and f

18



Top



a



b



e



d



h



a



f and g



b and c

19



Top



c



d



e



d



a



h



b and c



f and g

20



Top



a



c



b



e



d



a



h



f and g



b and c

21



Top



a



c



d



h



e



d



f and g



c

22, Brooch A



Top



a



d



a



h



e



d



f and g



b and c

22, Brooch B



c



d



d



e



a



h



f and g



b and c



Top



a



d



e



h



a



f and g



b

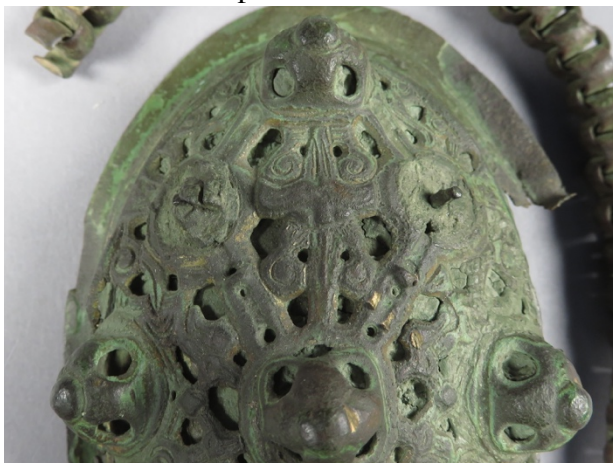
24



Top



c



a



d



e



f



g



h



a

25, Brooch A



Top



a



b



a



h



e



d



b and c



f and g

25, Brooch B



d



c



d



e



a



h



b and c



f and g



Top



a



d



a



h



d



e



b and c



f and g

27, Brooch A



Top



a



d



e



d



a



h



b and c



f and g

27, Brooch B



a



d



e



h



g

28, Brooch A



Top



h



e



d



a



b and c



f and g

28, Brooch B



d



a



h



e



b and c



f and g